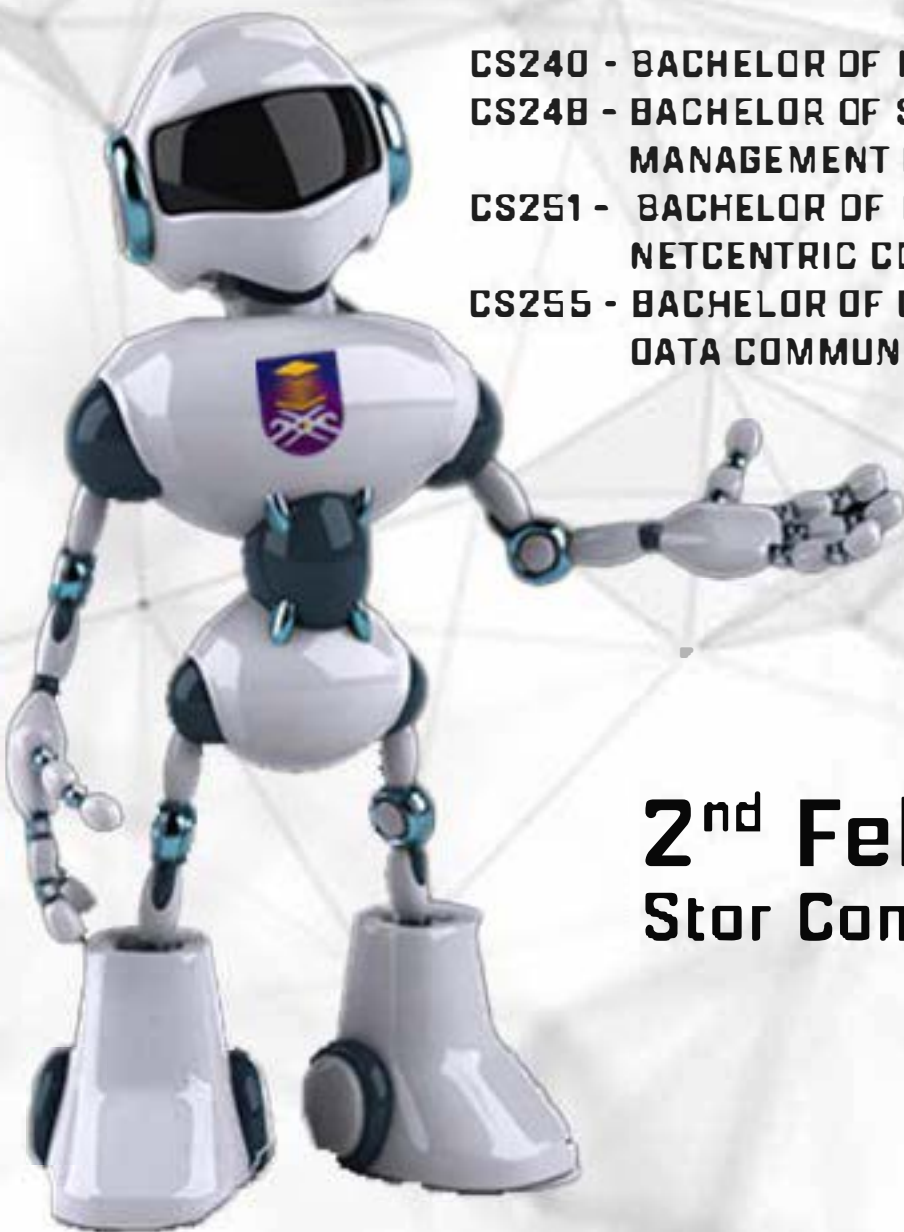RESEARCH EXHIBITION IN MATHEMATICS & COMPUTER SCIENCES

REMACS 5.0

CS240 - BACHELOR OF INFORMATION TECHNOLOGY (HONS.)
CS248 - BACHELOR OF SCIENCES (HONS.)
MANAGEMENT IN MATHEMATICS
CS251 - BACHELOR OF COMPUTER SCIENCE (HONS)
NETCENTRIC COMPUTING
CS255 - BACHELOR OF COMPUTER SCIENCE (HONS)
DATA COMMUNICATION & NETWORKING

2nd February 2023
Stor Complex, UiTM Perlis

Organized by:
College of Computing, Informatics and Media
Universiti Teknologi MARA Perlis Branch

Research Exhibition in Mathematics and Computer Sciences
(REMACS 5.0)

Research Exhibition in Mathematics and Computer Sciences (REMACS 5.0)

CONTENTS

Preface

It is with great pleasure that we present this extended abstract book, titled "The 5th Research Exhibition in Mathematics and Computer Sciences (REMACS 5.0)". This book is a collection of research work in the fields of Computer Science and Mathematics, contributed by the final year students from Universiti Teknologi MARA, Perlis Branch. The aim of this book is to showcase the diversity and depth of research in these two interrelated fields.

Mathematics and Computer Science are two fields that have seen tremendous growth and advancement in recent years. With the rise of new technologies and the increasing demand for data-driven solutions, researchers in these fields have been working hard to develop new theories, algorithms, and models that can help solve some of the most pressing problems of our time. This book is a testament to their hard work and dedication.

The abstracts in this book cover a wide range of topics, including algebra, analysis, logic, computer architecture, algorithms, artificial intelligence, machine learning, computer network, netcentric computing and many more. The work presented here is both theoretical and practical, and has the potential to impact many areas of society, from finance and healthcare to education and security.

We hope that this book will serve as a valuable resource for future students in the fields of Mathematics and Computer Science. We also hope that it will inspire more students to pursue innovative and groundbreaking research in these two fields. Finally, we would like to express our gratitude to all the contributors for their hard work and dedication, without which this book would not have been possible.

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EVENT SCHEDULE

8:00 – 8:30 am
- **Registration**

8:00 am – 12:00 pm
- **FYP Project Presentation**

12:00 - 2:00pm
- **Lunch Break**

2:15 – 2:35 pm
- **National & Wawasan Setia Anthems**
- **Doa Recitation**

2:35 – 2:45 pm
- **Welcoming Address by Director of REMACS 5.0**

2:45 – 2:55 pm
- **Officiating & Closing Remarks from Rector of UiTM Perlis**

2:55 – 3:00 pm
- **REMACS 5.0 Montage**

3:00 – 4:00 pm
- **Awarding of Winners:**
- **Best Poster**
- **Best Project Award**

- **Photo Session**

- **End of Ceremony**

Dress Code: Formal / Corporate

List of Papers

vii

EXTENDED ABSTRACTS

WEB-BASED BLOOD DONATION MANAGEMENT WITH REWARDS SYSTEM

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Abstract

The title of this study is "Web-Based Blood Donation Management with Rewards System". This study aims to design and develop a web-based system which has the ability to effectively and efficiently manage blood donation and rewards for every donor. This study utilizes the Software Development Life Cycle (SDLC) with the Waterfall Model as its methodology. The methodology consists of five phases which are analysis, design, implementation, testing, and documentation. To evaluate the study, Functionality Testing and User Experience Test (UXT) have been conducted. Functionality testing have been used to ensure that every function in this mobile application is working well. The UXT aims to evaluate users' experience while using the system and it was performed with XX participants. UXT focuses on the attractiveness, perspicuity, efficiency, dependability, stimulation and novelty of a system. In conclusion, this research and development has achieved its objectives which are designing, developing, and evaluating a web-based blood donation management with rewards system.

Keywords: donor, medical staff,current health system,UEQ

1. Introduction

The lack of blood supply is a problem that is always faced by the health authorities, especially the major government hospitals. This is because the surrounding community is not concerned about this problem which results in the health authorities being forced to ask or make a drastic initiative to overcome the problem. Therefore, a system has been developed to solve this problem which is web-based blood donation with rewards system. In addition, the implementation of this system uses a reward system that can inspire the interest of users or society to donate blood.

2. Methodology

Testing of the user experience is used to acquire the data (UXT). The User Experience Questionnaire (UEQ) is consisting of 26 questions, and each question is represented by a question that has the opposite value of what it asks. Donors and healthcare professionals or administrators in their 30s and 40s are the target ages for this UEQ. After finishing an attempt to use the Web-based Blood Donation with Reward System, respondents were given ten minutes to answer the questionnaire.

3. Results and Discussion

From the results of a questionnaire conducted consisting of donors and medical staff aged 22 to 40, the system is very good to implement into the current health system. The scales on the questionnaire give a full picture of how the user feels. Among the aspects that measures is attractiveness, perspicuity, efficiency, dependability, stimulation and novelty of the system. The UEQ consists of a seven-point Likert scale and twenty-six items representing the main characteristic. The benchmarking scale was measured, analysed, and recorded. The results describe that attractiveness was above average, perspicuity was below, efficiency and dependability along with stimulation was excellent benchmark and lastly for novelty was above average.

4. Novelty of Research / Product

Today, blood donation is critical for saving lives, and the demand is steadily growing. Blood donation has the potential to save countless lives. It is a key aspect of global healthcare. It concerns medical treatment as a survival and life-saving treatment, as well as treatment phlebotomy as a major medical technique (Collins., 2021). There is some research that has been done on the importance of blood to humans including research from (World Health Organization, 2022). Ensure that the blood supply is always available, and a productive system should be developed to avoid the problem of lack of blood supply. Therefore, there is not a system developed by using reward features to attract more donors to donate blood. Overall, the project aims to contribute to a scientific web-based application that will assist users in donating blood and will allow administrators or medical personnel to monitor the system.

5. Conclusion

In conclusion, the web-based blood donation with rewards system provides reward features that can encourage users to donate blood regularly by offering health-based rewards given to donors. With this system in place, the country's blood supply will not be cut off and it will constantly increase over time.

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FINAL YEAR PROJECT MANAGEMENT SYSTEM (FMS)

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Abstract

Final Year Project (FYP) is a subject that undergraduate students able to propose any project or research. This project name is Final Year Project Management System (FMS). The purpose of this project is to replace the current manual system for managing FYP affairs. This project is going to develop by using web application that can be use by Faculty of Computer and Mathematical Sciences (FSKM) lecturers and students. The manual process for requesting supervisor, adding lecturers, adding examiners and others are messy and time consuming with lack of efficiency. Therefore, by developing FYP management system can make FYP affairs easy. This project target are FSKM's students and lecturers. For this project, lecturers and students can access this system using their laptop or computer anytime and any browser, as long as they have internet. In this FMS, it has three big users which are admin, students, and lecturer. For each user, there will be a different interface and function. In this management system, admin will add lecturer's information, student will request supervisor, lecturers will accept or reject request and other basic functions. FYP management system will provide all basic information about FSKM's lecturers so that the students can use it for requesting a supervisor. PhpMyAdmin will be used as a platform for storing FMS data. FMS used functionality and usability testing to evaluate the system performance. The results show from both testing is good result according to the pass functions and high mean score.

Keywords: FYP, subject, FSKM, students, lecturers, system

1. Introduction

Students struggle in finding themselves a suitable supervisor because of the lack of lecturer's information and difficult for request process. To overcome this problem, this project objectives are to develop Final Year Project Management System (FMS) using a web-based techniques for UiTM FSKM students and lecturers. The second objective is to verify the proposed system in term of functionality and usability of the system. FMS involve three main user which are FYP coordinator or admin, students, and lecturers. Admin can add all lecturer's basic information, admin can add latest news for all users, students can view lecturer's information, student can request for supervisor, supervisor can accept or reject request and more functions.

2. Methodology

FMS system use software development life cycle (SDLC) as a methodology. The fifth phase is the testing phase which will be conducted using functionality and usability testing. For usability testing, data were collected from 30 respondents which consisted of FSKM's students and FSKM's lecturers. Respondents need to explore the system first. After testing the system, respondents will be provided with a link to the Google Form questionnaire. The questionnaire only takes 3-5 minutes to answer.

3. Results and Discussion

Functionality and usability testing are the testing that will be conducted after the development of FYP management system. Functionality testing will be tested using three users which are admin, student, and lecturer. Functionality testing is a test to make sure that the specifications and requirements that are

included in the system are fully functional. All results from the functionality testing were passed without any error occur. For usability testing, a total of 30 respondents participated in the usability testing questionnaire. Questionnaire will be divided into three sections. First section will ask about respondents' personal information like gender and program code. 10 questions were asked about the functions, interface, information, easy to use and more. Majority of the respondents strongly agree with the statements which are the interface and the functions found in this system were pleasant and work well. Respondents also agree that they satisfied with how easy the system is. Overall, the system received a mean score above 4 which indicates the system has a good usability.

4. Novelty of Research / Product

FYP is a mandatory subject for all FYP students. The purpose of this project is to create a web-based application system that will manage Final Year Project (FYP) affairs in organized way. This system will allow FYP coordinator, examiner, student, and lecturer using this system to communicate with each other for FYP affairs in an instance. This system will help through the first process until the last process. The benefits of FMS for students are students can find lecturer's basic information. Through this information, students can make a request for title and supervisor at the project form page. As for the lecturers, this system will help lecturers to know the list of students who have been request for supervisor. Lecturers can approve the request or even reject the request. This system also displays the latest news for all users. Lecturers and students can know the due dates submission for all works.

5. Conclusion

In conclusion, this system has been successfully developed using web application with the help of PHP and Bootstrap. The evaluation of functionality and usability has been implemented and got high mean scores. FMS can make FYP affairs for students and lecturers easier. Students can request, lecturers can accept the request.

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UNIBUKU: UiTM Book Reselling Web Application

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Abstract

In recent years, global online retail activities have seen a pattern of continuously expanding, with strong growth momentum. As a result of this sort of demand, a market for second-hand products that allows for the sale and purchase of a variety of unused things has emerged. Nowadays, books are quite costly, making it difficult for everyone to get them. As a result, many are seeking other methods to receive their desired books at a lower cost, and one of the options is to buy a used book. Ideally, people have a tendency to purchase new items while discarding older ones. This is especially common among college students, resulting in the abandonment and waste of many items that are still available. Unfortunately, there are not many web applications or platforms suitable for students to sell their used or old books. The study proposes to develop a web application to sell, and purchase used books. Students who are less capable of owning a book can discover an UiTM book that the older senior resells in this web application, and it is less pricey than the new book. The Web Development Life Cycle approach was used for this web system development. Then usability testing is carried out in order to evaluate the acceptability and applicability of the UNIBUKU web application. Overall, the UNIBUKU web application met all criteria and achieved the project's goals of establishing a web application that enabled students to have a proper platform to acquire and sell their used books.

Keywords: *Second hand, Web application, Used Books, UiTM books*

1. Introduction

Nowadays, books are quite costly, making it difficult for everyone to get them. As a result, many are seeking other methods to receive their desired books at a lower cost, and one of the options is to buy a used book. The objective of this project is to identify the requirements of the UNIBUKU: UiTM Book Reselling Web Application. The scope of the project is primarily focused on all students of the Faculty of Computer and Mathematical Science at the University of Technology, Mara (UiTM) to design and develop web applications, including evaluating the usability of UNIBUKU. The web application focuses on providing a platform for students to sell their old or used books. It will assist other students in overcoming the abandonment and waste of their old but still useful books.

2. Methodology

Usability testing is done to see if the UNIBUKU web application is acceptable and useful in terms of user engagement and how well the features work. During the testing phase, ten people between the ages of 20 and 26 were chosen to test how well the UNIBUKU web application worked and how easy it was to use. The initial step for testers involved the system's registration process. The testing took 15 minutes for the user to explore the system. After the user completed the system testing, the developer presented a series of questions to the testers to evaluate the UNIBUKU web application's applicability and usability.

3. Results and Discussions

In conclusion, system requirements are determined by fulfilling both the functional and non-functional criteria of the web application design for UNIBUKU. The web application has been tested to determine whether it is capable of reaching the development objective. In addition, the System Usability Scales (SUS) were utilised to assess the UNIBUKU online application's efficacy, efficiency, and usability. According to the findings from the 10 people who participated in the survey, three out of ten of them agree that the functions on this website are well integrated. Aside from that, the remaining 70 percent of respondents are in strongly agree that the function is nicely integrated. The score for usability testing shows that the 10 respondents provided scores greater than 68, which is considered good. The UNIBUKU web application's usability performance was graded as "good," with an average score of 79.75. Overall, the UNIBUKU web application met all criteria and achieved the project's goals of establishing a web application that enabled students to have a proper platform to acquire and sell their used books.

4. Novelty of Research / Product

The purpose of this project is to develop a web application for students to sell and purchase used or resold UiTM books. As a result of this sort of demand, a market for second-hand products that allows for the sale and purchase of a variety of unused things has emerged. In addition to resolving the issue of users not having access to trading channels, the system is also capable of resolving the issue of users' concerns over the safety of the process of purchasing second-hand items. The benefit for senior students is that they can easily sell their old or used books. It will assist senior students in overcoming the abandonment and waste of their old but still useful books. This web application also provides a platform for senior students to advertise their old books. As for the junior student, this web application is convenient as it assists in searching for old or used books and purchasing them. This web application can save students time as they don't need to be at the store. This web application will display the availability of the books. So, it is easier for students to know if the books are still available.

5. Conclusion

In conclusion, the project to design and construct a web application for students that provides a platform to buy and sell secondhand UiTM books was successful in accomplishing the goals, objectives, and methodology that were set forth for the project. Both the problem of students not being able to find the right used books and the problem of students having limited budgets were solved by develop and putting them both into a single web application.

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STUDENT INTERNSHIP PLACEMENT USING PERSONAL DECISION AID

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Abstract

Student Internship Placement using Personal Decision Aid is a web-based system that assist student, the internship coordinator as well as the organization. As university enrollment increased, the management of the internship program became out of control. Students who have been completing internships at UiTM Perlis using the manual approach have created a lot of issues. The biggest issue at UiTM Perlis is the manual management of the internship program, which is time-consuming, includes a lot of paper, and is poorly managed between coordinator and organization as well as students. To address the issue between students, the coordinator, and the organisation, the Student Internship Placement using Personal Decision Aid system was developed. This study aims to design and develop a personal decision aid to help the student select the ideal internship organizations. A complete and effective web-based system will be created using a waterfall model. Furthermore, functionality testing and usability testing were the two testing methods used to implement There were 31 respondents, including students, the internship coordinator, and the organization. The result showed that the Student Internship Placement using Personal Decision Aid system performed very well in terms of user interface satisfaction, usefulness, and usability as well as its use by users. As for future work, new researcher can add features that would allow the organization to choose the student based on their preferences as the opportunity for the company to approach the student about an internship when the student meets their requirements, including a chatbot functionality so that students may engage with the company directly and integrating email features so that students would receive notifications via email. In conclusion, the burden for those a part of the UiTM internship programme is effectively handled and minimized by this approach.

Keywords: *internship placement, internship, student, application* **(3-6 keywords)**

6. Introduction

A construction of a web-based system to assist the student internship placement using personal decision aid will be the focus of this project which will enable all the users to get the information more efficiently. This study's target users are CS240 students' and students who are enrolled in the CST699 Industrial Training course from Faculty of Computer and Mathematical Sciences , UiTM Perlis', as well as internship coordinators and internship organizations. The aim of this project is to design and develop a personal decision aid to help student select the ideal internship organizations and evaluate the effectiveness of the system using usability testing and functionality testing. This study's target users are CS240 students' and students whoe are enrolled in the CST699 Industrial Training course from Faculty of Computer and Mathematical Sciences , UiTM Perlis', as well as internship coordinators and internship organizations. The web-based system will be used for internship placement and advertising the internship vacancy of the organization.

7. Methodology

Functionality testing was used to determine whether the system complies with the technical requirements and functional standards set forth by the developers. Each system component was checked to make sure it was functioning efficiently during this testing. A significant amount of data was used to

assess each function, and the output and results were reviewed. Other than that, usability testing is a technique for determining how simple and user-friendly a system is by testing it. Usability testing primarily focuses on the simplicity of use of the system by the user, the system's flexibility in handling controls, and the system's capacity to achieve the goals and objectives. To test the system, real users are participating in the testing process. After completing all of the tasks, users will be given a questionnaire regarding the system using a Google Form via WhatsApp.

8. Results and Discussion

Based on the findings and analyses, it can be concluded that all 31 respondents were pleased with the system's utility, information quality, and interface quality, with the chapter five results providing as an evidence of this statement. Despite the fact that the system's objectives were met, which were to design and develop a personal decision aid to help student select the ideal internship organizations and to evaluate the effectiveness of the system using usability test and functionality test. The system still needs refinement and additional functionality for future usage based on the ideas recommended by respondents.

9. Novelty of Research / Product

This project will produce a web-based system named Student Internship Placement using Personal Decision Aid, used by Faculty of Science and Mathematics in UiTM Perlis. By using this web-based system, it can help students to apply the place of the internship based on the students' preference, able to compile a list of all the organizations that had signed up for internships and were offering them and organize their internships more efficiently. Furthermore, it will be allowed registered organization to advertise their related information as well as will help them to find the internship student easily. Other than that, this system will help the internship coordinator to monitor the students.

10. Conclusion

In conclusion, the research's goals have been met in cases where the system has been successfully constructed. Organizations can post internship vacancies, students can select the categories of internships they desire, and the coordinator can access both student and organization specific information.

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INTERNSHIP MONITORING AND ASSESSMENT SYSTEM

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Abstract

Internship Monitoring and Assessment System is a web-based system that assists students, the internship coordinator, and academic and organisation supervisors during and after the internship programme. Previously, the internship programme at Universiti Teknologi MARA (UiTM) Perlis was not systematic and was based on a manual system. Therefore, by developing this web-based system specifically for monitoring and assessment, students, the internship coordinator, the academic and organisation supervisor could accomplish their job accurately. This study aims to design and develop a web-based system to monitor and assess the internship student's progress and performance. A waterfall model will be used to develop a complete and successful web-based system. In addition, usability testing is being implemented in this study to evaluate the effectiveness of the Internship Monitoring and Assessment System. There were 30 respondents, including students with Industrial Training experience, the internship coordinator, and the academic and organisational supervisor. According to the test results, most respondents agreed that using this system is simple and comfortable for them. For future work, other researchers can include a Calendar feature to help all users to keep track of daily logbooks, assessment dates and appointment presentation schedules. In conclusion, this system successfully manages and reduces the workload for those involved in the UiTM internship programme.

Keywords: internship, monitoring, logbook, assessments, usability testing.

1. Introduction

University students have grown over time, making internship programme management increasingly complex (Abdullah et al., 2017). As a result, developing a web-based system will enable users to access information more efficiently. This final-year project aims to design and develop a web-based system to monitor and assess the internship student's progress and performance. Furthermore, usability testing will be used to evaluate the system's effectiveness. The project's scope mainly focuses on Universiti Teknologi MARA (UiTM) Perlis internship students enrolled in Industrial Training (CST699) in the Information Technology programme, the internship coordinator, the academic supervisor, and the organisation supervisor. The web-based system will be used for monitoring and assessment during and after the internship programme.

2. Methodology

A waterfall model will be used to create a complete and successful web-based system. In this study, usability testing is being used to assess the effectiveness of the Internship Monitoring and Assessment System. 30 people responded, including students who had successfully completed Industrial Training, the internship coordinator, and the academic and organisational supervisor. Complete instructions and explanations will be provided to ensure that respondents understand the system process. The usability testing was done on the provided laptop. Respondents were given 20 minutes to explore the system. After exploring and testing the system, respondents must complete the Google Forms questionnaire on their own devices.

3. Results and Discussion

According to the testing results, most respondents agreed that using the Internship Monitoring and Assessment System is simple and comfortable for them. 70% of respondents strongly agree that they are comfortable using the Internship Monitoring and Assessment System. In comparison, only 9 respondents (30%) are comfortable using this system. Furthermore, 21 respondents (70%) strongly agree that this system is satisfactory. However, there are some enhancements to the Internship Monitoring and Assessment System suggested by users. The Internship Monitoring and Assessment System efficiently manages logbook, assessment, and presentation appointments, reducing the workload of students, company supervisors, academic supervisors, and internship coordinators who manage the student's evaluation during and after the internship programme. As a result, all goals were achieved including designing and developing a web-based system to monitor and assess the progress and performance of internship students, as well as evaluating the system's effectiveness through usability testing. However, there are still some limitations and flaws that must be addressed in the future.

4. Novelty of Research / Product

Internship Monitoring and Assessment System is a web-based system that assists students, the internship coordinator, and academic and organisation supervisors during and after the internship programme. It consists of three sections: Logbook, Schedules an Appointment Presentation, and Internship Performance Assessments. Students will be able to focus more on their work or projects because of the development of this web system. The internship coordinator, as well as academic and organisation supervisors, can also monitor and evaluate students' progress online. This web-based system could set up a meeting for the final presentation. This would benefit all parties in the long term because it can record and secure information about students' internship data.

5. Conclusion

In conclusion, the objectives of this research have been achieved where the system has been successfully developed. The Internship Monitoring and Assessment System efficiently manages the logbook, assessments, and presentation appointments while also reducing workload during and after the internship programme.

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AR FOR PLANTATION AND AGROTECHNOLOGY AREA AT UITM PERLIS

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Abstract

The advancement of AR technology for information transmission makes the practice more interesting and interactive. In the use of this AR virtual elements that look real can be displayed in Plantation and Agrotechnology area by providing useful information and knowledge in the field of plantation. Augmented Reality (AR) is an interactive concept to provide learning that is considered as a new technology especially in Malaysia because lack of exploration to demonstrate effectiveness technology in getting. Besides, in AR exploration in the field of farming this can create an interesting form of technology ask regardless of age level. Through augmented reality (AR), various information can be conveyed in one application such as in the form of sound, image, video and more. In this project, it can also be seen that the problem of information delivery that supports the use of AR needs to be implemented in the Plantation and Agrotechnology area. In developing a mobile application, an appropriate development methodology has been implemented using the ADDIE model. Each ADDIE acronym stands for the analysis, design, development, implementation, and evaluation of AR plantations and agrotechnology area at UiTM Perlis. At the same time, in order to assess the user acceptability of augmented reality (AR), students were obliged to complete a series of user acceptance tests of AR for plantation and agrotechnology at UiTM Perlis.

Keywords: *Augmented Reality, UiTM Perlis, Plantation, Agrotechnology, user acceptance test, ADDIE Model.*

1. Introduction

AR for plantation and agrotechnology area at UiTM Perlis is the project that to develop mobile applications for the Plantation and Agrotechnology area to provide information on crops and livestock by bringing the Augmented Reality approach as a knowledge in the field of agrotourism and to evaluate user acceptance of AR for Plantation and Agrotechnology area at UiTM Perlis. The scope of this project is to develop Augmented Reality applications to help improve the information available in the Plantation and Agrotechnology area. Through this application there are also sounds, videos and information in the form of text to improve the apps is produced. In addition, this Augmented Reality application is suitable for students as knowledge and to promote eco-tourism at UiTM.

2. Methodology

ADDIE model is process analysis, design, development, implementation, and evaluation (Constancio et al., 2019). This analysis stage is to explore and inspect the problem statement, objective, scope and project significance. The design stage will discuss how to design the system using various diagrams, such as a flow chart, site map, and sketch storyboard. In development can also the use of some software to develop AR and Alpha testing and heuristic testing activities before the app is fully used by the scope user. The implementation is modified to ensure optimal effectiveness and successful outcomes. Evaluation is determine on what, how, why, and when of the tasks that were completed or not completed during the whole project(Kurt, 2018).

3. Results and Discussion

In this user acceptance was includes Alpha testing and heuristic testing conducted in the development phase. Alpha testing began after the initial development of the augmented reality app being tested was completed by using a checklist. Besides, the heuristic test process calls for the participation of two knowledgeable users from the UiTM Perlis teaching faculty. The process of heuristic testing requires a user who is an expert in the field of plantation and agrotechnology so that the information conveyed in AR apps can be conveyed to the user, who is the student, to achieve the objective. However, the user acceptance test from UiTM Perlis students is measured in the evaluation phase, where 30 respondents are required from UiTM Perlis students to answer the questionnaire via Google. Based on the results of the three tests, the changes are implemented and made a recommended feature for this AR for the plantation and agrotechnology area in the future.

4. Novelty of Research / Product

Plantation and Agrotechnology area was also encouraged as a tourist attraction destination as eco-tourism (Aswan, 2020). Besides, the benefits of using this Augmented reality as the best marketing for eco-tourism because UiTM students and residents can visit the whole area of plantation and agrotechnology With the use of this AR technology, virtual elements that look real can be displayed in the plantation and agrotechnology areas by providing useful information and knowledge in the field of the plantation that can create an interesting experience that replaces the old method of a notice board. Next, in AR exploration in the field of farming this can create an interesting form of technology ask regardless of age level. In this project, it can also be seen that the problem of information delivery that supports the use of AR needs to be implemented in the Plantation and Agrotechnology area.

5. Conclusion

AR for plantation and agrotechnology area at UiTM Perlis is the goal of the project was to give students information about the plantation in the plantation and agrotechnology area at UITM Perlis. This augmented reality software was developed using the ADDIE technique, which is well-known for its effectiveness in creating comprehensible and useful educational materials. The presence of AR in plantation and agrotechnology areas has the potential to boost agritourism by promoting the production of UiTM Perlis in plantations.

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MOBILE APPLICATION FOR COLLEGE LAUNDRY BOOKING SYSTEM IN UITM PERLIS

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Abstract

According to the observation of student life at UiTM Arau in Perlis, students have limited time to do side activities, especially to do their own laundry. Students have to wait their turn to use the washing machines or dryer and sometimes their queue is being cut off by others. This will take the student a longer time to wait. After studying the related issues, a system called Mobile Application for College Laundry Booking System in UiTM Perlis is proposed. The solution will offer time savings for students in queue for their laundry. Students do not have to wait for too long and can do other activities while waiting without having to worry about their turn being cut off. This project is developed with Android Studio connected with a database using Firebase Database. The application proposed will make the students much easier in using the laundry service in college with a proper booking system. All the objectives had been achieved from the analysis and testing results on the system.

Keywords: *laundry, college, washing machine, dryer*

1. Introduction

The objectives of this project are to develop a mobile application that focuses on booking the laundry and to evaluate the proposed model using a user acceptance test. Students living in the college UiTM Arau are the targeted users for this system. The system will design and develop a mobile application to help students have an easy way to book laundry. With this mobile application, students can see the availability of the laundry and the remaining time of the used washing machine and dryer. The application will reduce the time taken and can save time from long queues at the dobby. This mobile application will provide information about the laundry at college and help students to book the washing machine and dryer without having to queue manually or move from their current place.

2. Methodology

Data were collected from a survey which is using Functionality Testing. Each system component was checked to make sure it was functioning efficiently during this testing. A significant amount of data was used to assess each function and the output was reviewed. Other than that, User Acceptance Testing is a technique for determining how user-friendly a system is by testing it. The respondents will try to use the laundry mobile application and respondents will be provided with a tablet to use the application. The respondents will try to use the application for almost 30 minutes. After completing all the testing of a mobile application, users will be given a questionnaire regarding the acceptance test of the system using a Google Form.

3. Results and Discussion

A total of 30 people participated in the User Acceptance Test. In the first phase of the survey, personal information about the respondents such as gender, age and college were collected. Then, the question provided four sections such as perceived ease of use, perceived usefulness, attitude and intention to use. The intention to use criteria got the highest mean score which is 4.6 while the perceived ease of use and

attitude get the same score of 4.4 each. The intention to use criteria had proved to use this mobile application for their daily routine to use laundry. In conclusion, users have intended to use this mobile application as almost all criteria have high mean scores.

4. Novelty of Research / Product

The benefits of this mobile application has helped students in college use the laundry. This can improve the management process of using the laundry to wash clothes. Students don't need to queue long at the laundry. This also reduces the time taken to queue at the college laundry. Students just need to log in this mobile application and can book the laundry with their smartphone. They also can see the availability date and time for washing machines and dryers to make a booking. In addition, this project can provide an organized and orderly system in the laundry and can reduce students gathering in large numbers in the laundry.

5. Conclusion

Overall, all of the objectives were achieved, and the Mobile Application for College Laundry Booking System in UiTM Perlis was successfully developed in accordance with the plan. This mobile application also has been successfully developed according to the users need which is an easy application to book the laundry. The user will use this mobile application because this application can save time for students without waiting in line at laundry.

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SKIN CARE E-COMMERCE MOBILE PLATFORM WITH PRODUCT RECOMMENDATION BASED ON SKIN TYPE

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Abstract

This study for a project final year with the title Skincare E-Commerce Mobile Platform with Product Recommendation Based on Skin Type. This research aims to design and develop a mobile application for skincare e-commerce platform with product recommendations based on skin type. This mobile application has the ability to identify user skin type by using several methods. There are 3 methods that have been used is skin test question method, bare face method and blotting sheet method. Besides, this system also can recommend user with the suitable skincare products based on their skin type. The methodology for this study used the Software Development Life Cycle (SDLC) with the Waterfall Model. This methodology consists of five phases which is analysis, design, implementation, testing, and documentation. The system have been designed with the persuasive technology principle as a guideline. To evaluate the study, functionality testing and user experience test have been conducted. Functionality testing have been used to test every function in this mobile application. This testing have been successful and proceed to the second testing which is User Experience Test. This testing aims to satisfy users and concentrates primarily on attractiveness, perspicuity, efficiency, dependability, stimulation and novelty. In conclusion, this research and development have been achieve the objectives of designing, developing, and evaluating a mobile application for a skincare e-commerce platform with product recommendations based on skin type.

1. Introduction

Nowadays, when comes to choosing skin care product for their skin, people tend to choose the wrong skin care product that will make their skin worst. In order to help solve the problem there is need to develop a mobile platform e-commence. To achieve the e-commence mobile platform there are 3 goals that need to be achieved first. The first objective or goals is to design a mobile application e-commerce platform for skin care products with recommendations based on the skin type, Next, to develop a mobile application e-commerce platform for skin care products with recommendations based on the skin type to ease and help the user to choose their products to buy. The final objective is To evaluate the user experience of the mobile application e-commerce platform for skincare products with recommendations based on the skin type by using User Experience Test.

2. Methodology

Methodology that use in this project is Waterfall Model of Software Development Life Cycle (SDLC). Design phase is earlier phase which include the design the data flow of the system, design the database and design the user interface. By using the design that have been develop, implementation will be conducted to complete this project. Implementation phase include the development of user interface, develop system and creation of database. Testing have been conducted by using method functionality testing and user experience test to evaluate the satisfaction user during use this mobile applications.

3. Results and Discussion

In the recent depiction of user that have been use this mobile application, there are various reactions and recommendation about this application. Testing that have been used is User Experience Test which contains 26 questions and received more that 30 respondents. As a result from this survey, user is agree that the mobile application is attractiveness, perspicuity, efficiency, dependability, stimulation and novelty. From the survey, the mean has been calculated and have been compared to the benchmark. In overall, the mean scale for each part in this survey is above 2.00 which shows a positive evaluation from the user. Compared to the benchmark, this result is excellent. However, there is suspicious data from the user. During the data analysis, there are 2 questions that user submit the suspicious data. The questions is about the ability to learn and use this application and the quality of this application either valuable or inferior.

4. Novelty of Research / Product

Convenience, straightforward customer interaction, and online usage are all advantages of mobile applications (Parker, 2022). This mobile application is a skin care e-commerce mobile platform. In application include new features which is skin type identification. Instead of user buy the product in this application, user can identify their skin type to choose the suitable product to their skin. Knowing your skin type is essential for determining which products would be most beneficial and whether using the wrong products could make your skin worse rather than better (skinadmin & skinadmin, 2016). Skin type identification in this application include 3 methods which is Skin Test Questions method, Bare-Face method and Blotting Sheet method. In addition, product recommendation based on skin type also included in this mobile application. By include this feature, it is easier for users to choose the suitable product according to their skin type.

5. Conclusion

This research was carried out with the purpose developing a skin care e-commerce mobile platform with product recommendation based on skin type. This mobile applications able to identify user skin type by using skin test questions. In addition, this mobile application also can recommend product based on skin type.

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HEALER – MENTAL HEALTH PERSONAL DECISION AID

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Abstract

Healer is an application whose goal is to help adults recognise their mental health problems and control the symptoms. The goal of this project is to develop a personal aid for adults who are struggling with mental health problems. A design science research methodology (DSRM) was used to develop and evaluate materials to help address the identified problems. During the evaluation, the benchmark scale was measured, analysed, and recorded. The results demonstrate that the attractiveness scale is above average, the perspicuity scale is excellent, the efficiency scale is good, the stimulation scale is above average, the dependability scale is above average, but the novelty is bad. The design and development of the Healer achieved all of the objectives of this study, including outlining the requirements and techniques for developing a mobile mental health application.

Keywords: *Mental Health, Anxiety, Panic, Depression, Mental Health Disorders, Adults*

1. Introduction

Healer is an application whose goal is to help adults figure out their mental health problems and control the symptoms. The scope of this project is to develop a personal aid for adults who are struggling with mental health problems. The first module in this project is the mood tracking module. Personalisation tests will be done where the user will be prompted to choose their feelings and answer questions that they have been facing to identify their mood and symptoms. Second is the exercise recommendation module. From the personalisation test, a diagnosis will be made as well as suggestions of exercises treatment will be offered. Third module is the motivational quotes where in this module, simple yet needed consolation is offered to users in the form of motivation quotes that will help them get their lost motivation. Lastly is the expert treatment that will help them locate experts from psychology and counselling units available around them.

2. Methodology

Data were acquired through a survey utilising the User Experience Testing method (UXT). The User Experience Questionnaire (UEQ) consisted of 26 questions, each represented by a pair of words having opposing meanings. To accomplish the UXT, adults between the ages of 18–50-year-old were approached. The evaluation procedures were held at UiTM Perlis. The respondents were given an Android smartphone to use during the evaluation procedures and 10 minutes to explore the prototype of the application. Following the completion of the application by the responders, a Google Form questionnaire based on User Experience Testing (UXT) was issued for evaluation.

3. Results and Discussion

As a consequence, personal information such as gender, age, occupation, and education level were collected for the demographic questions in the first phase of the survey. This user experience testing had 30 participants that took part in the testing. The questionnaire's scales provide a full view of user experience. Both traditional usability criteria like efficiency, perspicuity, and dependability, as well as user experience elements like originality and stimulation, are measured. The UEQ has a 7-point Likert scale and twenty-six components that represent the main characteristic. The benchmark

scale was measured, analysed, and recorded. The results demonstrate that the attractiveness scale is above average, the perspicuity scale is excellent, the efficiency scale is good, the stimulation scale is above average, the dependability scale is above average, and however, novelty is bad.

4. Novelty of Research / Product

Poor mental health is a complex and widespread psychological issue affecting adults in both industrialised and developing countries. Various psychological and psychiatric surveys done in a variety of developed and developing countries indicated that the incidence of stress, anxiety, and depression (SAD) is significantly greater among adults than in the general population (Mofatteh, 2020). One of the ways to help those in need is giving the treatment they really need and entertain their problem as early as possible to avoid regretting it later. Personal recommender system may help in aid or assist adults with mental health problems receiving the treatment they need according to their symptoms and diagnosis. It can be done by taking a personalisation test that will require them to identify their moods and symptoms that will be analysed by the system to generate a diagnosis of the problem. According to the personalised diagnosis, a treatment can be offered to them with hope will help them to get better. Pedrelli et al., (2015) emphasised that technology-based programmes for detection and early treatment would have the benefit of giving anonymity, being accessible at any time, and possibly being cost-effective.

5. Conclusion

The personality test proved successful in capturing users' symptoms, making a diagnosis, and providing personalised exercise treatment suggestions to help people with mental health problems understand and control their mental health condition. Moreover, they can make use of the application to control their symptoms and seek experts' help.

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VETERINARY CLINIC MANAGEMENT SYSTEM

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Abstract

Veterinary Clinic Management System is a web-based application for managing appointments for pets. The goal of putting this system into place is to create a web-based application that enables pet owners to make appointment requests via the cloud or online before visiting the clinic for services and manage appointment data such as schedules, assessments, and notifications through the system. This system's primary objective is to identify problems, determine potential solutions, and replace the manual appointment scheduling procedure now used in veterinary clinics while supporting animal clinics in enhancing the delivery of high-quality care. In order to develop this web-based system, three goals must be met. The first is to identify and analyse the issue of veterinary clinic appointments and self-report, the second is to design and develop a web-based veterinary clinic appointment and self-report, and the third is to assess the usefulness of veterinary clinic appointments and self-report. This system employs the waterfall model as a technique and the System Development Life Cycle (SDLC) (**Jevtic. G, 2022**). Thirty people were chosen to test the system in a usability test, which involved using a set of questionnaires to ascertain user approval. The data and analysis's conclusions demonstrate that the system can be used, managed, and brought to the participants' goals. As a result, the technology makes the process of appointing management more efficient and seamless.

Keywords: veterinary clinic, pets, appointments,

1. Introduction (Objectives and Scope)

Modern technology has made it common for society to have pets. Animals can also help a person relieve stress from their jobs and other things. They can utilize playing with and caring for these animals as a hobby to increase their willingness to spend money on them. Animals infected with Covid-19 have been documented around the world. Most of these animals became infected after contact with people with COVID-19, including owners, caretakers, or others who were in close contact (Covid-19 and Health, 2020). In contrast, 36% of the respondents said they did not own any pets. Because the disease known as Covid-19 is expected to appear in 2020. The general population or community has been asked to stay inside and is not permitted to leave because the government has implemented a movement restriction order. The issue doesn't just effect people, it also has an impact on animals. Some pets don't receive the same amount of care and food as before as a result. The objective on this project is to design and develop a web-based Veterinary Clinic Management System to help facilitate client appointments at the clinic.

2. Methodology (Methods, Procedures, Process)

This veterinary clinic's initial operations were manual. Because of COVID-19, they created a methodology for making appointments to shorten the duration of treatment. Pet owners' research is necessary for this system's development. By using Google Form and making use of and assessing pre-existing concepts, data was gathered from interviews and questionnaires. Participants are chosen from among students, employees, and people of different ages who own pets. Google Form responses are requested from each participant for the questionnaire. The data will then be examined to determine the efficacy of utilizing the system after you have finished answering this questionnaire. The waterfall

model, which involves using its five phases to accomplish the goal, was the strategy employed to design this system. The process is important because it will determine the understanding in the use of the system

3. Results and Discussion

A veterinary clinic is where animals can receive better care, ensuring quality care and potentially saving the animal's life. Numerous pet treatments, including shots, major injuries, deworming, surgery, and others. Usability testing's primary goal is to ensure that the end user can accomplish the goals listed in the requirements (Maze, 2023). Revision of all system development features and system testing expertise are required for usability testing. In conclusion, this web system can be constructed and will periodically be improved based on the interviews and questionnaire sessions. In conclusion, it can be stated that this appointment system can help users and make it easier for users to receive treatment for their pets.

4. Novelty of Research / Product

The veterinary clinic management system will significantly make it easier and more fulfilling customer needs. It will solve the problem in the actual veterinary clinic as mentioned earlier, especially to avoid overcrowded clinics. General veterinary clinics can get quite busy practically every day. Users will have access to the information about pet owners and their animals whenever and wherever it is possible. The suggested management system will also be able to complete the registration process faster and more efficiently than the manual procedure, which is another important benefit. Finally, this project is important because the replacement of a web-based system will make it easier to make appointments and self report to replace manual processes.

5. Conclusion

In conclusion, this system has developed a web-based veterinary clinic management system, which has effectively attained all of its objectives. Making appointments is simple for users thanks to this technology. Thirty people in total were chosen to test this approach. The case study was completed through a Google Form for user acceptance testing.

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SOCIAL MARKETPLACE WEB APPLICATION FOR UITM PERLIS STUDENTS

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Abstract

An online marketplace is a digital platform that connects buyers and sellers, allowing them to buy and sell products and services online. It serves as a virtual marketplace where businesses and individuals can list and sell their products or services, and consumers can browse and purchase them. Online marketplaces like Amazon and eBay are some examples of it. They provide a convenient, easy-to-use, and efficient way for people to buy and sell goods and services from the comfort of their own homes. Many developers have created online marketplaces in recent years to make it easier for people to buy and sell items over the internet. As a result, this study introduced a web application that connects students within the university community to buy and sell goods. The web application will benefit students because the application provides a convenient platform for students to buy and sell goods within the university community, which can save time and effort compared to other traditional ways of buying and selling and provides an opportunity for small businesses, which can increase their revenue. This project was developed by using research framework methodology. There are three phases involved which are System Requirement Identification, System Design and Development and Testing. Functionality Testing and User Acceptance Testing were conducted to evaluate the web application.

Keywords: marketplace, online shopping, ecommerce

1. Introduction

These days, online business is becoming increasingly well-known all over the world. People have a tendency to buy or sell products online because it is incredibly convenient. to use and answers are typically much quicker. The issue arises due to the fact that the students, who are also the sellers, need to invest a significant amount of time and energy in order to sell and promote their previously owned items to the business market. As a result, a social marketplace web application that overcomes these challenges and offers a convenient and user-friendly platform for buying and selling goods within students in UiTM Perlis. This research project aimed to design and develop a web-based marketplace for UiTM students that allows them to buy and sell goods and services within the university community and the project also aimed to test the functionality and user acceptance of the developed system.

2. Methodology

Data were collected and tested by 30 randomly selected students from all parts and faculties of UiTM Perlis who volunteered to take part. During application testing, the developer does not provide assistance or facilitate its use. They have unrestricted access to the application and can make acceptable use of it. After all tasks have been completed, an application questionnaire will be administered. They will respond to the survey based on their experience with the application. The questionnaire comprises 14 questions regarding application, the respondents' information, the user interface design, as well as the application's navigation and usability.

3. Results and Discussion

The results of functional and user acceptance testing have been produced by the developer. It is possible to conclude that the Social Marketplace application works well and achieves its goals. A lot of satisfied consumers who tested the application want to use it on a regular basis. Students can save time and money by using the Social Marketplace app. Students can find their desired items at a lower cost by avoiding in-store purchasing. The goal of this project was to create a social marketplace web application that allows UiTM Perlis students to buy and sell goods within the university community with convenience and efficiency.

4. Novelty of Research / Product

There has been a number of research that has been investigated regarding online marketplace. Particularly, young people are the most dynamic social group that has long mastered the internet market There is some research on Online marketplace: student consumer strategies. The research purpose is to study young people's consumer strategies in the Internet market and understand the prevalence of online shopping practices. There is also some research regarding An insight into online shopping behaviour among young adults in Malaysia (Mokhtar et al., 2020). The research is to examine online shopping behaviour among young adults in Malaysia (Novgorodtseva et al., 2020). This paper investigates four variables that influence young adults online shopping behaviour namely convenience, customers satisfaction, perceived and price level. However, there has not been any research on web applications that focus on the online marketplace for university students. Therefore, the main focus is to develop the Social Marketplace web application for UiTM Perlis students. The research goal was to create a Social Marketplace web application that allows students to buy and sell goods within the university community with convenience and efficiency.

5. Conclusion

In conclusion, this project is named Social Marketplace web application for UiTM Perlis students. This research purpose is to allow and encourage students to buy and sell new or used items within the university community. At once, it can prevent them from going to waste and allows them to be reused by someone else and selling used items can also be a cost-effective solution for students who are looking for a way to make money or save money on items they need.

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FASTBLOOD: BLOOD DONOR MOBILE APP INTEGRATED WITH QR CODE

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Abstract

Human blood is made up of plasma, cells, and red, white blood cells and platelets. Human blood groups are classified into four different groups. All four groups are A, B, AB, and O which are also classified according to the ABO system (Ngassaki-Yoka et al., 2018).FastBlood:Blood Donor Mobile App Integrated With QR Code is a mobile app-based solution that allows blood donors to be able to view donation-approved information in the form of digitalization. The existence of the FastBlood app not only facilitates registration and speeds up the process of when to donate blood as donors can fill in the form in the app only and show the QR Code at the blood donation site. Donors can view the blood donation records they have made, the location of donating blood and find out what blood donation events will be held around them. In addition, Blood donors can see how many times they donate their blood and there is also a countdown to blood donors that starts from 90 days from their deadline for blood donation. Thus, users and administrators of the blood donation division can save their time.

Keywords: *Blood Donation, Mobile App, QR Code, Blood Donor, Donation Record*

1. Introduction

This project's objective is to develop a mobile application that aids blood donation in the registration process, maintains blood donation record history, and simplifies blood giving for regular blood donation. But frequently during blood donation, blood donors encounter issues such as their red record book becoming damaged, yellowed, or misplaced; hence, the emergence of FastBlood: Blood Donor Integrated With QR Code. Additionally, using the User Approval Test, analyse the user acceptance of the FastBlood: Blood Donor Integrated With QR Code (UAT). In addition, the app may offer users with a ubiquitous platform for seeing blood donation-related information, such as tracing for blood donation, viewing blood donation, tracking dates for blood donation, and a countdown for subsequent blood donation. As an administrator, you may read the QR Code displayed when a user registers for blood donation. In addition, the administrator is responsible for providing the user with a record of blood donation.

2. Methodology

The Agile Methodist method was applied as early as the assembly requirement and analysis. This phase identifies the project's requirements and conducts a literature study of the publication. The design phase is followed by the creation of a sitemap that offers a clear perspective of the project's structure before the interface is sketched using MockupPlus. The development process includes coding the software with Kodular.IO to generate mobile applications and storing data in phpMyAdmin on a 00WebHost-hosted server. User Equality Test (UAT) was done and assessed on 40 participants. In the Testing phase, all information is documented using this method.**Results and Discussion**

The limitation of the application is that it only stands on the 00Webhost and phpMyAdmin platforms, highly dependent on the Internet connection. Blood donors and potential blood donors will use this application when they want to do blood donation. There is also a suggestion from Dr Falah Wan (16

January 2023), he said the improvement in terms of the past record of a blood donor even if they first use this application and additional in the blood donation registration form section provide a place for blood donors and Dr to sign to ensure that the form is more validated and save. The results that can be concluded are very good as the application can help especially blood donors to get their blood donation information through this application and more easily, they do not have to carry a red record book when donating blood. In addition, the Transfusion Unit can maintain and manage users' blood donation records, update users' blood donation records and add places that can donate blood and blood donation programs through applications anywhere through their mobile phones.

3. Novelty of Research / Product

Through the FastBlood Mobile App: Blood Donors integrated with QR Codes, Administrators or Medical Staff easily do blood donor registration work. They just need to scan the QR Code proposed by the user and after squeezing the QR Code, then there will appear a digital version of the blood donation registration form. Due to the use of this application, the Resilience Unit in Malaysia was able to advance towards the form of digitization and, as a result, minimize the amount of paper used during the blood donation registration process.They will keep and update records of blood donations made to users. In the meantime, users can view a record of the blood donations they have donated through the record section of their donation. In addition, as well as the countdown until the next contribution.Users have access to a feature that allows them to see their blood donation location as well as the hours of business where the location is open for business. In addition, visitors can also research blood donation programs that can be accessed in Malaysia based on the state in which they are located.

4. Conclusion

FastBlood: Blood Donor Mobile App Integrated With QR Code makes it easier for donors to register and speeds up the process of when to donate blood. Blood donors can see the blood donation records they have done as well as find out who their next donation is for blood donation. All objectives of this project have been achieved.

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MOBILE APPLICATION FOR HEALTHY SLEEP RECOMMENDATION WITH CALM TECHNOLOGY

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Abstract

Sleep is a natural biological phenomenon and essential necessity for every individual's health and well-being throughout their life. Healthy sleep refers to adequate amount of sleep for human's body to recover. However, sleep disorders are prevalent nowadays for individuals that have difficulty to sleep which will eventually lead to mental health issues and other health problems and the risk of accidents and injuries. To overcome this problem, a mobile application with healthy sleep recommendation with calm technology is developed also known as Head2Sleep. The purpose of this project is to enhance sleep quality and improve sleep hygiene. Knowledge-based recommendation system used to provide healthy sleep recommendations based on Pittsburgh Quality Sleep Index. A Waterfall model which consists analysis, design, development, evaluation, and documentation phases is being used throughout this research. The principles of calm technology along with techno-spiritual design factors which are institutional, experiential, and practical have been implemented and is developed using Flutter. Evaluation was conducted using Usability Testing and Functionality Testing among students, private sector workers, and experts. Based on the results and findings, the mobile application can help in reducing sleep-related issues and it can be improved by integrating wearable devices and additional features like interactive games and an alert notification to remind of user's bedtime for future works.

Keywords: healthy sleep, sleep disorder, recommender, calm technology, techno-spiritual design

1. Introduction

This project intends to develop a mobile application for people who are having sleep problems by providing recommendations that can improve their sleep quality. Sleep amount and quality play vital role in reducing the risk of sleepiness and fatigue-related accidents and injuries, such as workplace accidents and motor vehicle wrecks (Wesselius et al., 2018; Kannan et al., 2022). The objectives are to develop a mobile application for healthy sleep recommendation with calm technology and to evaluate the mobile application using functionality and usability testing. This research aims to improve sleep quality and reduce sleep-related issues in the public. The scope for this study focuses on treating and reducing sleep problems to those with sleep disorders especially insomnia by using knowledge-based recommender to provide recommendations for healthy sleep that can help improve sleep hygiene based on scientific methods and Islamic perspectives and guidelines.

2. Methodology

The methodology used in this research is Waterfall model that contains five phases which include analysis, design, development, evaluation, and documentation throughout this project. The principles of calm technology and techno-spiritual design factors which are institutional, experiential, and practical are being implemented in the design of User Interface for the mobile application. This mobile application has been developed using Flutter and Firebase. Functionality testing and usability testing have been conducted to evaluate the mobile application among the target user. **Results and Discussion**

The results and findings are analysed based on the data gathered from the evaluation from 30 participants that involve students, private sector workers, and expert users. A total of 21 questions were evaluated using the Likert scale from 1 to 5 which range from strongly disagree to strongly agree.

Functionality testing consists of three sections which are recommender, calm technology, and techno-spiritual design on three factors that includes institutional, experiential, and practical. Meanwhile, usability testing consists of four criteria to be evaluated on compatibility, efficiency, effectiveness, and satisfaction of the mobile application. Participants are mostly satisfied with the overall mobile application as most participants especially on the attractive user interface design believed the mobile application can help to reduce sleep-related issues. However, the mobile application can still be improved in the future research and works so that it may be created with more engaging and interactive features that could help to improve the quality of sleep with healthy sleep.

3. Novelty of Research / Product

The mobile application will mostly benefit patients or people with sleep difficulties. Head2Sleep can assist them in changing their behaviours during the day and night that could affect their sleep habits. The mobile application can be used to measure quality of sleep in Sleep Score that is based on the Pittsburgh Sleep Quality Index questions. Furthermore, the implementation of calm technology in which to promotes calm and tranquillity in the form of interactive audio and visuals such as nature sounds, guided meditation, and breathing session can produce relaxation before night-time and during sleep for a better sleep. Techno-spiritual which consists of Surah recitation evokes the spiritual experience and feeling that would help to feel calm and remembrance to Allah. The practical aspect of the techno-spiritual design is through the tasbih and dua that can be practiced before bedtime.

4. Conclusion

In conclusion, the mobile application able to provide recommendations for healthy sleep from scientific method and Islamic perspectives and guidelines to improve sleep hygiene on daily activities using recommender. Therefore, this mobile application is developed to prevent or reduce sleep-related issues for those who have difficulty to sleep.

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ROADMATE: IMPROVING RIDESHARING AND CARPOOLING VIA MOBILE APP

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Abstract
The practice of carpooling involves several persons traveling in the same vehicle. Carpools help people save money on gas and cut down on carbon emissions. Typically, they are organized by people or businesses. Compared to more traditional ehailing applications, many users urge a ridesharing and carpooling apps to be released. People can save money by ridesharing and carpooling. Hence, the RoadMate app tend to makes it simple for drivers to find new passengers and vice versa. Instead of utilizing ehailing alone, people can save time and money by using this app. Carpooling also lessens traffic and air pollution by lowering the number of vehicles on the road.
Keywords: ehailing, carpooling,ridesharing, passengers ,travel

1. Introduction

E-hailing is a type of alternative transportation that is also referred to as carpooling or automobile sharing (Eva, 2020). Generally speaking, e-hailing is a form of transportation that brings two or more passengers to the same destination. In e-hailing, often referred to as ridesharing, ride-sourcing, renting a car, paratransit, or on-demand transportation, a traveler looks for a ride via a mobile application (Contreras & Paz, 2018).

The goal of the proposed research is to create a ridesharing and carpooling-focused smartphone app without the limitations of the existing ridesharing apps. Customers can split the cost of gas, parking, or tolls in this way, possibly saving up to 50%. Along the journey to the destination, the app might add more passengers. Without severe regulations, more drivers may join in carpooling, saving both the drivers and the passengers money. Following that, a significant reduction in traffic capacity might cause a dramatic change in air pollution over the planet.

2. Methodology

The agile technique is the ideal option for this project since it needs less planning and divides work into smaller, more manageable pieces. The Agile technique is made for brief projects including collaboration and the software development life cycle. The management of the software team's interactions with customers also reduces the risks associated with the product. The iterative nature of the Agile methodology enables improvements to be made in response to user satisfaction. It is straightforward to add new features or improve products using the agile methodology's multiple iterations . A better version of the product might also be developed using the agile technique. The steps of software development life cycle include planning, analysis of requirements, design, development, testing, maintenance, and documentation (Jevtic, 2019).

3. Results and Discussion

It may be concluded from the results that RoadMate has successfully enhanced ridesharing or carpooling. Additionally, encouraging and marketing ridesharing to everyone was the major objective of building these smartphone applications. This approach was successful in achieving its goal since it made it simple for everyone to find nearby carpools and take turns driving. User acceptance testing for the mobile app RoadMate was then successfully completed after the functioning of the app was assessed. The projects' shortcomings were discovered, and they will occasionally be improved.

4. Novelty of Research / Product

RoadMate is the straightforward act of a group of people join ride and use a single vehicle for commuting. As fewer cars are on the road, this helps reduce traffic and carbon emissions. It makes it

easier to utilize a car's or vehicle's entire seating capacity. Carpooling, often referred to as car-sharing, ride-sharing, or lift-sharing, is a quick and easy way to share a car with someone else who is doing the same route. By traveling in groups, people can save money on gas and tolls while also avoiding the stress of driving alone. One of the simplest and most effective ways to lessen traffic congestion and carbon footprint in Malaysia is to use RoadMate. RoadMate makes it possible to utilize all of a vehicle's seats, which would otherwise be left empty when just one person is present.

5. Conclusion

All of the goals of this research were effectively attained with the creation of the RoadMate carpooling and ridesharing application, which was built according to schedule. This tool, which makes it simple to carpool and share transportation, was also successfully created in response to user requirements. Last but not least, the project has been successful in making users' lives easier by implementing usability principles that are appropriate for consumers when using this program. On the basis of the knowledge gained from my effort, it is envisaged that subsequent scholars will improve this system by including novel components and paradigm-shifting concepts.

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FELINERINARY: CAT HEALTH MANAGEMENT APP WITH APPOINTMENT REMINDERS USING PUSH-NOTIFICATION

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Abstract

Veterinary clinics are important facilities for cat lovers to ensure the well-being of their pets. To ensure an efficient health record management system, many veterinary clinics have shifted to a computerized system. However, based on an interview with a local veterinary clinic there are some clinics still operating using paper-based record systems. Felinerinary: Cat Health Management App is developed to allow clinics to manage cat's health record and facilitate communication between vet staff and cat owners. This application is equipped with appointment reminders using Push-Notification. Felinerinary provides a ubiquitous platform for both users to enable access to the app. The cat owners will also be able to access their cat's appointments and vaccination records within the app. The methodology used for the development process is the Waterfall Model. The entire project development process is divided into five phases of requirements analysis, design, development, testing and documentation. Besides, a user experience test (UXT) with 30 participants consisting of cat owners, veterinary staff and cat lovers was conducted to verify the performance of this application prototype. The result of the testing conducted has obtained an excellent score on the benchmark scale.

Keywords: *veterinary clinics, health record, vet staff, cat owners*

1. Introduction

The objective of this project is to develop an app that can facilitate the treatment of the cats involving cat owners and veterinary clinic staff with appointment reminders via the technology from Push-Notification in Changlun, Kedah. Despite federal incentives to transition to Electronic Health Records (EHR), many physicians still operate on paper records (Hedges, 2020). Besides, to evaluate the performance of Felinerinary: Cat Health Management Application using User Experience Testing (UXT). In addition, this can provide a ubiquitous platform for both users to enable access anywhere through mobile phones to view current health information of their cats and ensure they give timely and correct medication to their cats.

2. Methodology

The Waterfall Model approach was used which is the requirement analysis phase is the earliest step. It requires the conduct of an investigation, identification of project requirements, and literature review from publications. The design phase followed with the sitemap that provides a clear view of the project structure before sketching the interfaces using Balsamiq. The development phase involves program code through Android Studio in producing the mobile app and storing the data in Firebase. A User Experience Testing (UXT) to evaluate 30 participants was conducted. With that, all information is documented in the documentation phase.

3. Results and Discussion

The responses of 30 participants were evaluated through a User Experience Questionnaire (UEQ) that prompted them to determine a scale of 1-7 for 26 questions about the experience of using the Felinerinary app. Hinderks et al., (2019) stated that, the questionnaires that measure the user experience consider this complexity of user experience, since they usually compute values on different UX scales. The scale results determined the attractiveness, efficiency, perspicuity, reliability, stimulation, and novelty of the app. The limitation of the application is that it only stands on the Android platform, very dependent on the Internet connection and the cat owners only use the application when their cat's health deteriorates. There are also suggestions from participants such as providing a feature that allows cat owners to buy cat essentials and a feature to total the sales and purchases of medicines at the veterinary clinic. The result that can be concluded is Excellent as the app can clearly help cat owners to get information and reports on their cat's health easier. Also, the veterinary clinic staff can maintain and manage cat vaccination records, cat medical records and so on through the application anywhere via their mobile phones.

4. Novelty of Research / Product

Through the Felinerinary mobile app, veterinary staff can easily refer to the history of the cat's health records available in the application if necessary. This makes it easier for cat owners to check their cat's health records more efficiently and effectively without having to worry about losing old health records. They can also record cat health information directly in the cat health record feature and are important for cat owners to follow. on record from time to time. Furthermore, to give medication to cats, cat owners can schedule a time to take medication using the medication reminder feature in the app because their cat cannot remember or talk about it. This feature will sound an alarm at a set time. If there is a vaccination appointment or cat care follow-up, the veterinary clinic staff can notify the cat owner by sending them some information such as the date, time, and purpose of the appointment with Push-Notification technology in the notify owner feature.

5. Conclusion

In conclusion, the Felinerinary mobile app can clearly help cat owners and vet staff to ease their tasks. Furthermore, most of the participants have excellent experience after using the mobile app after evaluating it through the User Experience Questionnaire (UEQ). Thus, all objectives of this project have been achieved.

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MOBILE INTERVENTION FOR USED CLOTHING MANAGEMENT WITH GEOLOCATION

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Abstract

Clothes can be one of the causes of the environmental pollution. This is because the clothes were thrown away in the landfills when it is become worn and unwearable. To overcome this problem, an initiative to develop Mobile Intervention for Used Clothing Management with Geolocation. This project is an initiative to be a donation medium for used clothing that people want to donate. Furthermore, this project also implements the Geolocation technology, which purposely to find the collection center for used clothing donation. The System Development Life Cycle (SDLC) was implemented in methodology of developing this application with Waterfall methodology. For a better development, the User Experience Testing (UXT) was conducted with 31 participants to ensure that the application is parallel with the requirements and achieve its goals. Based on the results, the participants give good comments and satisfied with the ability of the developed mobile application. In conclusion, this application will give many benefits and advantages for its target user, especially people who want to make donations based on used clothing material.

Keywords: Used clothing, donation, management

1. Introduction

Firstly, people do not know the appropriate channel to dispose their clothes either by donating, recycling or selling them as used clothing. As for now, no application available to assist donation of clothing. Donating clothing would prevent excessive waste flow that goes to the land field. The people will overlook and fail to notice if there is any announcement regarding clothing donation in the social media. In order to overcome this problem, an application that facilitate the used clothing is needed the most. The aim is to make used clothing donation handling easier for both the donor and the recipient.

2. Methodology

Data were collected from a survey, which is using the User Experience Testing (UXT). The User Experience Questionnaire (UEQ) is made up of 26 questions, each of which is represented by a pair of terms with opposing meanings. The participants will be recruited among people age 18-55 to gain more information regarding the research. The distribution of the questionnaire and the data collection and the data will be collected among people that interested in donating used clothes using mobile application. For the evaluation procedures, the Doclothing Mobile Application can be accessed by using provided smartphone by the researcher, and also can be installed by using .apk file that will be given to participants. To explore the application, the participants were given 10 minutes to using the application. After the participants finished using the application, a Google Form questionnaire based on User Experience Testing (UXT) will be distributed for evaluation.

3. Results and Discussion

As for the result, personal data, including gender, age, and profession, was gathered for the demographic profile in the first section of the survey. This user experience testing involved 31 respondents who responded to the survey. The scales of the questionnaire cover a comprehensive impression of user experience. Both classical usability aspects (efficiency, perspicuity, dependability) and user experience aspects (originality, stimulation) are measured. The UEQ includes a 7-point Likert scale and twenty-six elements showing the main feature. The scale for benchmark was measured, analysed and recorded. The results show that the scale for attractiveness is good, for perspicuity is above average, efficiency is good, stimulation is good and novelty is above average.

4. Novelty of Research / Product

There have been a number of research that have investigated regarding on how used clothing material managed, including research from (Williams & Williams, 2020) about unwanted clothing. To make sure the clothing donation will be beneficial to environment, Fenitra et al. (2021), stated that an individual has higher concerned about the environment are more likely to donate their clothing. The awareness about the clothing donation is highly valuable to make sure that the clothing donation is successful. Halizahari et al. (2021) in their research said that clothing donation will be essential especially during flood in Malaysia. However, there has not been any research on mobile application development that focusing on used clothing donation. Therefore, the main focus is to develop a mobile application for used clothing management with Geolocation. All in all, the research aims to contribute to the scientific mobile application will help users to make clothing donation such as shirts and pants and distribute to parties in need.

5. Conclusion

For conclusion, this project name Doclothing mobile application is an initiative to encourage people and community to donate their own used clothing to the needed one. This project also uses Geolocation technology, to locate the collection centre that accept used clothing donation and link with Google Map application. Overall, all objectives of this project have been achieved.

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UITM ARAU BICYCLE RESERVATION APP WITH IMPLEMENTATION OF QR CODES (UBIKE COLLEGE)

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Abstract

Mobile technology supports to ease users daily activities. UiTM Arau in Perlis has launched a program called Ubike College where students and staff can use bicycle for free. Currently, they did not have any mobile applications that will make booking bicycles easier. The purpose of this study is to address the issue of making booking bicycles easier which is to develop a mobile application for the bicycle Reservation System with the implementation of QR Codes. The target users of the mobile application are students and staff in UiTM Arau. Integrated with QR Codes can ensure that users can use the bicycles at that time with only the need to scan the QR Codes.

Keywords: Ubike College, Mobile Application, QR Codes,

1. Introduction

Students and staff at UiTM Arau in Perlis can ride bicycles for free as part of the Ubike College initiative. There are currently no mobile applications available to make booking bicycles simpler. The objective of Ubike College mobile applications is to help solve the problems that arise that occur to the staff and students who need to reserve and use the bicycle.

2. Methodology

Data were collected from participants by Functionality Test which respondent have knowledge of system functionality. For Functionality Testing, a user had been given two sets of case diagrams which are one for the test diagram admin and the user test diagram. The user needs to test the list that had been put in the test diagram in order to know whether the system is working properly. After doing the testing phase, need to fill in the test case diagram.

3. Results and Discussion

In conclusion, overall for functionality testing all of the lists that need to be tested whether it working properly or not are successfully tested by a user. The result of functionality testing is all of the functions in the Ubike College App are working properly.

4. Novelty of Research / Product

Mobile applications are mainly developed in three ways which are native, web, and hybrid mobile applications (Ahmad et al., 2018). Having developed mobile applications such as Ubike College for students and staff in UiTM Arau can help them to book and use bicycles more easily. This makes it easier for the users to use the mobile application with the implementation of QR Codes. A QR code is a user-friendly system for quickly accessing the

target program without laborious typing, and it has become a popular and successful method of doing so(Chou & Wang, 2020). The user just can only scan the QR Codes by using the scanning that already installs in the mobile application in order to use the bicycle at that time. benefits of using QR codes in mobile application are providing more information about the product or service without sweat, and the information quickly goes to the user's device. It is because of its 360-degree readability, it can be scanned from any angle using a QR scanner on a mobile phone(Din & Fazal Fazla, 2021).

5. Conclusion

In conclusion, Ubike College mobile application can help students and staff to book and use bicycles more easily. The overall objective for Ubike College has been successfully achieved through this research, where the Mobile Application for Bicycle Reservation App with the implementation of QR Codes has been successfully developed according to plan.

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EASYRENT: A WEB BASED RECOMMENDATION SYSTEM FOR SHOP RENTAL – A CASE STUDY IN JITRA, KEDAH

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Abstract

EASYRENT: A Web Based Recommendation System For Shop Rental - A Case Study in Jitra Kedah is a system developed for the users who are involved in the property industry such as renters, landlords and admin. This system that are able to filter, prioritize and efficiently deliver relevant information about the shop in order to reduce the problem of information overload will be beneficial. The EasyRent system solves this problem by searching through a large volume of dynamically generated information to provide users with personalized content and services. This system will display all available shops to be rented where renters can filter the shops according to their preferences such as monthly rent, property type, location and many more. It will be able to assist them in making their decision. In this project, a waterfall methodology were implemented. The Waterfall methodology also known as the Waterfall model is a sequential development process that flows like a waterfall through all phases of a project. The effectiveness of the EasyRent system was evaluated through usability testing. The usability of the EasyRent system as a whole was evaluated and found to be efficient to use and satisfied most of the participants.

Keywords: waterfall methodology, usability testing, recommendation

1. Introduction

EasyRent system is a system developed for the users who are involved in the property industry such as renters, landlords and admin. This system can be of great assistance to businesses owners that are looking for a shop to rent. EasyRent systems are able to improve search results and reduce the hassles that prospective renters experience while looking for a shop to rent in a preferred location. This system allows renters to book a desired shop and view the information of the booked shop. Besides, the landlord is able to add, edit, view and delete the shop information. The objectives of this system are to develop A Web Based Recommendation System For Shop Rental, A Case Study in Jitra, Kedah and the second objective is to evaluate the usability of the developed system using user usability test.

2. Methodology

The Waterfall methodology is implemented in this project. This waterfall model has five phases which start with requirement analysis, system design, system implementation, system testing and documentation (Sharma, 2023). Each phase will completely be wrapping up before the next phase begins (Brown, 2023). The first stage is the requirement analysis phase. The aim of this phase is to understand the exact requirements of this project. Next is the system design phase, it is the most crucial phase, it transforms logical design to physical design. The third phase is the system implementation phase. This phase transforms detailed design documentation from the design phase to real-time applications. Programming begins here. System testing is the fourth phase. User usability testing will determine if the system meets defined requirements. All the data and results that have been collected from previous phases will be documented during this phase.

3. Results and Discussion

The effectiveness of the EasyRent system was evaluated through usability testing. This testing was conducted through a questionnaire that is created in Google Form. The usability testing was carried out on thirty participants towards the potential users of this system. The result and analysis are determined based on three different categories which are usefulness and ease of use, user interface satisfaction and usability. The vast majority of participants were pleased with the performance of the system. Despite all of this, there were still multiple functions that needed to be improved. The limitation of this system is it requires a strong internet connection and it is only accessible through a website only. Following the completion of the system, various recommendations and suggestions were received from respondents to improve the system. Firstly, the respondent suggests integrated SMS or email Application Programming Interface (API) once the renter has made a booking. Second recommendations that were received are to change the dropdown in the login and registration into interfaces that are more visible to users. It is because there are some users who do not notice the dropdown features. Last but not least is to provide 360-degree features for the shop image so that users will have a clearer view of the shop.

4. Novelty of Research / Product

With the presence of this EasyRent system, it can save time for the business owner as they do not have to go search for the shop multiple times. They can just browse the website and choose their preferred shop. This method will save a lot of time and be more convenient as they can rent a shop anywhere. The use of a recommendation system can greatly benefit business owners who are searching for shops to be rent. It has the ability to improve search results and reduce the hassles that prospective renters have while looking for a shop to rent. Besides, it also greatly benefits the renters as they can just advertise their shop with just one click away.

5. Conclusion

In conclusion, it has been proved based on the feedback that the EasyRent system is easy to use, has all required information and that it fulfills the participants requirement. In addition, the first and second objective of this project, which was to develop a Web Based Recommendation System for Shop Rental in Jitra and to evaluate the usability of the developed system using user usability test was successfully completed and achieved.

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MEDCARE: A WEB-BASED CLINIC APPOINTMENT SYSTEM WITH SHORT MESSAGE SERVICE (SMS) NOTIFICATION

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Abstract

The MedCare Clinic Appointment System is a web-based application to manage appointments for patient and doctor at a non-government clinic. The purpose of implementing this system is to develop a web-based application which is enabling the patients request the appointments using cloud computing or online method before they get the doctor services in the clinic (face to face) as well as manage the appointment information such as schedule, rating, and notification through the system. The MedCare Clinic Appointment system also aims to reduce the time taken by patient to get the appointment within the doctor services. Furthermore, The MedCare Clinic Appointment system is integrated with Short Message Service (SMS) technology to notify the patient and doctor about the appointment status update.

Keywords: appointment, MedCare, clinic appointment system, Short Message Service (SMS)

1. Introduction

The objective of this project are to develop a web-based application system for the appointment management between doctors and patients. Next , to integrate the web-based application clinic appointment with Short Message Service (SMS) notification. To make the system development process easier, the scope of this application will be focused on creating web-based application using notepad++ and AdaSMS for Short Message Service (SMS) notification. Non-government clinic is the target for this system that including patients and doctors.

2. Methodology

Waterfall Model System Development Life Cycle (SDLC) for the methodology. A system is a collection of interacting or interdependent components that form an interconnected whole, it is a word that can be used in various industries, and the Software Development Life Cycle is a specific concept that describes the stages of developing a software component that interacts with other software components to create the whole system. These methodology of five stages, starting with Planning, System Requirement, System Design, System Development and finally System Evaluation.

3. Results and Discussion

The effectiveness of MedCare Clinic Appointment System was evaluated through usability testing. This testing was conducted through a questionnaire that is created in Google Form. The usability testing was carried out on thirty participants towards the potential users of this system. The result and analysis are determined based on four different categories which are user interface satisfaction , usefulness and ease of use, usability and last one is alert System.Based on the result, most of the participants were satisfied with the features of MedCare Clinic Appointment System, the functions of the system and the effectiveness of SMS notification. Despite all of this, there were still multiple functions that needed to be improved. The limitation of this system is it requires a strong internet connection and it is only accessible through a website only.

4. Novelty of Research / Product

In this era of pandemic Covid-19, appointment applications would lower the chance of infection since crowding might raise the risk. Thus, this project has been initiated to lower the risk of a pandemic by making an appointment online due to congestion and decreasing patient waiting time to obtain a medical service using cloud computing and SMS notification. Patients should not miss the appointment because they will be notified along the process until it is completed. The study's aimed to minimize the problem and make appointment management easier for both patients and doctors. Hence , we developed a system that sends notifications to patients and doctors throughout the appointment process until it is completed.

5. Conclusion

MedCare Clinic Appointment System using web-based and SMS technology is convenient, economic and reliable method . Therefore, the system has achieved all three objectives, which were to propose and develop a prototype web-based system for the patients and doctors, integrate the system with SMS service to notify those users on their appointments as well as to evaluate the user acceptance of the system and network performance.

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FASTPARK MOBILE APPLICATION USING GEOLOCATION

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Abstract

FastPark Mobile Application is an application that is developed to display the vacant or available parking area. This FastPark Mobile Application integrates geolocation which will show the user parking area that they search. The purpose of the FastPark Mobile Application is to help or assist drivers in finding a vacant parking area. Furthermore, in this application user can also reserve a slot in that parking area. This application will also help the drivers in reducing their time spent in finding vacant parking area. As such, the drivers save their energy and will help reduce the traffic congestion in the parking area. The development of the FastPark Mobile Application is using the System Development Life Cycle (SDLC) by implementing the waterfall model as the methodology. A user acceptance testing based on Technology Acceptance Model (TAM) was conducted with 30 participants from age 18 – 54 years old and above to see the acceptance of the system. The test has two parts, the first part was demographic question, and the second part was divided into four components and consisted of 12 questions. The result obtained from the testing was positively accepted by most of the participants. Therefore, the proposed system has been proven to be beneficial to the drivers and can also motivate other developers to help contribute to more future projects to help the drivers in finding a vacant parking area easily.

Keywords: application, user acceptance, parking, participants, finding

1. Introduction

Parking management systems are an essential part of the whole parking process for both parking operators and parking users. The objective of the application is to develop an android-based parking mobile application in Kuala Perlis that integrated with geolocation. The application also allows mobile phone users to view the parking area using geolocation and reserve a spot for people or tourists. This application involves two main users which are user and administrator. The user and administrator are required to register and login into the account first to have access in the system. The administrator is also able to add, update, and delete all the data of parking slot and area in the application. Therefore, the application focuses more on to suggest the user the area or location using the geolocation features.

2. Methodology

The initial step is to use the Waterfall Model approach which puts the entire project development process to be divided into separate phases such as Planning, Analysis, Design, Implementation, Testing, and Documentation. The requirement analysis phase is the earliest which requires the conduct of an initial investigation, identification of project requirements, and literature review from publications, and journals. This phase is followed by the project design phase which is determined with the sitemap used to provide a clear view of the project structure before sketching the mobile application interfaces using Microsoft Words. Then, the development phase is carried out which involves writing using program code through Android Studio in producing the mobile application and data storage in Firebase. The testing phase was conducted with User Acceptance Testing (UAT) to evaluate 30 participants who tested this mobile application. All information is documented in the last phase, which is the documentation phase.

3. Results and Discussion

The responses of 30 participants were evaluated through a User Acceptance Testing (UAT) that prompted them to determine a scale of 1-5 for 12 questions about the acceptance of using the FastPark Mobile Application. According to Zone (2019), user acceptance testing is often the very last type of testing that a piece of software is subjected to. This occurs after integration testing, end-to-end testing, and every other type of testing that is necessary for the piece of software being tested. The scale results determined if the application is perceived ease of use, perceived usefulness, attitude and intention to use the application. The limitation of the application is that it only stands on the Android platform, very dependent on the Internet connection and the user only able to book a parking place and does not support any form of payment. There are also suggestions from participants such as providing a page inside the envisioned mobile application where users may check the status of their reservations. It could be simpler for users to understand in this way if their reservation will be approved or not. Also, a few of the people who responded have suggested informing the admin of the mobile application whenever a user makes a reservation for parking.

4. Novelty of Research / Product

Through the FastPark Mobile Application, user can use the application to see which areas or locations offer parking, as well as the cost. The application should automatically display the location of the available parking place, and users must first sign into the app before utilizing it. Also, this parking mobile application will enable to make more efficient use of available spaces by controlling vehicle access at key entrances. FastPark Mobile Application has been able to execute its task in such a way that users can view the parking area that available with empty parking slot. It is also can make user easily make a reservation of the parking. The user may also easily make a reservation for the parking spot using this feature. The system also provides evidence, based on the assessments, that the newly implemented system has been given positive feedback. In point of fact, this may be of assistance to users in reducing the amount of time they spend waiting to make a reservation.

5. Conclusion

In conclusion, all the objective that had been set up for this mobile application have been successfully achieved. The FastPark Mobile Application using Geolocation was an application intended to help people save their time while find a parking area to book the parking slot in a certain area.

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AN ISLAMIC MULTIMEDIA LEARNING APPLICATION OF MENSTRUATION FOR ADOLESCENT GIRLS

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Abstract

Currently in Malaysia, adolescent girls learn about menstruation from the internet and school textbooks such as in Islamic Education and Physical Education and Health subjects. Although they are taught about menstruation and hygiene care, the textbooks contain so little information about menstruation from an Islamic perspective. In an effort to raise awareness about hygiene care of menstruation for Muslim adolescent girls, there should be more engaging digital learning materials. The Islamic multimedia learning application, entitled 'Lily' was created as a prototype for educating early adolescent girls on hygiene care and prohibitions during menstruation based on Islamic teaching. The user experience test was conducted over a period of two weeks with 26 girls where they were required to explore Lily thoroughly, then they were administered with the User Experience Questionnaire. The UEQ consisted of 26-items to measure their feedback regarding their experience after using the application. It was discovered that Lily received a positive mean score in all six major areas of user experience which are Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation and Novelty.

Keywords: menstruation, adolescent girls, multimedia learning application, Islamic taught.

1. Introduction

The objectives of this project are to design and develop an Islamic multimedia learning application of menstruation for adolescent girls and to evaluate the user experience of this multimedia learning application. In an effort to raise awareness about hygiene care of menstruation for adolescent girls from Islamic taught, there should be more engaging learning materials. The research scope of this project is to develop a multimedia learning application that can act as an alternative media to educate on hygiene care and prohibitions during menstruation based on Islamic taught.

2. Methodology

Data were collected from participants by using the User Experience (UX) testing with respondents who were adolescent girls aged between 10 - 15 years old. Before the testing, the Consent Form was given to their guardians. Once agreement was received from their guardians, the testing was conducted. To use the Lily multimedia learning application, the respondents were provided with a tablet to use the application. The respondents were allotted around twenty to thirty minutes to explore all the learning modules and other features. Then, after 30 minutes, the researcher sat down with them to assist them while answering the User Experience Questionnaire (UEQ).

3. Results and Discussion

A total of 26 people participated in the User Experience (UX) testing are early adolescent girls aged from 10 to 15 years old. In the first phase of the survey, personal information about the participant, like name and age, was collected. The User Experience Questionnaire (UEQ) scales' results of mean after doing User Experience (UX) testing on the Lily multimedia learning application. All of the mean values show positive results, the highest mean value is 3. The questionnaire's scales provide a comprehensive impression of user experience. Both traditional usability (efficiency, perspicuity, dependability) and user experience (attractiveness, novelty, stimulation) are assessed. Based on the result, it can be

concluded that all the respondents were satisfied with the features and modules in the Lily, indicating that they had a pleasant experience with it.

4. Novelty of Research / Product

Lily serves as a digital learning tool that aims to raise knowledge and awareness about hygiene care during menstruation for early puberty adolescent girls based on Islamic taught. Lily is equipped with engaging video and graphics to attract young learners' attention to such important topics in any Muslim family. Lily is a novel product because it comes in the form of a mobile application that contains multimedia elements to specifically educate Muslim girls about hygienic and healthy lifestyle during menstruation based on Islamic teaching, something that cannot be learned effectively through textbook.

5. Conclusion

The Lily multimedia learning application was successfully created to serve as a better source of learning material for educating early adolescent girls on hygiene care and prohibitions during menstruation from a single source based on Islamic teaching. The first phase of user experience testing revealed that the participants were delighted and had an enjoyable experience while learning from it because it received positive mean scores for Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation and Novelty.

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FUTSAL BOOKING WEB BASED SYSTEM INTEGRATE WITH TELEGRAM NOTIFICATIONS

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Abstract

In Malaysia, most of the court futsal facilities are still dependent on paper-based record system. Futsal booking web based system integrate with telegram notification is a web application to assist customer and futsal court staff in managing futsal court booking. Following a visit or attend at futsal court, this system will document customers' information such as name, no phone, and telegram chat id. Customers also has ubiquitous access to their booking record within the web app. Besides, telegram notifications is use by the admin to sent booking details by telegram chat bot. User Acceptance Testing (UAT) with 31 respondents was conducted to validate the prototype. The respondents include customers, court futsal staff, student who always plays futsal. Results from the UAT shows that the prototype obtained constructive feedback from users. Therefore, it can be concluded that the objective for this study is successfully attained.

Keywords: participants, user acceptance testing, web-based application, user interface satisfaction, Telegram

1. Introduction (Objectives and Scope)

The primary goal of the system is to make it easier for businesses to effectively manage court futsal activities that involve both customers and administrators. Additionally, the system will make it simpler for users to reserve and rent futsal courts online. In addition, the system will make use of telegraph notification technology in order to keep users informed about the status of their court futsal bookings. This information will be communicated to users via the system. According to the findings of the previous study, a database management system might be used to handle the booking of futsal courts. It is anticipated that this will speed up, improve, and secure user administrations, thereby making it significantly easier whenever it is required (Nahnisha et al., 2022). The end result of this is that users no longer have to go to the futsal location in order to carry out the booking procedures for the courts, which saves them both time and effort.

2. Methodology (Methods, Procedures, Process)

Based on the System Development Life Cycle, the researcher developed this system for the project's development (SDLC). The Waterfall Model was the methodology employed by the researcher to create this system. Because this methodology was included into the development process, the researcher was successful throughout all phases of the software development process. These phases cover system analysis, planning, designing, implementation, testing, maintenance, and documentation of the created system. The system planning phase, the first step in the process, calls for preliminary research, the identification of the project's problem, objectives, scope, and relevance, as well as the execution of a literature review based on journals and other works that are related. Following this phase is the system analysis phase, the purpose of which is to determine the hardware and software requirements for the development as well as provide an estimate of the overall time timeline for the project. Next, the system design phase is carried out, which is defined by the design of the use case diagram and the Entity Relationship Diagram (ERD) that is used in database design to generate an overview of data structures. This phase is followed by the implementation of the system design phase. After that, the phase of system implementation is carried out, which entails writing the programme code and developing system interfaces with the help of Notepad++ and storing data in MySQL with the assistance of phpMyAdmin. A process known as User Acceptance Testing (UAT) was used during the testing phase to determine the degree of satisfaction that 31 participants had with the system's level of usefulness. The third step,

maintenance and documentation, is when any last-minute defects and errors in the system are discovered, fixed, and any required upgrades are made.

3. Results and Discussion

User Acceptance Testing (UAT) was utilised to analyse 31 participants' replies on a scale of 1-5 for 18 questions about their history and Futsal Booking system use. The questionnaires asked participants how they liked the Futsal Booking system. Testing an application or system's user interface, the top layer, evaluates its quality (Watanabe et al., 2017). The results and analyses were based on User Interface Satisfaction, Perceived Usefulness and Ease of Use, Attitude, System Usability, and Telegram Notification Function. These categories determined outcomes and analysis. The system's shortcomings include the lack of a payment feature, its reliance on an active Internet connection, and the fact that clients can only book a court for one hour at a time. One idea for improving the Futsal Booking system is to advertise futsal courts with upcoming competitions. Additional ideas: The system should also provide a form for clients to register their team name and players. Second, attach a picture of the futsal court to make sure the buyer is satisfied with their reservation. After examining all comments, the researchers concluded that the Futsal Booking Web Based system was manageable, usable, and achieved its goal. This system helps users and administrators manage futsal court transactions, bookings, and management. This system's final goal, to test the Futsal Booking Web Based System Integrate with Telegram Notification's usability using User Acceptance Testing (UAT), was achieved.

4. Novelty of Research / Product

Futsal Web Based system has advanced to allow users to browse and book from a wide range of court available online without needing to physically visit any of the futsal places. For users' convenience, the system also incorporates Telegram notification technology to keep them notified and updated on the status of their court futsal bookings so they will no longer be required to visit the futsal court place or must contact the company personally and endure a lengthy wait for feedback regarding the status of their booking. This will eliminate the need for them to constantly waste time and energy going to the futsal court place from start to the end of the booking process. Once court booking has been made, user can view their booking details in the system as well, which includes details such as the booking number, contact, court name, court place, hours booked, time booked and last time book for user's reference. Futsal's web-based system also makes it possible for administrators to manage all booking requests efficiently and on time while keeping track of all booking data. The admin has access to both client and booking-related data, which she can add, edit, examine, update, and remove. The booking request must be accepted by the admin before the user is alerted via Telegram of his or her status.

5. Conclusion

This web-based system makes it easier for clients to make bookings, and it also makes it easier for personnel at the court futsal to manage bookings. It helps to reduce the usage of logbooks as booking records and makes it easier for users to check the availability of both the day and the court when it comes to futsal. Customers can make reservations for futsal courts using this web-based booking platform, which allows them to do so online.

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HOUSE RENTAL MANAGEMENT SYSTEM FOR STUDENT IN UITM PERLIS

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Abstract

This House Rental Management system is a system created to display rental houses near UiTM Perlis that are available. This house rental management system will also display detailed information about each house and allow you to contact the agent via WhatsApp. The purpose of the House Rental Management System is to help students find available rental houses near campus. While, in this system also can give landlords to upload their house to display in this system. So it can give ease to student to contact them for rent their house.

The methodology used for the development process is the waterfall model. The entire project development process is divided into separate phases. It will go through three phases, such as system requirement identification, system design and development, and testing. Besides functional testing, also user acceptance test (UAT) with 30 participants, consisting of students from UiTM Perlis, was conducted to verify the performance of this system prototype.

Keywords: House Rental, students, UiTM Perlis, User Acceptance Testing (UAT)

1. Introduction

The objective of this project is to develop an automated house rental management system for student at UiTM Perlis. Next, to test the functionality of the developed system using user acceptance testing. The scope of the project is limited to UiTM Perlis students who want to live outside UiTM or who have problems not being able to live in college. The users included in this project include students, advertisers, and admin. This project will be taken about 1 year to be completed and used by this targeted user. The application is limited to users create an account to log in the system. Only students who really want to rent a house need to use this system. This system will show the available house that can rent by students.

2. Methodology

Data were collected from a survey, which is using the User Acceptance Testing (UAT). The User Acceptance Questionnaire (UAQ) is made up of 19 questions, each of which is represented by a pair of terms with opposing meanings. The respondents will be recruited among students UiTM Perlis to gain more information regarding the research. The distribution of the questionnaire and the data collection and the data will be collected among students that interested in rental a house. For the evaluation procedures, the House Rental Management system can be accessed by using provided laptop by the researcher that will be given to participants. To explore the application, the participants were given 10 minutes to using the system. After the participants finished using the application, a Google Form questionnaire based on User Acceptance Testing (UAT) will be distributed for evaluation.

3. Results and Discussion

The questionnaire covers user information, perceived ease of use, perceived usefulness, attitude, and intention to use. After utilising the system, respondents receive the questionnaire to obtain their data. The poll found that respondents liked this system. The outcome showed that the app is easy to use and can help students rent a house. 30 respondents completed a questionnaire-based user acceptance test. The study found that most respondents are satisfied with the web-based app system requirements. Thus, students could benefit from utilising this web-based app due to its features and functionality, which make it easy to use. In conclusion, a house rental management system can help many students plan to rent a house. They will also find their desired attractions, speeding up the process. This app also helps travellers learn more about house rentals. In conclusion, the project was successful in achieving its final goal, which was to verify the functionality of the constructed system using user acceptance testing.

4. Novelty of Research / Product

This project will result in the production of a web-based system that will be utilised by students at UiTM Perlis and will be given the name House Rental Management System for Students in UiTM Perlis. Students can use this web-based system to get assistance in finding a place to rent that meets their preferences and in finding landlords who meet those requirements. In addition to this, registered landlords will be able to market their house-related information, which will make it simpler for them to locate tenants to rent their properties. Aside from that, this approach will assist consumers in finding rental houses in a shorter amount of time, which will be a huge benefit.

5. Conclusion

This system is for rental housing services, but users can also access it to gain as much knowledge about homes as they desire. The system's primary purpose is to facilitate rentals. Users have the opportunity to acquire additional knowledge regarding the house, the cost of the property, as well as the benefits and amenities that are offered by the house. Because of this, the usage of online applications is a relatively new form of technology that has the potential to be useful in assisting students in renting a home that is suitable and satisfying to them.

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PENANG TRAVEL SERVICE PROVIDER APPLICATION USING GEOFENCING

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Abstract

Penang Travel Service Provider Application is a tourism application that is developed to ease the work of travelers or backpackers. This mobile application is integrated with geofencing technology that enables users or travelers to detect attractions around them in specific areas. Alongside with the technology integrated, this mobile application has a few functionality such as enabling users to book a hotel, make vehicle reservation, buying ticket through a directed link to its own website also consist of an information booth inside the application which makes it a multifunctional mobile app. This application is being developed based on Android platform as the operational system which requires Android developing software which is Android Studio. Firebase also has been used. The development of this mobile application has been done using Agile as its methodology. A total of 30 respondents from Penang conducted a user acceptance test using a questionnaire. While another 10 respondents also in the same group had been conducted an interview. Results of evaluation have found that almost all respondents are satisfied with the criteria of the mobile application included in. Therefore, this mobile application could be helpful for travelers and backpackers who plan to travel to Penang as its functionality and features would give benefits to them.

Keywords: mobile application, geofencing, User Acceptance, Penang

1. Introduction

The primary objective of this project is to build and construct a travel service provider application that will make it simpler for tourists who want to travel to Penang to plan their vacations. To put it more succinctly, there are essentially three goals to be accomplished with this project. To begin, the creation of an application system for travel service providers that makes use of mobile applications. Second, integrating mobile applications with geofencing technology so that users may decide what kinds of attractions are in their immediate vicinity. And last, to conduct user acceptance testing on mobile applications in order to assess how well they are received.

2. Methodology

The development of this mobile application has been done using Agile as its methodology. A questionnaire was used to examine 30 respondents from Penang using user acceptance test. This project's main goal is to make visiting and staying in Penang easier for tourists, hence most of the responses will be taken on the spot at Penang. Due to this, the testing was done in several tourist spots in Penang, including Street Art Georgetown and Padang Kota Penang. The tester should also be a foreigner or non-Penangite. Respondents must be briefed on the testing goal and project before answering the questionnaire. The respondent will then receive an Android phone with the Penang App apk installed. Respondents were not given a time limit to use the app, but they should be familiar with its features. After that, they will fill out the questionnaire.

3. Results and Discussion

The questionnaire covers user interface satisfaction, application usability, and usefulness and ease of use. After utilising the app, respondents receive the questionnaire to obtain their data. The poll found that respondents liked how this application used geofencing technologies. The outcome showed that the app is easy to use and can help tourists plan trips. 30 respondents completed a questionnaire-based user acceptance test. The study found that most respondents are satisfied with the mobile app's requirements. Thus, travellers and backpackers visiting Penang could benefit from utilising this smartphone app due to its features and functionality, making it easy to use. In conclusion, a Geofencing-integrated app can help many tourists plan their trips. They will also find their desired attractions, speeding up the process. This app also helps travellers learn more about Penang.

4. Novelty of Research / Product

There are few researches made by previous work which study about how geofencing has been used into some commercial industries, or particularly those intended for tourism, highlighting the work of geofencing in real life use. Previous research on how geofencing is used for dynamic B2B marketing in a variety of industries, and competitive strategies have been widely utilised. Common examples of a geofencing marketing strategy are location-based push notifications and customized messages/alerts sent by a software application to a user entering/exiting a digital fence (Garcia, 2022). There are also several research on the work of geofencing. The paper proposes the concept of a geofence market, in which providers may sell their geofences and users can find and subscribe to geofences that are interesting and relevant to their current location (Qayum & Sohail, 2016). However, there has not any research about how the geofencing could deliver in tourism sector which will be implemented in a such easy travel application that could ease the travelers. Therefore, the main focus of this research is to identify how the development of tourism application integrated with geofencing will help user in planning their trip. All in all, the research aims to contribute to the Penang tourism sector that an improvement should be done in line with technological developments.

5. Conclusion

In conclusion, the development of an application that is integrated with Geofencing can facilitate the trip planning processes of a great number of tourists and travelers. They will also be able to find the attractions that they were looking for, which will make the process far less time consuming. In addition, by making use of this application as a travel companion, users, and especially travelers, will be able to get further knowledge of Penang.

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MOBILE APPLICATION SYSTEM FOR CARDIOVASCULAR DISEASE PATIENT

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Abstract

Cardiovascular failure is a complex and potentially fatal chronic condition that requires medical and lifestyle therapy. Unfortunately, there are not many mobile fitness application systems for cardiovascular disease (CVD) patients. Therefore, the purpose of this study is to develop a mobile application system to guide cardiovascular disease (CVD) patients about exercise that is suitable for them. The mobile health application system can be used by heart patients to find out the most accurate and safe exercise methods. In this mobile application, patients can exercise using a stopwatch to record the time they exercise, such as walking, running, cycling, and climbing stairs. Then, patients can know their BMI according to their height and weight. In addition, patients can also find out information about heart disease in this mobile application. The scope focuses on all patients with cardiovascular disease, no matter if they are children, teenagers, adults, or the elderly, who can use this mobile application system to exercise. In addition, this mobile application uses the DSRM method, which is the Design Science Research Methodology, for development. After that, the results and findings for this mobile application are derived from evaluation results from expert reviews and in-depth interviews with patients and regular users. The test results revealed that this mobile application is usable but needs to be refined and improved. As a result, CPFitness has achieved its objective and goal of developing a mobile fitness application system for patients with cardiovascular disease (CDV).

Keywords: mHealth, CVD, Design Science Research Methodology.

1. Introduction

The objective of this project is to identify suitable exercise methods for patients with heart disease, develop a mobile application system to guide cardiovascular disease patients on the appropriate exercises needed, and evaluate mobile application systems using expert review and in-depth interviews (IDIs). In addition, the scope of the project is mainly focused on meeting the needs of individuals for their daily routines. The mobile application system provides fitness awareness that is suitable for the patient's personal health. All patients with cardiovascular disease, regardless of whether they are children, teenagers, adults, or the elderly, can use this mobile application system to exercise. Therefore, patients can exercise using a stopwatch to record the time they exercise, such as walking, running, cycling, and climbing stairs. Additionally, patients can find out their BMI according to their height and weight. Then, patients can also find out information about heart disease in this mobile application.

2. Methodology

The Direct Science Research Method (DSRM) is used as a methodology in this project based on a model (Vaishnavi & Kuechler, 2004). The first phase is problem awareness, that is, outlining current research areas and illustrating how proposed fixes work. The second phase is the suggestion, which is the description of the issue and the awareness of what can be done. The third phase is development. Design artifacts are used for the development process. The fourth phase is evaluation. The effectiveness of the artifact's contribution to finding a solution to the problem is determined through evaluation. Finally, the fifth phase is the conclusion of the development and evaluation of artifacts.

3. Results and Discussion

Data was gathered through expert review and an in-depth interview. Based on the six responses obtained, it consists of medical officers and lecturers for expert review. Males make up 66.7% of respondents, while females make up 33.3%. The respondents who answered the questionnaire consisted of 33.3% computer science lecturers, 33.3% medical officers, and 33.3% sports science lecturers. For in-depth interviews, data is analyzed using the results of interviews that have been conducted. Data from normal users and patients were graphed and analyzed. Based on the 30 responses obtained, it consists of heart patients and regular users. The majority of respondents were female (60%), while 40% were male. The majority of respondents are between 51 and 60 years old. Then, as much as 50% of the population consists of people who do not work, 30% consists of people who work, and 20% consists of students. Therefore, the results of expert review and in-depth interviews with patients and regular users have found that the CPFitness mobile application is suitable for use by CVD patients and easy to understand but that it needs improvement.

4. Novelty of Research / Product

From a technology perspective, this study takes advantage of popular health and fitness technology by applying it in a healthy environment, specifically to guide patients with cardiovascular disease to carry out their daily routines healthily. As a result, this mobile application system is ideal for patients because it can assist and guide them in selecting exercises that are appropriate for them. There are additional features, such as the fact that patients can use the app to exercise using a stopwatch to record their exercise time, such as walking, running, cycling, and climbing stairs. Additionally, patients can find out their BMI according to their height and weight. In addition, this mobile application system can make it easier for patients to not waste time referring to medical places or other platforms that are not clear about the type of fitness exercise that suits them while also saving time if they are busy with other daily routines. This is because this mobile application system can be used wherever they are. This mobile application system can also encourage patients to not be lazy about exercising because it facilitates and guides them in choosing the appropriate type of exercise.

5. Conclusion

The first goal is achieved throughout the development process, which is covered in Chapter 4 about creating this application. This application is made using a design-based interface. Finally, Chapter 5 completes the third objective of the project, where the evaluation guarantee comes from an expert review and an in-depth interview.

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WEB-BASED CARBON FOOTPRINT CALCULATOR FOR BAKERY FOOD WASTE

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Abstract

Carbon footprint for food is greenhouse gas emissions produced by growing, farming, processing, transporting, storing, cooking, and disposing of food. Carbon emission is carbon gas that released every time food is produced. The term "food waste" is food that completes the food supply chain until the final product and suitable for human consumption but discarded regardless of whether it is rotten or expired. Wasting food means that greenhouse gas emissions that been released during food production are being wasted. Bakery is the biggest contributor in the food industry that contributes to food waste. Therefore, this project developed BakerCFC (Carbon Footprint Calculator) for bakery food waste. BakerCFC allows bakeries to effectively monitor carbon waste. User interface design for BakerCFC using persuasive technology which are reduction, suggestion, conditioning, self-monitoring, and surveillance. The methodology used in developing BakerCFC is Waterfall Model that consists of five phases which are analysis, design, development, testing, and documentation. Development of BakerCFC was using Bootstrap. The evaluation consists of functionality and usability testing of BakerCFC involving bakery owners and expert users. Usability evaluation was conducted to bakery owners for them to evaluate carbon footprint and motivate behavior change for three weeks. Two phases of usability testing were conducted that involved pre-evaluation and post-evaluation. Web-based carbon footprint calculators with persuasive technology aims to change behavior of bakery owners in reducing food waste. BakerCFC helped in changing behavior as well as motivating bakeries to reduce food waste.

Keywords: *Carbon Footprint, Carbon Emission, Food Waste, Bakery, Persuasive Technology, Waterfall Model*

1. Introduction

Wasting food means that greenhouse gas emissions that are released during food production are being wasted, increasing the risk of climate change. The objectives of this project are to develop a web-based carbon footprint calculator for bakery food waste and to evaluate the effectiveness of a web-based carbon footprint calculator for bakery food waste using usability and functionality testing. The project's scope is mainly to calculate the total carbon footprint of food waste and focuses on the bakery sector. This study conducted in three different bakeries for three weeks to monitor their carbon footprint of food waste and motivate behaviour change.

2. Methodology

This project applies waterfall model, which includes five phases consisting of analysis, design, development, testing, and documentation. BakerCFC was developed with Bootstrap and MySQL for database connectivity. For user interface design, BakerCFC uses persuasive technology, which includes reduction, suggestion, conditioning, self-monitoring, and surveillance. The evaluation of BakerCFC involved expert users, functionality, and usability testing. For usability testing, three users, which are bakeries, used BakerCFC for three weeks. The usability testing included pre-evaluation, which occurred in week one, and post-evaluation, which occurred on week three.

3. Results and Discussion

The evaluation of BakerCFC was conducted using expert review, functionality and usability testing. Expert Review conducted by two expert user using cognitive walkthrough. The suggestion given by expert user is to add input text for weight in calculator page to make it identifiable. Functionality testing is to examines all functions. For functionality, respondent successfully receives desired output. Next, usability testing where it used to evaluate how persuasive technology; conditioning, reduction, suggestion, self-monitoring, and surveillance, can change the bakery's behavior. For usability, it conducted to three bakeries owner on three weeks. During the first week, bakeries were evaluated on their knowledge of carbon emissions, carbon footprints, and the importance of reducing carbon footprint. After third week of use BakerCFC, bakeries completed a post-evaluation that includes information about bakery, understanding of the unit measurement, satisfaction of user interface, and other persuasive technology elements. For conditioning, user feel motivated when they see ranking, they get. Next, reduction, calculate carbon footprint process can be done easily. Moreover, suggestion, which suggestion given by BakerCFC easily to understand. For self-monitoring, BakerCFC allows users to view the amount of carbon footprint from previous days and weeks. Lastly, surveillance, update on bakeries details is needed.

4. Novelty of Research / Product

BakerCFC are significant to the bakery owners, which it is reducing operating costs and increasing profits. By measuring food weight, bakeries can determine the amount of carbon footprint generated by non-preferred foods. Bakery owners make behavior changes by reducing the amount of unsold and perishable foods and increasing the production of high-demand, durable food. In this way, the bakery sector can increase the profit margin. This web-based also significant in increased awareness of preserving the environment. The carbon footprint calculator for food waste opens opportunities to advocate for the long-term protection and conservation of the environment, thereby improving the lives of all living things, including humans. By analyzing the carbon dioxide emissions of waste, bakeries owner can develop strategies to ensure the earth's sustainability. Calculating carbon emissions is the first step in reducing carbon emission risks such as climate change.

5. Conclusion

In summary, BakerCFC could help bakeries in reducing food waste. Web-based carbon footprint calculators with persuasive technology aims to change behavior of bakery owners in reducing food waste. BakerCFC helped in changing behavior as well as motivating bakeries to reduce food waste.

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FOOD TRUCK FINDER

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Abstract

Finding a food truck without internet or electronics is exhausting for food truck lovers. Since food trucks are mobile vendors, users have trouble finding their favourite food truck. To address this problem, a Food Truck Finder mobile application has been developed. It will help user by finding a food truck vendor where they are current location. The methodology that has been implemented into this project are using Agile Methodology. To improve the development, this project has been conducted to 30 respondents to validate the mobile application using User Usability Testing. From the result, a Food Truck Finder received feedback from the respondents. Hence, the objective of this project is successfully achieved.

Keywords: food truck, vendor, finder, mobile application

1. Introduction

The project's objectives are to design and develop a mobile application specifically for food truck user that can be able to find the food truck location near to the user's location. Secondly, to evaluate the functionality and usability of the mobile application. For the project scope, this mobile application involves two main users which are food truck vendors and food truck finders. Each user that wants to find a food from a food truck, they can use this mobile application whereas they can search and find the nearest food truck location to them. For a food truck vendor, they can update their current location of their food trucks. Also, the user can know the rating and reviews of the food truck that they search.

2. Methodology

Agile methodology is a sort of project management process that is mostly used for software development. First, the requirement phase that the project must be properly organized. Second, the design phase that need the information from requirement phase was applied in designing the Food Truck Finder. Third, the develop phase where the application or programme is fully coded. Fourth, the test phase where the functionality and usability testing are managed. Last is deploy phase where the documented all information about this project from beginning until the finished.

3. Results and Discussion

This user usability testing involved 30 respondents that has been chosen randomly. The questionnaire consists of the information of the respondents and the user usability testing questions. For user usability testing questionnaire, the answer provided was based on ranking. When testing the functionality of the mobile application, it had been done in order to check the application is working correctly. The result shows that most respondents strongly agreed and agreed that using the Food Truck Finder is simple and easy to use for them. However, there is some recommendation and feedback about the Food truck Finder by respondents. Also, all objectives were successfully achieved including designing and developing a mobile application to track where they food truck location are selling for that day. Yet, there are still have a limitation about this application.

4. Novelty of Research / Product

Food Truck Finder is a mobile application that help user to find a food truck location using Google Services. By using a Food Truck Finder, it can increase user interest in buying food from food truck. Also, it can help gain more profit for the vendors because people can easily find their location by using this application. Food trucks are one of many types of street commerce (Ehrenfeucht, 2017). Food trucks can open the job opportunities to people that do not have enough modal to start their business with opening the shop in the building. Also, people love to eat outside rather than cook at home. This mobile application can manage their time and energy too by knowing if the food truck is available or not and the distance from their current location to the food truck places

5. Conclusion

In conclusion, all of the objectives of this project are achieved successfully. This mobile application, Food Truck Finder, was useful and it can be used anytime and anywhere as long as has an internet connection. It makes food truck finder find a food truck location easier.

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RESPONSIVE WEB-BASED CAFE FOOD ORDERING SYSTEM USING BOOTSTRAP AND QR CODE

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Abstract

The number of students enrolled in colleges is steadily growing these days, resulting in a massive increase in the educational sector and almost every university now provides consignment meals for student cafeterias nowadays. However, menu ordering used in the cafeteria to be an entirely manual process, with a waiter taking orders using pen and paper, taking the orders to the kitchen, bringing the food, and calculating the cost which leads to a lack of data accuracy and data input errors while collecting orders. The aim of this project includes designing and developing a food ordering system using responsive web-based techniques and evaluating the system's usability using User Acceptance Testing. Therefore, A Responsive Web-based Cafe Food Ordering System for UiTM Perlis College Using Bootstrap and QR Code called E-Dahlia Cafe System was proposed to replace the manual process. In this study, the system could manage the ordering process by customers that able to place the menu and view the ordering status of the orders. In addition, employees of the cafeteria can manage the ordering process and all menu items that are available. Besides, the iterative model has been used to implement the development of this system. The User Acceptance Test (UAT) has been used to get feedback from 30 respondents from Dahlia Cafeteria employees and college students. The result shows most respondents are confident in using this E-Dahlia Cafe for future ease.

Keywords: student's college, cafeteria employee, self-ordering system, ordering process

1. Introduction

Menu ordering used to be an entirely manual process, with a waiter taking orders from customers using pen and paper, taking the orders to the kitchen, bringing the food, and calculating the cost at all institutions that have cafeterias for their students and employees that lead to human error issues owing to the large quantity of manual work involved in daily operations. To overcome these limitations, the objectives of this project are to design and develop a food ordering system called E-Dahlia Cafe System by using responsive web-based technique and to evaluate the usability of system using User Acceptance Testing. This system involved two users that consist of college student and cafeteria employee. College students can place orders at cafeteria online using their smartphone devices. Meanwhile, the system allows the employee to manage ordering process such as updating order status and manage menu category or product using laptop or tablet.

2. Methodology

E-Dahlia Cafe system used Iterative model as a methodology. User Acceptance Testing is an evaluation phase that were conducted with Dahlia Cafeteria employees and college students to gather data from participants and determine if the system could handle real-world tasks and apply development specifications to satisfy customer needs. The participants were given time to explore the system after an explanation has been given and to answer the evaluation questionnaire. An explanation has been given to gain understanding for using the system. However, each task has been explained to assist the participant if they are having trouble using the system. The questionnaire has been distributed using a link in the system that will redirect participants to google form.

3. Results and Discussion

Unit testing and functional testing were conducted after development of E-Dahlia Cafe system completed. These two testing has ensured each form's appearance and validation function as intended and has been verified each module's functioning that make sure the user's needs are being satisfied. Besides, the evaluation using user acceptance testing (UAT) that having purpose to verify the end user requirements are fulfilled for acceptability. Data and feedback from 30 respondents from Dahlia Cafeteria employees and college students resulting the majority of respondents are confident in using this E-Dahlia Cafe for future ease. This system can also benefit both users by saving time during the ordering process. However, several improvement and feedback that has been suggested by some respondents can be used in future work for this system.

4. Novelty of Research / Product

According to research, college students who want to place orders with cafeteria staff members must start a WhatsApp group. There is a chance that the canteen staff will overlook the order and delay the service (Swami & Das, 2021). According to Yee & Fudzee (2021), In many Malaysian cafes, traditional ordering techniques including writing orders on paper, standing in line at the counter, or waiting for service are still in use. Therefore, this system's purpose is to overcome limitations discovered in previous research. The E-Dahlia Cafe System is a responsive web application that allows cafeteria employees to manage order process digitally. It saves time for employees because don't have to go to the kitchen, and it allows the chef to receive and view orders using a laptop or tablet. Furthermore, customers may instantly access the web application with their smartphone or any device by scanning QR codes at the table to browse the menu and can spend more time looking at the meal offered. Customers may also monitor the order status and total payment through the system. This will eliminate the error of calculating the entire billing because the bill will be displayed immediately when the order is placed.

5. Conclusion

E-Dahlia Cafe System has successfully developed using responsive web-based technique to helps in manage the ordering process at Dahlia Cafeteria to help both users which allow college students to place orders online and employee cafeteria taking orders without using the manual process. The evaluation using UAT has been conducted to gather data and feedback from respondents and most of them felt confident and easy to use this system.

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WHEELS4RENT: A WEB-BASED VEHICLE RENTAL AND MANAGEMENT SYSTEM WITH SHORT MESSAGE SERVICE (SMS) NOTIFICATION

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Abstract

Wheels4Rent is a web-based vehicle rental and management system integrated with Short Message Service (SMS) notification technology to better manage the operations of a vehicle rental business. This system's evolution has also made it possible for users to browse and book from a wide range of vehicles available online without needing to physically visit any of the rental places. This system incorporates SMS notification technology that helps to notify users about the status of their rental bookings. This system also enables the admin to keep track of the rental records in time and manage all the rental requests systematically. The target users for this system are the local community. The researcher has developed this system based on System Development Life Cycle (SDLC) by using the Waterfall Model as the methodology. The system is developed with PHP and MySQL by using Notepad++ and phpMyAdmin serving as the respective code editors and database management tools. The User Acceptance Testing (UAT) was conducted to evaluate user's acceptance of the developed system.

Keywords: bookings, rental, SMS notification technology, vehicles

1. Introduction

Most vehicle rental companies use a manual approach that seems complicated and time-consuming for customers and businesses. Customers must personally call or visit the company to make a reservation. Finding a company's phone number or physical address can be a hassle for customers, who may end up spending extra money and effort. As an outcome, this study proposed developing the Wheels4Rent system that allow users to book and rent vehicles online and allow staff to keep track of rental records in a timely manner and manage all rental requests without issues. The system's primary objective is to facilitate users to reserve and rent vehicles online, as well as make it easier for businesses to efficiently manage rental operations that involve both users and administrators. The system will make use of SMS notification technology to keep users notified about the status of their rental bookings. As a result, users no longer need to bother coming to the rental place to perform rental operations from start to the end, saving them both time and effort as the system allows everyone to be able to access it anytime and anywhere in just a few clicks.

2. Methodology

For the project development, the researcher has developed this system based on System Development Life Cycle (SDLC) by using the Waterfall Model as the methodology. The methodology involved the System Planning, Analysis, Designing, Implementation, Testing, as well as Maintenance and Documentation phase. The system planning phase is the first in the process and it called for preliminary research, the identification of the project's problem, objectives, scope, and significance, as well as conducting a literature review based on journals and related works. This phase is followed by the system analysis phase which is to identify the hardware and software requirements for the development and estimate the project schedule from start to finish. Next, the system design phase is carried out which is defined by designing the use case diagram and Entity Relationship Diagram (ERD) that used in database design to create an overview of data structures. The system implementation phase is then conducted, which involved in writing the program code and developing system interfaces using Notepad++ and data storage in MySQL using phpMyAdmin. In the testing phase, User Acceptance Testing (UAT) was

conducted to evaluate the acceptance of 30 participants in the usability of the developed system. In the final phase, which is Maintenance and Documentation, the bugs are detected, errors in the system are fixed, and some modifications are implemented. All the information gathered, findings and analysis result, is also documented in this phase.

3. Results and Discussion

The responses of 30 participants were evaluated using a User Acceptance Testing (UAT) in which the participants were provided with a set of questionnaires that prompted them to determine a scale of 1-5 for 18 questions including the background of respondent and user feedback of using the Wheels4Rent system. The testing is performed at the topmost layer which is the user interface of an application or system to evaluate the quality attributes of the application or system (Watanabe et al., 2017). The result and analysis are determined based on five different categories which are User Interface Satisfaction, Perceived Usefulness and Ease of Use, Attitude, Usability of the System and SMS Notification Function. After analysing all of the responses, researchers concluded that the Wheels4Rent system was manageable, usable, and successful in its intended purpose as most of the participants were satisfied with the interfaces, functionality and the effectiveness of SMS notification since the overall total mean of the questions in those five categories were above 4.

4. Novelty of Research / Product

Wheels4Rent system has advanced to allow users to browse and book from a wide range of vehicles available online without needing to physically visit any of the rental places. For users' convenience, the system also incorporates SMS notification technology to keep them notified and updated on the status of their rental bookings so they will no longer be required to visit the rental place or must contact the company personally. This will eliminate the need for them to constantly waste time and energy going to the rental place from start to the end of the rental process. Once vehicle booking has been made, user can view their booking details in the system, which includes booking number, booking date, booking status, and invoice for user's reference. Through the Wheels4Rent system, it also enables admin to keep track of the rental records in time and manage all the rental request systematically. Admin has the ability to add, edit, view, update and delete the data pertaining to both vehicles and bookings. The booking request is subject to admin's approval before being notified to the user via SMS whether it has been approved or rejected.

5. Conclusion

In conclusion, the system has succeeded in accomplishing all of its objective which are to develop a web-based application that facilitate user to reserve and rent vehicles online, as well as helps the business to manage rental operations effectively, to integrate the web-based application with Short Message Service (SMS) notification technology, and to evaluate the usability of the developed system using User Acceptance Test (UAT). Moreover, majority of the research participants found the Wheels4Rent system is helpful, thus it is safe to say that this system will make it easier for those in need of transportation in their quest to rent a vehicle. As a result, with this system in place, users may select from a wide range of vehicles to rent without having to physically visit the rental company.

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IMPLEMENTATIONS OF QR-CODE FOR BUS TRANSPORT PASS USING MOBILE APPS

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Abstract

An online Bus Booking Mobile Application for people to use is proposed to simplify the existing bus booking process. The proposed system is to provides the users an interface as well as design that can facilitate the users. This system is designed so that to facilitate passengers to purchase e-ticket and boarding using their own mobile phones. In developing the mobile application, a suitable development has been implemented using the Agile Methodology as guideline. This project has been developed using Visual Studio Code with Firebase as a database.

Keywords: Qr-code, bus, mobile application

1. Introduction

E-ticket is a system for creating and selling online tickets. Users can easily book tickets to online, pay online, then their e-tickets will be ready and an efficient electronic ticketing system using qr codes has been proposed. The objectives of this project to review the city transport pass process and analyse problems in the process of recording the ticket, to design and develop mobile applications Bus-Q with qr-code scanner and to evaluate the system through user acceptance test. Project scope often help in determining the focus of a project and making the development more organized and systematic. The scopes for this project are divided into two parts which are the category for user and system functionality.

2. Methodology

User Acceptance Testing is a type of testing performed by end users or customers to validate or approve a software system before the software application is put into production. The main purpose is to validate end-to-end business operations. It is performed in a separate test environment with data structures like the production environment. It is kind of black box testing involving two or more end users. This test includes customers and end users. The testing had been done with 31 end users by testing the apps using mobile phone. The testing had been done in Stesen Bas Ekspres Kangar, Perlis.

3. Results and Discussion

Based on user acceptance testing, it can be concluded that all 31 respondents were satisfied with the system. The proof of this statement was proved in Chapter 5. The purpose of the system was achieved, it consisted of designing and developing a Bus-Q mobile application with a QR code scanner and evaluating the system with user acceptance tests. Based on the ideas recommend by respondents, this system should be refined and add features for future use.

4. Novelty of Research

This project has produced a mobile application named Bus-Q, which is the implementations of qr-code for bus transport pass. This mobile application can be use by anyone. By using this mobile application, user can get a personalized and easy-to-use user experience for online reservations and online ticket purchases. Furthermore, for seat selection user can choose a seat of choice from the sitting arrangement, online bus ticket booking system is about full availability which means that user can reserve and buy

tickets whenever they want. It means that users can avoid contacting sales reps and purchase bus seats through a mobile application in a contact-free manner.

5. Conclusion

In conclusion, the researcher's goals have been achieved, which to review the city transport pass process and analyse problems in the process of recording the ticket, to design and develop mobile applications Bus-Q with qr-code scanner and to evaluate the system through user acceptance test and the mobile application has been successfully constructed.

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DEVELOPING A CATERING SERVICES MOBILE APPLICATION FOR LOCAL COMMUNITY

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Abstract

The catering booking system's mobile app for Gua Musang Kelantan's local community makes catering booking easier for both community members and catering owners. It has a user-friendly interface, owner options, and food menus. The system allows for catering bookings to be made at any time, and the catering owner can access the booking list at all times. The app is being developed using Android Studio and Firebase, following an Agile Model with a clear lifecycle phase. This will help streamline the booking process and reduce wait times for the community.

Keywords: booking, community, mobile application, android studio, catering

1. Introduction

In carrying out this project entitled developing a catering services mobile application for local community, it is guided by three main objectives which are to identify and analyse the problem of catering service for local community, to design and develop a mobile apps for catering services, to evaluate the system and using functionality and usability testing. These three objectives are the target in achieving the requirements in the development of this catering booking application for the local community. For the scope of this project is to develop a mobile application-based catering booking system for catering operators as well as consumers. In general, this system will allow customers to book online at a flexible time, choose the type of event to be held, choose the type of food menu that can be booked and use unique features that allows them to make endless catering bookings.

2. Methodology

The researcher adopted the Agile System Development Life Cycle (SDLC) method for this project, including analysis, design, development, testing, and documentation phases. The analysis phase involved determining software and equipment needs, while the design phase involved creating an ERD and project design using Justinmind. The development phase used Android Studio and Firebase as the database. During testing, user-centered usability and functionality tests were performed. Finally, the documentation phase involved evaluating results and improving project weaknesses.

3. Results and Discussion

Usability and functionality tests were conducted on 30 users to gauge their satisfaction with the application. The results, based on categories such as User Interface Satisfaction, Perceived Usefulness and Ease of Use, and Attitude, showed weaknesses such as a lack of admin system, dependence on an active internet connection, and limited menu options. To improve the system, the researcher recommends increasing menu options and making it easier for the admin to update services and for users to update their profile picture. Ultimately, the researcher concluded that the catering booking system is manageable, usable, and effective in helping users and administrators manage transactions and reservations.

4. Novelty of Research / Product

The mobile catering booking app allows users to book services for events they're hosting. It displays available catering options on the desired date to make booking easier. Once a booking is made, users can view the details of their order history including the type and quantity of food. The app also includes a feature to delete history if desired. The administrator can manage bookings more efficiently and organize their schedule systematically. Booking requests require approval from the admin, who can notify users of changes via WhatsApp.

5. Conclusion

Finally, the catering booking for local community mobile application is a project that intends to assist users, specifically public users and catering parties, in making catering bookings as well as managing bookings that have already been made by users. Additionally, this initiative seeks to make it easier for general public users to book caterer bookings whenever they want, even at the crack of dawn.

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ON-DEMAND HOME SERVICES USING MOBILE APPS FOR DIGITAL HOUSEHOLDS

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Abstract

The world of the current industrial era has become increasingly dependent on scientific advancements and robotic intelligence. Today's businesses, households, and industries all depend on technology, keeping its power to influence Malaysia's civilizations, cultures, and economies. Due to a lack of customer feedback, it can be challenging for homeowners with digital homes to locate and schedule the best serviceman. On-demand home services using mobile apps for digital household is a platform design to identify and analyse of home services booking system for digital households. Here, homeowners may find serviceman with a variety of skills. By conveniently browsing, choosing, and booking, these mobile apps enable consumers to keep scheduling services with the serviceman of their choice. It will be simpler for both parties to coordinate the time and schedule to make a service booking by using these mobile applications. The fact that homeowners may schedule servicing appointments with experts through this mobile application greatly benefits its users. The Agile Model was developed using appropriate development techniques as a manual for building mobile applications. Using Visual Studio and Firebase as its database, On-demand home services using mobile apps for digital household will build. By giving a questionnaire containing questions from the Usability Testing to 30 respondents, the proposed system was assessed.

Keywords: mobile application, home service booking, homeowner, serviceman

1. Introduction

Technologies have become a vital component of today's businesses, homes, and industries, preserving their ability to shape Malaysia's civilizations, cultures, and economics (Suki et al., 2022). The project's objective is to analyse the problem and requirements of home services system using mobile apps for digital households and to design and develop a mobile apps digital household service. The project's scope is to analyse and construct a mobile app digital household service for digital households. This project will create a mobile app for digital homes to find different types of servicemen. The user only needs to choose a serviceman who matches the digital home service requested and set a time. In addition, there is a serviceman profile that offers more information in order to persuade users that the selected serviceman is the best option for them. This mobile application lets homeowners book service appointments with serviceman without much searching.

2. Methodology

Software Development Life Cycle (SDLC) methodology primarily focuses on the stages of software development, such as requirements analysis, planning, software design, development, testing, and implementation (Altvater, 2020). In functionality testing, the researcher in this project uses the Test Script method to confirm the features and capabilities of the system. In usability process, all the respondents were given a questionnaire with the home service booking application that has been installed into the android phone. Respondents needed to answer the questionnaire provided through Google form after they are completing use that application. All the answers from the questionnaire were recorded and analysed by the researcher and all details explanation on the findings will be explained further below.

3. Results and Discussion

The project result is focuses on the testing of the data collection from the respondents on the home service mobile application for serviceman and homeowner. Two tests were performed involving functionality and usability testing on two user which are homeowner and serviceman. Usability testing was tested to 4 serviceman's staff and 26 homeowners. The objective of usability testing is to confirm whether end -user usability requirements have been met towards home service mobile application for serviceman and homeowner. On the other hand, the purpose of the test is to improve the home service mobile application from the respondent's side of view. In summary, based on the findings of usability testing results, most respondents believed that home services booking mobile applications are a good platform that is efficient and will bring many benefits and advantages to users, particularly serviceman and homeowner.

4. Novelty of Research

The mobile application for booking home services offers users a wide range of advantages. The ability for homeowners to schedule a service directly with the serviceman makes these mobile apps helpful. With the help of these apps, homeowners may review and score the profiles of serviceman. Since the difficulty in building a search list of numerous servicemen on a single site, the homeowner can also benefit from this system because it speeds up selecting a trustworthy and qualified expert for their digital home service. The homeowner might be able to save some time. This mobile apps allows serviceman to plan appointments, create schedules, and update their profiles. This mobile apps also notify serviceman of approaching customer. This is advantageous to the serviceman since it will let independent contractors increase their earnings over time and develop their skills.

5. Conclusion

This research study discusses the introduction, literature review, methodology, the development of the on-demand home services using mobile application for digital households as well as the results and findings. The aim to build an on-demand home services using mobile application for digital households was achieved by accomplishing all three objectives.

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FAKE NEWS CLASSIFICATION USING MACHINE LEARNING TECHNIQUES

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Abstract

The amounts of information, particularly text data, grows at an exponential rate as more and more time passes. Along with the data, our knowledge of machine learning also advances, and the additional processing power allows us to rapidly train models that are both highly sophisticated and very extensive. Recently, there has been a lot of emphasis focused on fake news across the globe. The impacts may be political, economic, organisational, or even personal. In this work, the technique of machine learning is broken down and discussed in an effort to overcome this challenge. The use of a TF-IDF vectorizer and the training of the data on three different classifiers in order to determine which one of them performs particularly well for this particular dataset of labelled news statements The ratings for accuracy, recall, and F1-score assist us in determining which model performs the most effectively.

Keywords: machine learning, fake news, classifiers

1. Introduction

The objective of this project is to perform classification that employs machine learning techniques to identify between fake and real news based on feature-related data. The challenges considered for this classification is meant to aid users in deciding which algorithm is more effective for predicting false and true news. By applying suitable algorithms, the classification algorithms may provide more precise results based on the acquired data. Decision Tree, Passive Aggressive, and Logistic Regression are among the algorithms used to produce the outcomes of the categorization of fake and real news.

2. Methodology

The first step is to assess the issue statement to better comprehend the problem's cause. Reading and gathering data from digital publications, as well as performing research, are among the strategies utilised to get information on the mentioned topics. Developers search for datasets that correspond to the study's title on websites and platforms such as Kaggle. After identifying the suitable dataset, the acquired data was examined in Microsoft Excel in CSV format to check its suitability for usage. In addition, these data were converted into a data type usable in the Python programming language. After the data has been pre-processed, TdefVectorizer is used to turn text data into a numerical format so that it may be used and read by Python programming languages. The data were then trained using machine learning methods and algorithms such as Logistic Regression, Decision Tree, and Passive Aggressive classifiers. All of these models were developed using Python and the Jupyter Notebook application. In this step, the output of machine learning models was compared using several sorts of calculations, such as the confusion matrix, to measure their correctness.

3. Results and Discussion

This research concentrates on the techniques used for analysis of data. Several outcomes provided after data analysis may be utilised as a guide and solution to assist individuals or end users in facing and creating early expectations about an issue. Overall, it is anticipated that this initiative would aid stakeholders in finding answers to their problems. Effectiveness and efficiency are two of the most important aspects of the procedure used to distinguish between fake news and true news. Utilizing the

most effective and efficient algorithm evaluated to identify false news, more projects may be developed using the outcome of this study.

4. Novelty of Research / Product

Several studies have explored how Voting Ensemble Classifier may be used to identify fake news (Reshmi & Raja S, 2022). In addition, there have been several research on identifying fake news using Support Vector Machine, Naive Bayes, and LSTM (Jain et al., 2022). In addition, there is research on modelling the identification of fake news using BERT-CNN-BiLSTM Architecture (Alghamdi et al., 2022). Nonetheless, one of the studies used deep learning to identify fake news (Lu et al., 2022).

5. Conclusion

As it becomes simpler to convey information to the public in several forms, the threat presented by fake news is severe and spreading like wildfire. We can control and prevent the spread of misinformation more quickly and efficiently with the use of machine learning than with human effort alone.

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DATA VISUALIZATION OF FAMILY INCOME AND EXPENSES

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Abstract

Data Visualization of Family Income and Expenses is proposed to help people to manage their income and expenses. Users will be able to plan and budget their finances using the data provided by the dashboard, as it will show average expenses compared to their income, the number of members, marital status, and many more. In this application, there is also data visualization applied to visualize what type of item they have spent on.

Keywords: income, expenses, financial

1. Introduction

I have planned to develop a dashboard known as "Data Visualization of Family Income and Expenses" which displays the yearly average of income and expenses. This dashboard helps its user to manage income and expenses. It is quite vital for people to control costs, and see what people always spend their money on. Moreover, consistently tracking our expenses will help to maintain control of our finances and promote better financial habits like saving. With bits of help from this dashboard, users can do planning and budgeting on their expenses.

2. Methodology

To develop this project, I used the Research Model. There are four phases in order to develop this project which are a preliminary study, analysis, development, and testing. In this Preliminary Study, I recognize the project's idea, identify the problem statements, identify the problem statements, and define project objectives, project scope, and project significance. For the analysis phase, I analyzed datasets that were obtained from Kaggle and analyze the hardware and software requirements. Meanwhile, for the development phase, I use Apache Hive to provide a central store of information and create data visualization. Lastly, for the testing phase, I used the User Acceptance Test to 30 participants.

3. Results and Discussion

Having more children seems to lower the standard of living, especially for young families with young children, even when the family's total income grows slightly with each additional member (Espenshade et al., 1983). Spendable income is the portion of one's income that can be spent on goods and services. The quantity of money spent on products and services increases with the family size, but at a decreasing rate. In other words, while having more children increases a family's spending on goods and services, the percentage of additional costs for each child decreases. Other than that, marital status has historically been related to social and economic vulnerability, especially unmarried individuals who were considered more vulnerable than the married (Lurie, 2021).

4. Novelty of Research / Product

Young adults experience a period of change between the ages of 21 and 29, according to data from the CE Interview Survey component for 2007-08. People in their late twenties, between the ages of 27 and 29, have a higher average income, higher average spending, higher likelihood of having a bachelor's

degree, and higher likelihood of property ownership than their early twenties counterparts (Hawk, 2011). Other than that, there is research stating that an individual's consumption spending is primarily determined by his or her income level (Kulub Abd. Rashid et al., 2011). When income rises, so does spare income, and people buy more items. As a result, consumption of significant purchases and non-essential items rises. Aside from that, marriage is also related to lifestyle changes such as the purchase of a home and its furnishings, which necessitates an increase in household spending (Gorman, 2000). Marriage modifies one's perspective on the importance of material necessities and the resources needed to get them. Marriage, or at least the first one, is often seen as a major event in a person's life. They might feel they have reached a new point in their lives when they can settle down with a larger quantity of necessities.

5. Conclusion

This project successfully analyzed the family income and expenditure dataset, designed a dashboard and visualized the data with any data visualization, and used the User Acceptance Test to assess user usability and satisfaction.

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DATA VISUALIZATION : CAUSES AND RISK FACTORS OF DEATH

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Abstract

Human mortality data visualization can assist higher-up organizations in the medical profession or governmental departments in dealing with death trends, which advise that different countries take suitable measures to minimize their death rate. The objectives of this study are to analyze the retrieved datasets on mortality causes and its risk factors that effect the death rate, to construct a dashboard and visualize the death rate and the relationship between death rate and death causes and also risk factors of the death and lastly, to assess the dashboard's performance in visualizing the relationship of death rate based on the causes and also the risk factors that lead to the death. Therefore, data visualization is needed in give insight for higher up to make a decision. The data set for this project is obtain from Kaggle and Our World In Data website. Firstly, the planning and preliminary phase will be conducted to gather information about project area. The second phase is analysis phase where the process data preparation for the retrieved data set will be going in acquire cleaning data set. The next phase for the project will be development phase. This phase include the process of constructing data visualization and designing dashboard and lastly testing phase. The finding of this project will help in minimizing the death rate in the country. The higher up could get insight from this data visualization for the country and make differences with other country death rate in reducing the number for their country. This analysis shows how important geographical and economic factors are in affecting the death patterns.

Keywords: *Data visualization, Dashboard, Causes Of Death, Risk Factors Of Death*

1. Introduction

The dashboard might show the causes of death, as well as associated risk factors, in a number of charts, such as line charts, maps, and bar charts, to explore the relationship, trends, or distribution, which could help narrow down which concerns to focus on. The objectives of this study is to analyze the retrieved datasets on mortality causes and its risk factors that effect the death rate, to construct a dashboard and visualize the death rate and the relationship between death rate and death causes and also risk factors of the death and also to assess the dashboard's performance in visualizing the relationship of death rate based on the causes and also the risk factors that lead to the death. The datasets regarding number of death and causes of death have obtained from Kaggle while Our World In Data website provided four datasets: mortality rates by country, causes of death, death risk factors and the death rate by age group.The causes of mortality are classified into three categories which is communicable diseases (infectious and parasitic diseases, as well as maternal, perinatal, and nutritional disorders), non-communicable diseases (chronic), and injuries caused by car accidents, homicides, war deaths, drowning, fire-related accidents, natural disasters, and suicides (WHO, 2020). Additionally, the investigated data is cleaned using the data cleaning integration function to ensure that the visualization process is as efficient as feasible. This dashboard can be used by the higher up, medical experts, individuals working in top management of the health field, and the government to plan and implement more effective ways to decrease the rate of death due to the categories of causes examined in this project.

2. Methodology

After creating the dashboard with the data visualization of the causes and risk factors of death, usability testing will be carried out to assess the case study. Several professionals will do the usability testing.

The experts will include those in positions of authority, medical professionals, those in top positions of the healthcare industry, as well as members of the government. They will test the system in order to evaluate it. Participants in a test will essentially try to finish tasks while observers watch, listen, and take notes. The purpose is to identify any usability difficulties, collect qualitative and quantitative data, and determine participant satisfaction with the final product. The results of the usability testing will be used to develop the validation criteria. After the system testing, the participants will receive questionnaires for the usability testing through Google Form to complete. The information gathered in accordance with the suggestions and comments made by the participants will be examined and reported.

3. Results and Discussion

According to the usability testing results, 82.1% of respondents are satisfied with the dashboard data visualization, while the remaining 17.9% are neutral on the scale of satisfaction with the dashboard data visualization. 71.4% of respondents willing to recommend this dashboard to their department and colleagues, while 21.4% are unsure. As a result of this usability testing, the dashboard data visualization met the objectives that were specified in the beginning of the project. By giving higher-ups in the global medical community information and insight, this dashboard may prove beneficial and useful in the future.

4. Novelty of Research / Product

This study is focused on data visualization dashboards because no relevant work has been found that employs data visualization dashboards for all causes and risk factors of death. There is only study about the project that uses data visualization, but it is more about prediction that uses machine learning to determine the outcome of mortality prediction. The significance of mortality data visualization stems from both the personal significance of death and their ability to improve public health when used to systematically analyse and monitor a community's health state. Death data visualization is frequently used as a basis in establishing health plans and strategies to prevent or reduce early mortality and improve quality of life in the field of public health. However, national statistics systems in many developing nations are inadequate. Even in countries with well-functioning systems. The visualization of mortality data assists in tracking the characteristics of individuals dying in the country and allows comparisons of death patterns with other countries. It can also be used to calculate the population's annual life expectancy.

5. Conclusion

This research study includes the introduction, literature review, methodology, the development of the dashboard data visualization about mortality causes and risk factors, as well as the results and findings from the usability testing evaluation through questionnaire. The aim to visualize the rate of death based on the causes and risk factor of the death using dashboard was achieved by accomplishing all three objectives which are to analyze the retrieved datasets on mortality causes and its risk factors that effect the death rate, to construct a dashboard and visualize the death rate and the relationship between death rate and death causes and also risk factors of the death and to assess the dashboard's performance in visualizing the relationship of death rate based on the causes and also the risk factors that lead to the death.

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DEVELOPING GRAPHICAL VISUALIZATION FOR UNDERSTANDING THE PATTERN OF STUDENTS PERFORMANCE IN EXAM

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Abstract

Education is a necessary human virtue, a foundation for a good life, and a symbol of liberty. This project was made to analyses the data requirement, dataset of student performance during examination also to design a students' performance dashboard that guides students to know which courses to focus more and which courses are linked together for their exams and last but not least to evaluate the functionality of the dashboard using User Acceptance Testing. The aim is to visualize the importance of understanding students' performance during exams using a dashboard and evaluate its functionality. The Design Science Research methodology (DSRM) was used throughout the development process of this project. Moreover, the data cleaning and transform were made fully with Microsoft Excel. The data visualization was made using Microsoft Power Bi. The evaluation of the project was made using User Acceptance Test (UAT) with the results of 49% of respondent agree and other 50% strongly agree intend on using KPPIM UiTM Perlis Student Performance Dashboard as guidance tool.

Keywords: *student performance, visualize, User Acceptance Test, functionality.*

1. Introduction

Education is a necessary human virtue, a foundation for a good life, and a symbol of liberty (Bhardwaj, 2016). This report analyses the data requirement, dataset of student performance during examination also to design a students' performance dashboard that will guide students to know which courses to focus more and which courses are linked together for their exams and finally to evaluate the functionality of the dashboard using User Acceptance Testing. The aim is to visualize the importance of understanding students' performance during exams using a dashboard and evaluate its functionality.

2. Methodology

Data were collected from four lecturers that taught these four courses which are ICT651, ICT501, CSC435 & CSC415) from the year of 2019 until the latest test in the year of 2022. The data of test for course CSC435 is Sir Mohd Nizam Osman, CSC415 from Madam Mahfudzah Othman, ICT61 from Dr Khairul Anwar while test mark for ICT501 was obtained from Dr Norfiza Ibrahim. Research findings evaluate whether the dashboard developed are accepted and favoured by students for example if they would use it if it were available and if it would be their main dashboard to identify their study performance.

3. Results and Discussion

As a result of the User Acceptance Test, some personal information was collected including gender, semester's currently in, and performance measurement method. The test was able to collect exactly 30 respondents from CS240 students. The questionnaire's scales provide a comprehensive picture of user experience, ranging from strongly disagree labelled 1 to strongly agree labelled 5. All user acceptance criteria including perceived ease of use, perceived usefulness, attitude, and intention to use are measured in the test. Based on the result gained from the test, more that 80% of respondent find it is easy to use

the dashboard, as well as 46% of the respondent agree that the dashboard is useful for evaluating their performance, more than 90% have favourable attitude towards the dashboard and finally more that 80% of these respondent agree that they would use the dashboard as their guidance tool if it is published.

4. Novelty of Research / Product

The novelty of this project is that it is the first dashboard that preview the performance of UiTM Perlis student of the KPPIM. With that it will help the student in that faculty to understand their level in studies and encourages them to study based on their performance shown on the dashboard. Bedsides, it also provides forecasting for each subject available in the dashboard for the next 2 semesters. With this it will show the students what are the results they will get if they continue their way of studies as some subjects are related to each other therefore the possibility of them getting the same range of mark for the next subject with the similar contents.

5. Conclusion

As the three objectives are achieved: To identify the data requirement, dataset of student performance during examination. To design a students' performance dashboard that will guide students to know what focus more and which courses are linked together. And finally, to evaluate the functionality of the dashboard, therefore the project has been successfully completed.

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DIABETES RISK PREDICTION SYSTEM AND DATA VISUALIZATION

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Abstract

Diabetes is a deadly chronic disease that has a negative impact on the entire body system. This disease affects millions of people, and a significant number of patients die because of its side effects each year. Undiagnosed diabetes can lead to nerve and kidney damage, heart and blood vessel disease, slow wound healing, hearing loss, and a variety of skin diseases. Moreover, the rapid growth of diabetes is very alarming and the need to identify the significant factor that leads to diabetes is increasing. Therefore, an efficient way to predict diabetics is required so that necessary procedures can be implemented ahead of time. A diabetes prediction system is implemented for predicting diabetes and visualizing the significant factors that lead to diabetes. The target users for this system are medical practitioners, individuals working in diabetes research centers, and the government. Secondary data has been used for this research. HTML, CSS, Python, and data visualization techniques are used to design the system. The overall development process is divided into four phases: planning, analysis, development, and testing. To determine Diabetes, the prediction model used and compared different machine learning algorithms such as Logistic Regression (LR) and Support Vector Machine (SVM). As a result, Logistic Regression has been selected as the prediction model because it displays the highest accuracy score. According to the usability testing evaluation, many respondents were satisfied with the system's usability.

Keywords: *diabetes, diabetes prediction system, machine learning, Logistic Regression, data visualization*

1. Introduction

The aim of the study is to develop a system using machine learning techniques that can predict diabetes in an early stage to prevent worse health complications. Furthermore, data visualization has been used to aid end-users in analyzing diabetes conditions and identifying key factors that are significantly involved with diabetes disease. Therefore, the objective of this project is (1) To implement machine learning technique in predicting diabetes, (2) To develop a system that can predict diabetes as well as a dashboard visualization of the relationship between the diabetes features, and (3) To evaluate the usability of the system using usability testing. Medical practitioners, individuals working in diabetes research centers, and the government are the target user of this system.

2. Methodology

The problem statement, objective, scope, and project significance are all identified in the first phase of the System Development Methodology, which is the planning phase. Before performing the machine learning workflow, the retrieved dataset is explored and cleaned during the analysis phase. Later, the accuracy scores of the machine learning models are compared, and the model with the highest score is chosen as the system's prediction model. The system design will then be developed in the development phases to perform the actual task of predicting diabetes and displaying all the visualizations in the dashboard. Finally, during the testing phase, the system will be tested using usability testing to obtain feedback on its performance.

3. Results and Discussion

During the testing phases, 22 respondents completed the questionnaire, and their responses were collected and analyzed. 16 questions from the Post-Study System Usability Questionnaire (PSSUQ) were observed, with three main categories evaluated: usefulness, information quality, and interface quality. According to the findings, among the higher-level categories, interface quality received the highest mean score, while information quality received the lowest. It demonstrates that the majority of respondents prefer to use the system interface, while others struggle to understand the information displayed in the system. According to the respondents, the Diabetes Risk Prediction System has a high level of usability. Future research could improve the classifier's accuracy and predictability by employing different algorithms or combining them with other computational techniques such as genetic algorithms or particle swarm optimization.

4. Novelty of Research / Product

Diabetes Risk Prediction System can be used to predict diabetes risk and identify significant risk factors that lead to diabetes at an early stage. As a result, it benefits the healthcare system by improving diabetes management. Furthermore, machine learning techniques are widely used by many researchers for disease prediction at an early stage. However, very few people use visualization techniques to predict diabetes. Rather than visualizing the system, many of the researchers preferred machine learning or a deep learning-based approach. As a result of the combination of diabetes prediction and visualization of the factors that contribute to diabetes in patients, end-users can perform early disease control care, reducing diagnostic times and representing economic savings for the health system and the patient.

5. Conclusion

In conclusion, the Diabetes Risk Prediction System is effective in providing accurate and timely diabetes diagnosis results. The system has the potential to reduce the prevalence of diabetes and its associated risks. As a result, the current healthcare system can be improved to provide a better user experience.

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WEB-BASED APPLICATION FOR PLACES RECOMMENDER USING MACHINE LEARNING

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Abstract

Information about places to visit can be found easily on the internet, however, the information available might be overwhelming and users may have to spend considerable time locating those places that are interesting to them. Hence, tourists nowadays are looking for a simpler way to look for places' recommendation in a certain country that suits their taste. Therefore, the Web-Based Application for Places Recommender using Machine Learning is developed. This system is developed mainly using Streamlit, Pandas, SK-Learn, HTML and CSS and the data that is gathered is encoded using CountVectorizer and then using Cosine Similarity to recommend the places. Then the system is evaluated using User Acceptance Testing by 20 respondents and the results are then used to improve the system.

Keywords: Recommendation System, Cosine Similarity, CountVectorizer, Machine Learning.

1. Introduction

Tourist nowadays are looking for a simpler way to look for recommendation for places to visit in a certain country that is in line with their taste. Therefore, to overcome the problem, this system is developed with several objectives in mind. The objectives are to identify the requirements and techniques to build an effective web-based places recommender system, to develop a web-based recommender system using machine learning and to evaluate the system using User Acceptance Testing (UAT). The aim is to help the tourist to find a spot to visit that suits their preference. The scope of this research is to develop a web-based application system for places recommendation to the interested users to visit Malaysia which helps the user in finding a tourist spot that is suitable with their preference at the same time giving them a complete information regarding the place.

2. Methodology

The data used for this project was collected and scrapped using an Instant Data Scraper from different resources on the Internet. First the data is encoded using CountVectorizer to transform the dataset into vector which is done based on the word frequency that appear across the whole text, then using cosine similarity to compare the similarity between the places to be recommended to the users. The web is develop mainly using Streamlit, Pandas, SK-Learn, HTML and CSS. Then the system is evaluated using User Acceptance Testing by 20 respondents (5 tourism industry expert, 5 students and 10 public).

3. Results and Discussion

The summary from the UAT found that 60% of the respondent is very satisfied with the system, while the other 35% is satisfied and the remaining 5% is neutral on the scale of satisfaction with the system. It safe to say that this system managed to achieve the objectives proposed and able to do what it proposed to do in helping both the domestic and international tourists to find a place to visit in Malaysia. However, since the system is developed using Streamlit which is fairly a new framework, there is a lot of limitations such as the limited interface design freedom, restricted choice of buttons and menu, arose during the development of the system.

4. Novelty of Research / Product

There are a lot of information regarding places to visit on the Internet, however there is a limited to none, where it gave the full information on the places. This system gave that information all in one click. The recommendation given to the users consists of the places' website, phone number so the users could give the places' owner a call just in case of any inquires, a location link if the users wanted to drive directly to the places, food recommendation as well as accommodation nearby the place. This system also allows the user to find their desired places to visit based on their desired category and ratings which is acquired from Google review.

5. Conclusion

To conclude, this study met all its objectives by developing a Web-Based Application for Places Recommender using Machine Learning. The data regarding the places can be seen being visualised on the system, hence allowing the domestic and international tourist to find their desired tourist spot.

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DATA VISUALIZATION OF CHRONIC KIDNEY DISEASE SYMPTOMS

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Abstract

Chronic kidney disease is one of the primary causes of mortality in society. Neglecting this disease will expose you to incredibly serious risks and consequences. The factors that contribute to the increment of the mortality are the lifestyle, lack of awareness among society and even among practitioner doctors. Chronic kidney disease can strike anyone, regardless of age or gender. What makes it different is the risk level of each factor. Due to that, an awareness campaign towards this disease must be taken seriously so that early diagnosis of this disease can be made to avoid harmful scenarios. Thus, an interactive dashboard called Dashney comes to the rescue, where the features included in this interactive dashboard are charts visualization and a self-service analytic model. To complete the dashboard, System Development Life Cycle (SDLC) methodology is used which focus on the public user needs. Finally, the finding shows that Dashney is a well-accepted dashboard as it provides the information about symptoms of chronic kidney disease which can help users to get educated about chronic kidney disease and its risk. By knowing this knowledge, people will be aware of their own health and take a precautious step to prevent the disease.

Keywords: *dashboard, chronic kidney disease, symptoms*

1. Introduction

The Chronic Kidney Disease (CKD) affects around one out of every ten persons worldwide, resulting in millions of early deaths. The project aim is to visualise symptoms of chronic kidney disease using dashboard to ease medical institution, doctors, and patients in term of analysing symptoms. It also helps reduce the risk of a patient diagnosed with CKD.

2. Methods, Procedures, Process

The methodology that was used here is System Development Life Cycle (SDLC). For this project, there are 4 procedures in total to develop the dashboard for this project. It is preliminary study, analysis, development, and testing. The testing phase has been done and complete. The activity that has been done in the testing phase is the usability test with the System Usability Scale (SUS) tool. The testing phase is being done by few respondents that helps in verifying the quality, and performance of the dashboard. To put it simply, chapter 3 was all the flow of dashboard development using SDLC.

3. Results and Discussion

Concisely, the objective of the dashboard has been met as all the functionality is working well. The dashboard was carefully developed according to all the data requirement gathered throughout the whole year. Many people can be benefited and educated from this system. Civilians can learn more and increase their awareness regarding the chronic kidney disease Dashney. They can identify the risk factors that contributes to kidney disease well better and learn more about it. Besides, medical expertise also can use the dashboard on their patients. Therefore, precautions can be taken seriously, and early detection also can be made where it may help to lower the risk of mortality with chronic kidney disease.

4. Novelty of Research / Product

There have been a number of research that have developed dashboards that have related attributes to chronic kidney disease particularly OptiMissP that provides additional insight to the structure of the data and their missingness in chronic kidney disease (Geifman et al., 2021). Previous research about (Swee et al., 2020) was done through utilization of the telenephrology dashboard system improved early detection and identification of kidney disease and saved time and costs for Veterans in travel.

5. Conclusion

The existence of this dashboard, is due to the mortality numbers and because of kidney disease and the awareness of public regarding this disease. By developing Dashney, it is hoped that it can help in raising the awareness about this disease to more people especially for those that have no idea what causes the kidney disease and how to control the risk. The successful of this project is defined based on the achievements of all the objectives have been met.

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SMART SUPPLY CHAIN MANAGEMENT USING DATA VISUALIZATION

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Abstract

Smart supply chain management has been digitalized by industry revolution 4.0 to improve and maintaining manufacturing and logistic operation at all levels. Rapid adoption of emerging technologies transforms global economy and smart supply management to build greater connectivity. However, massive data scales, limited research of supply chain interactions, pandemics, recession, and geopolitical event interrupted supply chain management operations. This research investigates data visualization approach using interactive operational dashboard. Data visualization contains supply chain management operations and information of risks factors that can impact the supply and demand integration, which include the amounts of supply, sales and profit, payment process, shipping method and supplier pattern buying. Research model is significant to establish data visualization with practical determination. It consists of five phases which are preliminary study, requirement analysis, development, testing and documentation phase.

Keywords: *Data visualization, Supply Chain, Operational Dashboard, Fraudulent*

1. Introduction

Supply chain is a crucial connection between an organization and its suppliers. The worldwide supply chain management market was worth $15.85 billion in 2020, and by 2026, it is estimated to be worth about 31 billion (Placek, 2022). The research determines the risk factors correlation of change in demand and supply chain based on smart supply chain dataset. Second objective is to construct interactive operational dashboard data visualization in emphasizing the flow of smart supply chain. This research aims to evaluate the effectiveness of developed data visualization in real-time metric. Manager, operational team, customer service representatives and researchers are users of dashboard. The supply chain dataset is measured on commerce activities including provision, production, sales, and commercial distribution. The data then will be analysed in form of dashboard to allow users interpret information that impact the supply chain.

2. Methodology

Research methodology has five phases starting with preliminary study, requirement analysis, development, testing phase and documentation phase. Each phase is aimed to meet the requirement of research objectives. During preliminary study phase, obtained information are view from various aspects by conceptualize the title, problem statements, project's goal and objectives, scopes, and significant that indicate measurable organizational value. Requirement analysis ensure the dataset is leveraged in variety of techniques such as pre-processing and data exploration. In conjunction with data and analysis gathered for development phase, designs and DAX Language also applied more widely to produce diverse results on operational dashboard visualization.

3. Results and Discussion

Design of Entity Relationship Diagram and storyboard of dashboard interfaces are key players in determining dashboard usability. Sales forecasts by each agent are made for the next 5 years to

determine the sales situation that will be managed by the system's supply chain management in the future. Moreover, sales summary is presented to determine the amount of sales profit and appropriate time to conduct sales based on each week of each year. This research also reveal supplier buying pattern among fraudulent suppliers who have faked repeat orders up to 22 times to prevent their access from purchasing in the system. Usability and functionality testing also were conducted to obtain feedback through questionnaires from 30 actual users. The feedbacks afterwards are used as guidance for improvement in developing operational dashboard.

4. Novelty of Research / Product

The implementation of dashboard visualization and variety of colourful graphs allow manager and operational team to monitor the supply chain planning and constraints in real-time for organization. It is because of when users encounter with massive information, they tend to grasp vivid imagery instead of basic plain graphics (Ramly et al., 2012). By using Microsoft Power BI, rapid access towards organization data request and cost-effective are offered through human language interface and convenient graphical design tools. Hence, the system does not require any expert technical assistances (Shah, 2018). Therefore, organization can achieve data-driven decisions. Users can prolong their screen-focus to increase the supply visibility especially during potential occurrences such as delayed deliveries, changes in sales order priority, supply estimation date and shipping. Apart from that, this project is crucial for customer support representatives to assists suppliers for their inquiries. For instance, they provide accurate shipment information that will improves suppliers' engagement. The acquired data allow researchers to improve meta-analyses for comparative studies towards diverse customer pattern buying.

5. Conclusion

Smart Supply Chain Management using Data Visualization is a platform allowing users to enhance their visibility towards smart supply chain management business and determine the risk factors that impact the change in demand and supply chain. Developing operational dashboard on Microsoft Power BI encourage logistic industries achievement and prediction.

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DATA VISUALIZATION OF BLOOD DONATION DURING CORONAVIRUS DISEASE (COVID-19) IN PERLIS

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Abstract

Blood donation is considered as collecting blood for a limited time before use, there is an ongoing need for a steady supply. Healthy individuals must donate blood on a regular basis to ensure that blood is always accessible whenever and wherever it is necessary, especially based on their respective blood types. However, during the COVID-19 pandemic that was expected to have a negative impact on blood system activities and reduce blood supply as an unintended consequence of social distancing measures against blood donation activities. The pandemic Covid-19 causes the percentage rate of blood donors to decrease dramatically. This study helps society to receive the trustworthy source of blood donation activities. Moreover, this study uses data visualization approaches to present blood donation information. This is because of society having a lack of awareness and knowledge to having a blood donation. Therefore, graphical elements will be used in interactive dashboard to improve the user understanding on analyzing the blood donation consequences during Covid-19 pandemic. The dashboard application will assist organisational leaders in accessing information resources in the form of visualisation. The dashboard system's purpose is to deliver basic information of the blood donate, as well as abstract performance measurement and intuitive visualisation. The finding of this research will provide evaluation on presentation of blood donate information among society. The methodology used in the creation of the system is divided into four phases which is preliminary study, analysis, development, and testing. It focuses on explaining problem statements, project objectives, project scope, and project significance at the preliminary study phase.

Keywords: *blood donation, COVID-19, blood*

1. Introduction

The dataset will be obtained from questionnaire and GitHub website. It contains multiple parameters in one dataset. However, to ensure the accuracy of the dataset and data visualization of blood donation it involves the data cleaning technique. To analyse the blood shortage, actual blood supply and demand were compared with the expected value (Guo & Chen, 2021). This dashboard can be used by the Northern Regional Blood Centre, National Blood Centre of Malaysia, and The Ministry of Health of Malaysia to ensure the blood supply is not interrupted during a Covid-19 disease and devise appropriate methods without exposing blood donors to Covid-19 infection. Every year, more than 20 million units of blood products are utilized in blood transfusions (Özener et al., 2019). The objectives of on this project are to analyse the techniques for blood donation information presentation in data visualization approach. Next, to design the dashboard and construct the data visualization in interactive charts. Finally, to evaluate the data visualization approach to promote blood donation using User Acceptance Test.

2. Methodology

This study design will be conducted using a survey from a google forms questionnaire to assess performance of the dashboard. Participants will be recruited among Hospital Tuanku Fauziah staff and University Technology Mara students who are from Bachelor of Information Technology (HONS.), all

participants will be required to sign a consent form. The distribution of the questionnaire and the data collection will be involving all staff from the blood bank unit at Hospital Tuanku Fauziah. All participants will be brief about the objective of the study and the instruction to answer the questions. Participant will be asked to answer the on Google form. During answering the question, participants will not be allowed to copy or asking for answer. They will be required to answer all questions sincerely. The duration to answer the questionnaire is around 15 mins. The questionnaire consists of 2 sections, with Section A is participants demographic data and Section B is the main questionnaire. Data will be collected and analyzed to determine the dashboard performance. The user acceptance test (UAT) is the final stage in the production of the application. This is intended to see the degree to which the dashboard can function and satisfy the needs of its users.

3. Results and Discussion

Blood donation is a public health issue essential to guarantee quality medical-surgical care and save millions of lives every year. Blood is continuously needed for the treatment of accident casualties, cancer treatments, organ transplants, anemia treatments, and major surgeries such as open-heart surgery (Özener et al., 2019). The primary intention of acceptance testing is to guarantee that the end user can meet the objectives outlined in the requirements. Acceptance testing involves reviewing the feature-complete application flow and end-to-end experience rather than focusing on the functioning of single features. End users are involved in user acceptance testing (UAT) and beta testing, both of which are subcategories of acceptance testing. The company may then examine the input and adjust as a result.

4. Novelty of Research / Product

There are several benefits that users can get from this Data Visualization of Blood Donation During Coronavirus Disease 2019 (COVID-19) in Perlis. The data visualization helps the parties involved aware of the blood supply in every centre in Malaysia. It is very important to keep the donor safe without being infected with Coronavirus. This project is useful to determine the statistic of the increment and decrement of an average person donating blood. The importance of this project is to facilitate understanding for the users to visualize the data. The data visualization useful for users exploring the data structure, detecting outliers and unusual groups, evaluating modelling output, and presenting results to make it more efficient.

5. Conclusion

This study achieved all the objectives, including visualizing blood donation dataset. The data was successfully presented in a dashboard and published using Microsoft Powe BI. It allows users to learn about blood donation and related statistics. Finally, this project will increase awareness regarding blood donation in Perlis that should be concerned.

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DIABETES PREDICTION USING MACHINE LEARNING

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Abstract

The increasing population has led to longer wait times for patients in the medical industry, particularly for diabetes check-ups. Machine learning technology can assist with speeding up the process of identifying diabetes by utilizing algorithms and techniques to train on previous data and predict potential problems. Two types of machine learning, supervised and unsupervised, are used to assist patients and the medical sector. The data and results from these methods can be used as references for diagnosis. Based on the diagnostic measurement data gathered for this study, it is found that using prediction model can assist patients and the medical sector in predicting diabetes The effectiveness of these methods will be determined by evaluating their accuracy using various metrics after testing and training. An algorithm or method with a high percentage of accuracy will be considered effective when compared to others. In summary, machine learning technology can help improve the efficiency of identifying diabetes by analyzing previous data and making predictions, which can ultimately benefit both patients and the medical industry.

Keywords: diabetes, machine learning, prediction model

1. Introduction

The objective of this project is to gather available data of diabetes from a diabetes institute. This will involve collecting a large dataset of diabetes-related information such as patient demographics, medical history, lab results, and other relevant data. Once the dataset has been collected, machine learning algorithms will be used to analyze the data and develop a prediction model that can accurately identify whether or not a patient has diabetes. The effectiveness of the prediction models developed in this project will be thoroughly evaluated and compared using a variety of evaluation metrics will be the final goal for this project. These metrics will provide a quantitative measure of the model's performance.

2. Methodology

This project will begin by analyzing the problem statement to gain a better understanding of the goals and objectives. Relevant topics will be identified by researching various sources. The next step will be to prepare the data by determining the amount of data needed and the attributes of the data. Multiple sources such as Kaggle will be searched for data that is relevant to the study, and the data will be downloaded in CSV format for viewing in Microsoft Excel. After that, the data will be reviewed and understood to develop a clear vision for the techniques and methods that will be used for the project. The data will then be transferred to Jupyter Notebook for pre-processing and cleaning, utilizing Python programming and libraries such as scikit-learn, NumPy and Pandas. Outliers will be detected and removed from the dataset, and feature selection will be performed using Pearson's Correlation Coefficient technique. The data will be split into 80/20 for testing and training, and machine learning algorithms such as Naive Bayes, Support Vector Machine and Decision Tree will be used to train the prediction model. The model's performance will be evaluated using metrics such as confusion matrix, accuracy, recall, precision, and f-1 score.

3. Results and Discussion

The result from the evaluation metrics found that the Support Vector Machine algorithm had the highest accuracy score of 82%, compared to 77% for Naive Bayes and 79% for Decision Tree from the accuracy testing. This suggests that the prediction model is effective at providing accurate predictions. However, it is important to consider the quality and availability of the data, as well as the complexity and noise level, when evaluating the performance of the model. These factors can have an impact on the accuracy of the predictions and must be examined carefully.

4. Novelty of Research / Product

There have been a number of research that have investigated the development of machine learning in medical sectors. By making computers capable of self-learning without human intervention, machine learning aims to enable computers to modify their behaviour accordingly (Ławrynowicz & Tresp, 2014). Making programmes that can learn data and predict the output by itself requires machine learning (Kaličanin et al., 2019). The healthcare industry relies heavily on predictive modelling (Axelrod & Vogel, 2003). The term "predictive analytics" refers to a number of methods that are used to draw conclusions about the possibility of specific future occurrences (Brooks & Thompson, 2017).

5. Conclusion

In conclusion, machine learning techniques can be effectively used for the prediction of diabetes. The process of building a predictive model for diabetes typically involves several steps such as data pre-processing, feature selection, model selection, and model evaluation. By using suitable machine learning algorithms, it is possible to develop a model that can accurately predict whether a patient has diabetes or not.

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THE DEVELOPMENT OF DISEASES PREDICTION SYSTEM BASED ON SYMPTOMS

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Abstract

In the medical industry, patients must wait a long time for a health check-up at the hospital because the number of patients is too large for the hospital to accommodate. As a result, by employing technologies such as machine learning, the medical industry will be able to speed up the process of identifying diseases. The data and results can help people and serve as a reference in predicting a problem. In this study, the use of this machine learning method is seen to help patients and the medical industry predict disease based on symptom data. Moreover, it also will create an interface to make it easy for user to choose symptom and to display the results using Python. A confusion matrix will be used to evaluate the dataset's accuracy so that more accurate results may be generated.

Keywords: Cost, time, disease, machine learning

1. Introduction

The goal of this project is to create a system that uses machine learning algorithms to predict the type of disease based on data related to disease symptoms. The issues chosen for development of this system are intended to assist users in determining the type of disease based on symptoms experienced. By implementing some appropriate algorithms, the system can provide more accurate results based on the data collected. Decision Tree, Random Forest, and Naive Bayes are among the algorithms that will be used to determine the results of the type of disease that related to the symptoms. The system will employ a simple and straightforward user interface designed to allow users to use it easily and save time.

2. Methodology

The first step is to analyse the problem statement in order to better understand the source of the problem. Reading and collecting information from digital newspapers, as well as conducting studies are among the methods used to find information on the issues discussed. First and foremost, developers look for datasets that match the title of the study on websites or platforms such as Kaggle. After locating the appropriate dataset, the downloaded data was reviewed in CSV format in Microsoft Excel to ensure that it is fit for use. Furthermore, this data was transformed into a data type that can be used in the Python programming language. After the evaluate data was cleaned, it then it was converts raw data into numerical form using Pandas software so that it can be used and read by Python programming languages. Following that, the data was trained using machine learning techniques and algorithms such as Decision Tree, Naive Bayes, and Random Forest classifiers. All of these models were written in Python using the Visual Studio Code software. To determine accuracy, the output of machine learning models was compared in this phase using various types of calculations such as the confusion matrix. Finally, it will provide an interface for selecting symptoms and displaying results using Python and tkinter.

3. Results and Discussion

This research focuses on the techniques used to analyse the data. Following data analysis, several results produced can be used as a guide and solution to help people or end user in confronting and forming initial expectations about a problem. Overall, it is believed that this project would be able to help stakeholders in finding solutions to their issues. Cost and time management are two of the primary issues when involving the process to do a check up to determine a disease. Because this system may be

used anywhere and at any time, costs that must be incurred can be reduced and time is perceived as being more economical with this method. Additionally, the system created in this research may produce results quickly and without the need for much time.

4. Novelty of Research / Product

There have been a number of research that have investigated how a dendritic Neuron Model for Disease Prediction Work (Xu et al., 2021). Previous research about a novel method for disease recognition and cure time prediction based on symptom (Shankar et al., 2015). There have also been several research on developing disease risk prediction model base on environment factors (Pak & Shin, 2014). Moreover, there are research that involve Chronic obstructive pulmonary disease (COPD) to predict COPD severity based on clinical data using machine learning (Choi et al., 2021). Nevertheless, one of the research use Convolutional neural network to predict disease risk (Ambekar & Phalnikar, 2018).

5. Conclusion

In conclusion, the development of a disease prediction system based on symptoms can be a valuable tool for healthcare professionals and individuals alike. Such a system can help identify individuals at high risk of developing specific diseases, allowing for early intervention and prevention efforts. Additionally, it can aid in the development of public health policies and interventions, optimize the allocation of healthcare resources and target at-risk groups who may require preventative measures.

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LUNG CANCER PREDICTION USING MACHINE LEARNING TECHNIQUES

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Abstract

Lung, prostate, and colorectal cancers are responsible for up to 45 percent of all cancer-related deaths. Therefore, it is of the biggest significance to recognise or predict it prior to its crucial stages. It is possible to save lives by identifying and treating cancer in its earliest stages. The classification of cancer risks, such as high risk and low risk, is often achieved using statistical methods. When this occurs, it may be very difficult to handle the complex interactions of high-dimensional data. To bypass these limitations, which are caused by the vast size of the data, techniques from the area of machine learning may be used. Therefore, for the aim of this research, machine learning techniques such as K-nearest neighbours, decision tree, and logistic regression were employed to predict the probability of developing cancer.

Keywords: lung cancer, machine learning, classification

1. Introduction

This project's objective is to produce a prediction that makes use of machine learning algorithms in order to forecast cases of lung cancer based on data relating to the symptoms of lung cancer. The problems that were selected for creation of this prediction are meant to help users determine whether or not they have lung cancer based on the symptoms that they have encountered. The categorization is able to provide findings that are more accurate on the basis of the data that was gathered if certain proper methods are used. Among the algorithms that will be used in the process of determining the outcomes of the lung cancer that are connected to the symptoms, Decision Tree, K-Nearest Neighbor, and Logistic Regression will all be included.

2. Methodology

The first thing that has to be done is an analysis of the problem statement so that you can have a better understanding of where the issue originated. Finding information on the topics that are being discussed may be accomplished in a number of ways, some of which include performing research, reading digital newspapers and gathering information from them, and reading. The first thing that software developers do is seek on websites and online platforms like Kaggle for datasets that have titles that are similar to those of the study. Following the process of identifying the relevant dataset, the data that was downloaded was examined in Microsoft Excel's CSV format to see whether or not it could be put to good use. In addition, these data were converted into a data type that is compatible with the Python programming language so that it may be utilised by it. Following the cleaning of the evaluate data, the raw data was then converted into numerical form using the Pandas software. This allowed the data to be used and read by computer languages written in Python. After that, the data were trained using several methods and algorithms for machine learning, such as Decision Tree, K-Nearest Neighbor, and Logistic Regression classifiers. Python was used as the primary programming language, while the Jupyter notebook served as the primary development environment. During this phase, the output of machine learning models was compared using a variety of different sorts of calculations, such as the confusion matrix, in order to measure the level of accuracy achieved.

3. Results and Discussion

This study focuses on the methodologies utilised for data analysis. Several outcomes provided after data analysis may be utilised as a guide and solution to assist individuals or end users in facing and creating early expectations about an issue. Overall, it is anticipated that this initiative would aid stakeholders in finding answers to their problems. Cost and time management are two of the most important considerations in the process of diagnosing an illness. Due to the fact that this forecast may be employed anywhere and at any time, expenses can be decreased and time is regarded as being more cost-effective using this strategy.

4. Novelty of Research / Product

There have been a lot of studies that have been conducted by research. Discovery of an early diagnostic biomarker for lung cancer through the use of machine learning techniques (Xie et al., 2021). Previous study on an innovative ensemble model of classification approach for gene-expression data of lung cancer using a modified genetic algorithm (Chandrakar et al., 2021). In addition, there is research being done regarding an unique comparative study for the detection of Covid-19 on CT lung images utilising approaches such as texture analysis, machine learning, and deep learning (Yasar & Ceylan, 2021). Despite this, one of the studies looked at how machine learning algorithms may be used to analyse gene expression patterns of different lung cancer subtypes (Yuan et al., 2020).

5. Conclusion

This study accomplished its objectives. The research studied the symptoms, causes, and classification of lung cancer. The disease is classed as cancerous or noncancerous based on characteristics extracted from the dataset used for this study. This study use supervised machine learning to classify patients as having or not having lung cancer.

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OBJECT DETECTION MODEL FOR MANGO LEAF DISEASES

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Abstract

Deep learning is part of a broader family of machine learning methods based on artificial neural networks with representation learning. Learning can be supervised, semi-supervised or unsupervised. A deep learning method was used to develop a leaf disease object detection model. However, this project will focus on collecting datasets mango leaf disease images samples from UiTM Harumanis mango tree farm. In addition, this object detection model for mango leaf diseases used the techniques mean average precision (mAP) to performance accuracy and speed of the algorithm. This project would detect mango tree growers' leaf diseases using the YOLOv4 darknet. This model can also be utilised by homeowners that grow mango trees. On object detection, farmers can detect leaf diseases like black sooty molds and white wax scales earlier and treat them. Thus, leaf disease-detecting projects will use this feature to help the users facing this leaf disease problem. This object detection model will also benefit mango farmers and agriculture students. This study will also help farmers monitor several mango trees rapidly.

Keywords: YOLOv4 Darknet, mean average precision (mAP), dataset leaf diseases image samples

1. Introduction

A computer vision technology called object detection helps find and identify things in an image or video. To identify early on the types of leaf diseases found on the mango Harumanis tree and take early action in overcoming the disease of the mango Harumanis leaf tree from suffering from damage. The goal of this project is to make it easier for mango farmers, especially Harumanis, to detect the leaf diseases they face. In order to achieve the aim, the objective is to collect white wax scales and black soothy mold mango leaf images samples, develop early object detection model for leaf disease for mango farmers and evaluate the performance of white wax and black soothy mold object detection model. This project aims to formulate an object detection model for leaf disease by using deep learning techniques.

2. Methodology

However, this project will collect datasets of mango leaf disease images from UiTM Harumanis mango tree farm. To take high-quality leaf disease images, turn an A4 paper box into a mini studio. Additionally, the dataset must be extracted in JPEG format. The dataset needs leaf disease labels. A model can be trained using an image dataset of leaf diseases, along with information on their locations in the image and a label identifying the type of leaf disease each four class represents, such as Athronous, Black Soothy Mold, White Wax Scale, Healthy. The model will list the objects it detects, the position of a bounding box that includes each object, and a mean average precision (mAP) score that indicates confidence in the detection's accuracy and speed.

3. Results and Discussion

This project is developed to focus on object detection model for mango leaf diseases using the best deep learning techniques. The best deep learning techniques are being used in this research to concentrate on object detection model for mango leaf diseases. The mean average precision (mAP) accuracy and speed of deep learning algorithms serve as benchmarks. 150 image samples for each 4 classes were used to create the project's dataset, which was then transformed into the training phase for object detection

model. The result of training will show the performance mean average precision (mAP) of the model development and the analysis can be done to distinguish phrases training is done.

4. Novelty of Research / Product

There have been a number of research that have investigated how to implement object detection, According to Tong & Wu (2022), robot vision, autonomous driving, intelligent transportation surveillance, human-computer interaction, content-based picture retrieval, drone scene analysis, consumer electronics, and augmented reality are just a few of the applications that employ object detection. Darknet has a distinct architecture and set of capabilities than other deep learning frameworks and is mostly used for object detection. According to Carata et al., (2019), the ability to quickly create different network configurations, starting with the original Darknet network, was the other key goal. It is faster than many other Neural Network architectures and approaches like Faster R-CNN etc. Additionally, whereas Darknet architecture & YOLO is a specialised framework and at the top of their game in terms of speed and accuracy, TensorFlow has a wider reach. YOLO can run on the CPU; however the GPU offers 500 times the performance due to CUDA and cuDNN exploitation.

5. Conclusion

This project successfully to collect dataset mango leaf diseases for example White Wax Scale, Black Soothy Mold and Anthracnose, develop early object detection model for leaf disease for mango farmers and evaluate the performance of white wax and black soothy mold object detection model.

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ANALYZING ON HOW FOOD CONSUMPTION CAN AFFECT IN DIABETES

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Abstract

Diabetes is a common well known disease which normally people address it as a disease for old people. But it is not any age specific disease anymore as it began to develop among the youth nowadays. There should be a proper method to educate people about the importance of food consumption in taming down the disease. A proper way should be carried out to address the problem. Glycemic value is one of the important aspect that should be highlight when it comes to diabetes. It should be followed to properly manage daily food consumption. However, it is still not being properly address to the public to properly use. This project aims to provide a dashboard that can help in guiding about diabetes and analyse how food consumption effects on diabetes. Data is collected from various sources from the internet. It will visualize food glycemic value and food consumption trend that will help diabetic and anyone who is curious about the disease to be cautious with daily food intake.

Keywords: *diabetes, glycemic value, dashboard, food consumption*

1. Introduction

There are multiple reasons for people to eat healthy just to avoid or overcome diseases that one might have. Food and diabetes are inseparable which a clear understanding about diabetes and way to handle it is a need. It will prolong diabetes if there is no measurement to slow it down. Therefore, a dashboard that helps in visualizing food glycemic values and data about diabetes is needed to help in educating and giving awareness about the disease and the food needed to tame it.

2. Methodology

Data were collected from two websites for the visualization such as the glycemic value and the country involved in the datasets. Scraping the data is required since it is from websites which will be done using parsehub to scrape. The dataset will then be cleaned using Microsoft Excel before it can be transferred to any storage spaces with the Hadoop Distributed File System (HDFS). The data is then analysed using Hive to aggregate the data to produce more relevant data. Visualization and publishing can be done on Microsoft Power BI.

3. Results and Discussion

In the visualization of food consumed by Europeans, it is confirmed that most Europeans tend to consume food that is high in glycemic value. Death due to diabetes in Europe is the highest compared to the other continent. This could be due to the food consumed by most Europeans as a whole. It shows that some of the countries in Europe consume food that is in moderate amounts of glycemic value. But as the statistics of the death due to diabetes are the highest in Europe, it should be pointed to all the countries in the continent. With that, a usability test was conduct to analyse the dashboard usefulness. The average mean score comes with a 4.41079 which is above the average. Can be conclude that the dashboard is useful and achieved its objective.

4. Novelty of Research / Product

Number of researches have been done to find the connection between food with diabetes which a Study conduct on food nutrition and association with Diabetes Mellitus done by (Wan, 2020) which highlight that a certain type of food nutrition should be reduced and this bring to the ideas of using glycemic value as a measurement for food that can be consumed by diabetic. It is found that there is a positive association between glycemic index and food consumed (Jenkins et al., 2021). In Malaysia, among pregnant woman, one-fifth of women in reproductive age were diagnosed with diabetes which could be due to unbalanced diets and healthy lifestyle (Cheong et al., 2013)

5. Conclusion

In conclusion, we could say that glycemic value does give an impact in determining food that can be consumed by diabetic. The dashboard has achieved the objective of the project with analyzing how food consumption effects on diabetes dashboard. The project did visualize the data appropriately using graph and chart.

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DASHBOARD : RISK PERCEPTION AND TRAVEL SATISFACTION USING PUBLIC TRANSPORT DURING COVID-19

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Abstract

At the beginning of 2020, there was an incident where our world has been attacked with an infectious disease called COVID-19. All human beings are required to maintain mobility and reduce activities outside the home area. In addition, border closures or restrictions on incoming passengers, screening at airports and train stations, and travel advice on areas with community delivery. Nowadays, such things have made it necessary for only a part of society to return to the old norm of working in an existing office or workplace and studying physically. This problem arises when there is a significant change that can also be seen from the shift of public transport selection as the main mode of movement to private vehicles worldwide. This project wants to collect all the data from the answers given by the public transport users themselves. In the meantime, data visualizations were used in this project to show how information was delivered by people.

Keywords: COVID-19,public transport, dashboard, travel

1. Introduction

Objective of the project is to analyze the retrieved datasets regarding people's risk perceptions and satisfaction with public transportation during COVID-19, to design a dashboard and visualize the related data with any type of data visualization, and lastly to evaluate the usability and performance of the dashboard. The scope of the project is to develop a dashboard that can analyse, explicate, and displaying as well as visualize the data about user's risk perception and travel satisfaction of public transport users during COVID-19. This can be used to find the exact information of risk user's perception before the pandemic, during a pandemic, after the pandemic, and what is user satisfaction using public transport toward the current living situation for use by public transportation industry, such as travel agencies and management of public transports.

2. Methodology

In this section, it gives an overview on how the project is planned and developed. This figure illustrates the overview of all the phases that will be used to develop this project. There are four phases in developing this project, which are preliminary study, analysis, development and testing phase. The first phase explains on identifying the problem statements, objective, scope and significance of the project. The analysis phase explains about the related topic of the project and hardware and software used for the project. Next, the development phase explains on how the project was developed and the testing phase explains on identifying the user acceptance and feedback from the user.

3. Results and Discussion

The first section explains on the test method that was used in order to test the usability of visualization in the Risk Perception and Travel Satisfaction Dashboard . The testing was done to gain feedback from actual users. The result of the testing was also elaborated in the first section. The usability testing for was conducted by selecting random 30 participants from UiTM Perlis or from any community including of public transport users to test on the dashboard according to the task given . Moreover, a set of questionnaires was given to the participants after tested the dashboard to gain feedback from them.

4. Novelty of Research / Product

These studies have highlighted that human mobility and interaction patterns directly contribute to the spread of infectious diseases, particularly during pandemics. So, the importance of developing a dashboard in this project is to store and display important information from multiple data sources in one easily accessible place. With the development of technology, especially in 2022 today, with the help of smartphones, tablets, and other mobile technologies, dashboards are also used to convey relevant information to audiences anytime and anywhere. Furthermore, a developed dashboard is used to visually display all the data related to human mobility and interaction patterns and their risk and satisfaction when traveling during the time of COVID-19. This project uses visualizations or data visualization, and dashboards to communicate metrics visually to help users understand the complex relationships in their data. This can help public transport agencies or any travel agency to see what users prefer now and are useful for them to make decisions based on the data displayed in the dashboard.

5. Conclusion

In conclusion, once this dashboard is developed, users and stakeholders can use this platform to see, study, and make improvements in trying to provide transportation to passengers here. The dashboard helps predict the data on the risk and satisfaction of its users, and this is an advantage for the travel agency or its management to be more concerned about the perception of public transport users during the COVID-19 pandemic now and in the future.

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DASHBOARD VISUALIZATION OF MOBILITY COVID-19

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Abstract
COVID-19 is now declared as global pandemic by World Health Organization. These coronaviruses spread among animals and even in humans such as camels, pigs, cats, and bats. COVID-19 stands for Coronavirus disease 2019, it was first identified on 17 November 2019 in Wuhan, China. The symptoms of COVID-19 are some other flu diseases such as fever, sore throat, tiredness, nasal congestion, and headache. It is hard to find out the difference between common flu and COVID-19. Now, this virus is spread out throughout the world. The Dashboard Visualization of Mobility COVID-19 is a graphical data visualization to assist and help people to concerned about COVID-19, gain knowledge about COVID-19 and to make big look at the effect of this diseases since it exists.

1. Introduction

The current COVID-19 pandemic has caused undeniable damages in varying sectors throughout the world, from healthcare, to economy, to education and politics. One of the pressing issues that the spread of this disease has also caused is the corresponding propagation of misinformation and "fake news" on the coronavirus. It is often difficult for people to find streamlined sources of information that are accurate and of high quality as well (MacRohon & Jeng, 2021). The Dashboard Visualization of Mobility COVID-19 will help people to get better understanding for mobility of COVID-19 through graphical visualization dashboard. The dashboard shows cases reported in 2020 and 2021 for cases and death cases, diseases recorded and after vaccination how much cases and death has been reported.

2. Methodology

Data collection for this project is from open sources which are Our World in Data website. From the dataset, graphical visualization will be developed will into an interactive and immersive dashboard using Microsoft Power BI. After dataset has been collected, the raw data need to be cleansed. This is because the data collected has null values and repetitive also some data is not useful for the project. The cleaning process was done by using Microsoft Excel. Additionally, after dashboard have completed, a survey for usability testing has been done using Technology Acceptance Model (TAM) in google form to seeing design problems, spotting areas for improvement, and learning about the behaviour and preferences of the audience.

3. Results and Discussion

According to the testing results, 80% of respondents can learn how to use the dashboard quickly, while 20% are neutral for able to learn how to use the dashboard. 54.2% strongly agree that information in the dashboard is clear, meanwhile 41.7% agree and another 4.2% is neutral to say that the information in the dashboard was clear. As a result of this testing, using the dashboard, people can find out more information related to COVID-19 such as COVID-19 effect in and out of country and what affected the most from COVID-19. The goal of this dashboard is to assist and help people to concerned about COVID-19, gain knowledge about COVID-19 and to make big look at the effect of this diseases since it exists.

4. Novelty of Research

The findings of this projects are revealing that COVID-19 have affect many factors for example age is not a significant factor that affect a person to be captured by this disease, from total case, to find out total deaths and total survive with COVID-19. Next, know how effectiveness of vaccines (from date vaccine, is total cases rise or lower). Moreover, help people to know about COVID-19 thru graphical visualization. Therefore, from this project help people to know more about mobility of COVID-19. when it come into new diseases that COVID-19 is a new thing it is causing people want to know more deeply about it. Thru this project, using dashboard with visualization make it easier for people to read the data with an interesting graphical visualization. It is because if it in essay is less attractive to people to know more about COVID-19. Moreover, using the dashboard, people can find out more information related to COVID-19 such as COVID19 effect in and out of country and what affected the most from COVID-19.

5. Conclusion
To conclude, this dashboard visualization makes it easier for people to read the data with an interesting graphical visualization. It is because if it in essay is less attractive to people to know more about COVID-19. Moreover, using the dashboard, people can find out more information related to COVID-19 such as COVID19 effect in and out of country and what affected the most from COVID-19.

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DEVELOPING GRAPHICAL VISUALIZATION FOR ANALYZING STUDENT ADAPTABILITY LEVEL IN ONLINE EDUCATION

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Abstract

A method or concept of education or learning known as "e-learning" makes use of information technology at any time or place during the teaching and learning process. Early in 2020, the covid-19 outbreak is spreading and having an impact on the educational field. It has also changed how kids learn. As a result, education has undergone a significant transformation. E-learning, or remote learning through digital platforms, has become increasingly popular. The objectives of this project are to create a dashboard and provide useful information about online learning and preparation for future e-learning courses. Analysing the requirements for data analysis of student adaptability level in online learning are one of the project's objectives. Then, the project's objectives also required the project to design and develop an analytical dashboard using Microsoft Power BI. After that, the analytical dashboard will be evaluated. Planning, Analysis, Development, and Implementation are the four steps of the methodology that will be employed in this project. Every activity, technique, and outcome that the project applied to accomplish its objective will be defined during each step.

Keywords: adaptability, online learning, education

1. Introduction

The objectives of this project are to create a dashboard and provide useful information about student adaptability and preparation for future e-learning courses. Analysing the requirements for data analysis of student adaptability in online learning are one of the project's objectives. Then, the project's objectives also required the project to design and develop an analytical dashboard using Microsoft Power BI. After that, the analytical dashboard will be evaluated. Planning, Analysis, Development, and Implementation are the four steps of the methodology that will be employ in this project. Every activity, technique, and outcome that the project applied to accomplish its objective will be define during each step.

2. Methodology

The project techniques are important for comprehending the development process at each stage of the project. For the project's goals to be achieve, every explanation and detail is essential to visualizing the student adaptability level on online education. The project used waterfall methodology and it is divided into the following four phases: planning, analysis, development, and testing. The planned project's approach and methods, as well as the expected outputs of each phase and how they will be achieved, are all described in the project methodology.

3. Results and Discussion

The discussion focuses on the Student Adaptability Dashboard Visualization outcomes and data obtained from respondents. To begin, each of the 30 (UAT) respondents was given a Google Form questionnaire as well as a link to the informational dashboard. In order to complete third objective, this testing phase are very important. The User Acceptance Test (UAT) will be analysed by three section, which is demographic information, perceived usability and perceived user satisfaction. According to

the data, most respondents agree and are satisfied with all aspects of the dashboard evaluated. Most of the response comments has been positive, and the dashboard is simple to understand.

4. Novelty of Research / Product

A method or concept of education or learning known as "e-learning" makes use of information technology at any time or place during the teaching and learning process. Early in 2020, the covid-19 outbreak is spreading and having an impact on the educational field. It has also changed how kids learn. The objectives of this project are to create a dashboard and provide useful information about e-learning and preparation for future e-learning courses. This project will assist persons in the education field in locating the appropriate study and planning resources when enrolled in online courses. This initiative will also help individuals comprehend statistical data analysis better by using visual presentations that will make it more accessible and open to the public. Every activity, technique, and outcome that the project applied to accomplish its objective will be defined during each step.

5. Conclusion

This project met all its objectives, including identifying the requirements and procedures for producing a dashboard visualisation for student adaptation level in online education using Microsoft Power BI. The dashboard can assist both students and instructors in becoming better prepare for online learning with all the information stated about online learning.

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DATA VISUALIZATION ON STUDENT STRESS LEVEL

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Abstract

Stress has become part of students' academic life due to the various internal and external expectations placed upon their shoulder. Therefore, this research is to visualize on student stress level among universities students. The objective of this project is to analyze the retrieved data on the level that affects students' stress, to visualize the stress levels among university students relate to their issues and to evaluate the proposed visualization dashboard on student stress level using User Acceptance Test (UAT). The method used in the visualization is Microsoft Power BI which allows user to search for data, convert, visualize, and share the dashboards that user create to public. Secondary data from Figshare website was selected to obtain a dataset to be studied using a Power BI. This research will also help individuals build strong interpersonal relationships and deal with stress in their everyday lives by using visual representations of statistical data analysis, thereby making it easier and available to everyone.

Keywords: *student stress level, issues, data visualization, Microsoft Power BI*

1. Introduction

The outcomes of this project will assist students to determine their stress levels based on their causes of stress, which will aid students in addressing obstacles relating to their problem and selecting which area or problems they must improve. Following that, to visualize the stress levels among university students in relation to their issues. For example, by seeking strategies for resolving problems and making better judgments in the future through the dashboard created by Microsoft Power BI. Last, the development will evaluate the proposed visualization dashboard of student stress level using acceptance test (UAT) in google form. With the assistance of this initiative, students and others will have a better grasp of how to manage with stress and stay focused while solving problems.

2. Methodology

The System Development Life Cycle, a waterfall approach, will be used for this project. Research methodology is an organized project management process that contains standards, definitions, and descriptions of the procedures used to gather, store, analyze, and show data. The five stages approach employed in this research are the planning phase, the analysis phase, the development phase, the testing phase, and the documentation phase of the data system. Every description and detail are critical in visualizing the effects of student stress, which is essential to fulfil the project's objectives. Also, to aid or enable persons in student life in collaborating by taking action to solve difficulties that students are coping with stress.

3. Results and Discussion

Data visualization is required to gain a better understanding of the effect of student stress. Therefore, this project intended to construct a data visualization using Microsoft Power BI to evaluate the obtained data on the level that influences students' stress. The approach has been established in usability testing to indicate that the responder is comfortable and agrees with every feature of the dashboard assessed. The dashboard created is simple and straightforward to use for the user to obtain information on the causes of student stress levels. Furthermore, the responder response is mostly good, allowing individuals to observe the effect of student stress in better comprehension using a Microsoft Power BI.

4. Novelty of Research / Product

Recently, various research has been done using university students as subjects. According to Ugarte et al., (2019) stress in people is caused by work, studies, economic problems, and family problems among others, and it affects their wellbeing causing deterioration in mental and physical health of the individual. Thus, we should recognize it is significant importance to detect stress before it turns into severe major problems (Mounika et al., 2019). To prevent future adjustment problems, voluntary shut-ins, and school dropouts, the research was comprehended to the lifestyle and amount of stress in university students and to make their problems clear (Tarui & Mizuno-matsumoto, 2009). Moreover, data visualisation is required to gain a better understanding to the effect of student stress level in this dashboard. This initiative will help students who are having problems forming good interpersonal relationships or dealing with stress in their daily life.

5. Conclusion

This study met its goals, which included visualizing student stress levels and obtaining student stress data. The dashboard was efficiently displayed in Microsoft Power BI, allowing users to understand the stress management method. Finally, this study will raise awareness regarding student stress alternatives, which should be of interest to everyone.

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DASHBOARD: DATA VISUALIZATION OF COVID-19 CONFIRMED AND DEATHS IN MALAYSIA (COVIM)

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Abstract

COVID-19 has spread widely in worldwide and Malaysia one of the countries affected. Therefore, there are many people who want to know about the total number of COVID-19 cases that occur in their country. Even though the Malaysia government already provided the website of COVID-19 but there is only one visualization that display on the website. Thus, a real-time COVIM dashboard has been designed and developed a user-friendly tool with variety type of data visualization to better grasp the status of COVID-19 in Malaysia. COVIM dashboard was aimed to be used by researchers, healthcare workers and general public. Therefore, this study proposes to use a Microsoft Power BI as a tool to develop a dashboard system. Furthermore, the method that will be used in developing dashboard system is Waterfall Model. The resulted COVIM dashboard provides important insights that can be used to make informed decisions concerning the spread of COVID-19 in Malaysia.

Keywords: COVID-19, Malaysia, COVIM dashboard, real-time, Microsoft Power BI

1. Introduction

This project refers on how to resolve the issue encountered by the user which is they need to spend more time to read the data COVID-19 manually in the text form. Therefore, this study developed a Dashboard: COVID-19 Confirmed and Deaths in Malaysia or named as a COVIM dashboard to solve the problem that encountered. The objective of this project is (1) To identify suitable visualization method of COVID-19 Confirmed and Deaths in Malaysia, (2) To develop a dashboard visualization of COVID-19 Confirmed and Deaths in Malaysia using Microsoft Power BI, and (3) To evaluate the data visualization of COVID-19 Confirmed and Deaths in Malaysia using User Acceptance Test (UAT). Furthermore, the scope of this study will focus on researchers, health care workers and the public as respondents in this study. And the data of COVID-19 will obtain from public data GitHub MoH-Malaysia where it is a real-time data that is updated daily based on COVID-19 cases in Malaysia.

2. Methodology

This study was implemented using a waterfall method. Waterfall model is the method which phases of the activity are defined based on the thought processes required to conduct the activities (Conger, 2011). There are five phases of methodology in this study: (1) requirement gathering phase, (2) design phase using Balsamiq Wireframes as a prototype software, (3) transformed and clean data phase, (4) build phase using Microsoft Power BI and (5) testing phase using User Acceptance Test (UAT). The project methodology also describes the approach and methods which will be used to deliver the proposed project as well as the deliverables of each phase and how they will be achieved.

3. Results and Discussion

Through this project, there are six types of visualization that used in COVIM dashboard which are (1) Cards visualization, (2) Bubble map, (3) Funnel chart, (4) Area chart, (5) Donut chart, and (6) Table visualization. While, based on the evaluation testing through User Acceptance Test (UAT), about 90% of the respondents are clear and understandable with COVIM dashboard. Moreover, about 95% of the respondents, they are satisfied with a COVIM dashboard and intent to use it again in the future. At the same time, they would like to recommend this COVIM dashboard to their family and friends.

4. Novelty of Research / Product

The uniqueness of COVIM dashboard is a real-time dashboard that update daily cases of COVID-19 in Malaysia based on Ministry of Health Malaysia's data. Moreover, there are many types of visualization that display different information of COVID-19 in Malaysia such as there are bubble map, funnel chart, area chart, donut chart, card visualization and table visualization. Furthermore, COVIM dashboard has a clean and modern interface that better grasp the status of COVID-19 in Malaysia, therefore, COVIM dashboard was provided dark mode and light mode version of the dashboard that users can choose.

5. Conclusion

To conclude, this COVIM dashboard it could help more effectively to people to view the real-time data COVID-19 confirmed cases and deaths cases in Malaysia. Moreover, by using COVIM dashboard, it can be able to predict the future situation of COVID-19 cases in Malaysia that could happen in future. Finally, we can consider that COVIM dashboard can be used in an emergency or in the future.

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DATA VISUALIZATION OF HUMAN STRESS DETECTION LEVEL

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Abstract

Nowadays, everyone is experiencing stress regardless of race, age, and so on either stress in terms of work or learning thus causing a person to suffer from severe mental illness. Mental stress also can lead to mental illnesses like anxiety and depression. The proposed solution is to improve and visualize the data visualization dataset related to the human stress detection level among students with display it on the dashboard using suitable charts. Data Visualization of Human Stress Detection Level among students will visualize the interactive dashboard that contains data from the data set that had been gathered from the Figshare website. This dashboard will visualize the data in a variety of charts to make the users become more productive and clearer. This dashboard visualization will assist the stakeholders in making decisions without hesitation. It is because the dashboard will display accurate information about human stress detection levels among students.

Keywords: stress, data visualization, student, dashboard, level.

1. Introduction

Nowadays, everyone is experiencing stress regardless of race, age, and so on either stress in terms of work or learning thus causing a person to suffer from severe mental illness. Mental stress also can lead to mental illnesses like anxiety and depression (Wang, Fu, Ngai, Leong & Huang, 2019). The project's scope is mainly focused on investigating residents' human stress detection levels, especially the students. It is because everyone has their own problems that cause them stress to handle their problems. Next, this project also focuses on developing the data visualization of the human stress detection level data set using the dashboard. The data set is obtained from the Figshare website. Through the dashboard, this project will provide the output of data visualization of the human stress detection level in the form of a suitable graphic and visualize it clearly. The first objectives in this data visualization of human stress detection level are to extract the human stress detection level dataset among students. In order to know further about data visualization of human stress level is through constructing a dashboard and use multiple charts to visualize the datasets. After that, to evaluate the usability of dashboard regarding human stress level among student with related parameter.

2. Methodology

A questionnaire development, a research design, survey sampling, data gathering, and data analysis will be suggested to conduct the exploratory inquiry. Although this methodology does not give accurate results, it will help the researcher comprehend the current issue better. Because of this, a literature study must be completed before the exploratory investigation can begin to prevent unwanted things from happening. Data is gathered using Google Forms questionnaires to evaluate the human stress detection level. The distribution of the questionnaire and the data collection will involve individuals from age 18 to 65 who have or experienced stress before. The questionnaire is divided into three parts which are Part A contains demographic information about the respondents, Part B contains the core of the questions and Part C will ask the opinion of respondents on the proposed project. All participants are expected to answer the questions truthfully without any influence from any other participants. To thoroughly respond to all the survey's questions will take about 15 minutes. All the information of the participants will be kept confidential.

3. Results and Discussion

According to the usability testing results, 86.9% of respondents are satisfied with the dashboard data visualization, while the remaining 13% are neutral on the scale of satisfaction with the dashboard data visualization. 82.6% of respondents thought the Data Visualization Dashboard as easy to use and the remaining is 17.4%. The user believe that they become productive quickly using in Data Visualization Dashboard Human Stress Detection Level is 82.6% represent 19 respondents while 17.4% is unsure represent 4 respondents. The dashboard data visualization met the objectives that were specified at the beginning of the project as a result of this usability testing.

4. Novelty of Research / Product

This project will provide an outcome where it will benefit those who suffer from stress. It can help in giving a clear picture of human stress detection levels directly. At least, organizations like the Ministry of Health can overcome the stress problems experienced by the residents. It is because there are many types of symptoms of stress, types of stress, and so on. By using the data visualization, we can see clearly the information displayed on the dashboard. To produce the dashboard interesting and clearly display the raw data set, will use the Microsoft Power BI Desktop to visualize it. The residents especially students will benefit from understanding what stress is, what the symptoms of stress are, and other concepts since this project focus on providing an overview of human stress detection levels. Using data visualization can help to improve our comprehension of how sensitive humans are to stress. This data visualization helps to visualize the data set to form a suitable graph or chart, so it will help the people more understand the information displayed on the dashboard to help the residents who are under stress. The residents especially students who are under stress will get benefit from this because them know the causes to overcome of the stress.

5. Conclusion

This research study includes an introduction, a literature review, methodology, the development of a dashboard data visualization about human stress detection level, and the results and findings from usability testing evaluation via the questionnaire. The target of visualizing the human stress detection level using the dashboard was achieved by completing all three objectives which are extracting the human stress detection level dataset among students, constructing a dashboard and using multiple charts to visualize the datasets, as well as evaluating the dashboard's usability regarding human stress levels among students with related parameters.

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DASHBOARD VISUALIZATION ON RENTAL HOUSE DATA IN PERLIS FOR UITM ARAU STUDENTS

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Abstract

Lots of people nowadays finding house for rental especially among the millennials. This include students who are finding for rental house during their period of study. Nowadays, there are various website to find the rental house property on the Internet. Several trusted websites such as Mudah.my for example is one of the platforms for people to find the rental house. However, the current approach of finding the information through the website are lacking in certain ways especially in representing the house details and has incomplete information. Students find it hard to rely on the information as it is confusing and not accurate. This project aims to provide a dashboard visualization of rental house in Perlis that will help specifically on UiTM Arau students to find suitable rental house. Data is collected by surveys from students and extracted from property website. Data visualisation approach is implemented to visualise rental house data and related information that will help students compare the houses and choose their preferred rental house based on the data displayed in the dashboard.

Keywords: *Rental house, Property website, Data visualisation, Dashboard*

1. Introduction

The aim is to provide a visualization dashboard of rental house data in Perlis that will help UiTM Arau students to find suitable rental house. This project will study the requirements and techniques to visualise rental house data and related information using Microsoft Power BI. The evaluation of the dashboard will be based on the usability testing by the end user. The data of rental house will cover around Perlis, mainly in the district of Arau, Kangar and few districts that are near to the campus.

2. Methodology

The data will be extracted through various property website such as Mudah.my by using the method of web scraping. Survey also may be conducted among the UiTM Arau students who lived outside the campus to add more collection on the rental house available. The dataset will be going through transformation and cleaning process before load in for visualisation. The development of this dashboard will be using Microsoft Power BI for the visualisation and interfaces. Appropriate visualization techniques are chosen according to the attributes of data collected that need to be visualized.

3. Results and Discussion

The evaluation of the dashboard has been done with the usability testing among the students and staff. The test is carried out by distributing the questionnaires created in Google Form. Based on the result obtained from the usability test, most of the respondent are satisfied with the dashboard. The findings have shown that the user can utilized the dashboard function and able to gain the information needed on the rental house. The dashboard developed are easy to use and understandable for the user to find the rental house based on their preferences. The students and staff found that the dashboard is helpful in telling the information needed and well-integrated.

4. Novelty of Research / Product

There have been several research that have study the dashboard visualization requirement and development involving residential property data and information. One of the previous research projects from Li Yap (2020) who proposed on developing a dashboard to monitor housing market that are focusing on Kampar area which aim for renters, property investors and existing landlords. It involved with data mining and data analytics to provide an insight to users of the dashboard. There is also research paper by Pongpaichet et al. (2021) that proposed a novel spatio-temporal distribution of residential real estate price monitoring system which to help economists monitoring the situation of the residential real estate market in Thailand focusing on Bangkok district. (Pongpaichet et al., 2021).

5. Conclusion

This study has achieved all the objectives, including establishing the requirements and techniques in developing a dashboard visualization on rental house information using the Microsoft Power BI. The dashboard successfully offers and allows the student to have a better approach in finding the rental house.

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DATA VISUALIZATION OF HIGHER EDUCATION STUDENTS' PERFORMANCE EVALUATION

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Abstract

Data Visualization of Higher Education Students' Performance Evaluation will visualize the interactive dashboard such as the analytical dashboard that containing data from dataset that had been gathered from UCI Machine Learning Repository. In general, this dashboard is developed for the easier use for the university's administrator, decision makers and lecturer especially in making decision about the higher education students' performance after the evaluation has been done. With the existence of the dashboard, it will reduce the time for the decision makers throughout the process of decision making. Besides, the dashboard visualization is develop using Software Development Methodology. Thus, this dashboard visualization will assist the stakeholders in order to making decision better and effective.

Keywords: higher education, performance, dashboard, university, decision-makers

1. Introduction

Data Visualization of Higher Education Students' Performance Evaluation is a analytical dashboard that visualize the dataset that have been obtained. The objectives of this development of dashboard visualization are firstly to extract the dataset of the higher education students' performance evaluation. Next, to visualize the dataset using data visualization techniques by designing a dashboard with the various forms of charts and lastly, to evaluate the dashboard usability by how it performs in visualizing the data. The dashboard is useful for university's administration, lecturers, students and also decision makers related to higher education for keep track of their students' performance from time to time so that they can plan ways on how to keep improving their students' performance.

2. Methodology

The research design will be conducted via an online survey by using the Google Forms to distribute the questionnaire about the questions related to the higher education students and the functionality of the dashboard visualization for the users. Before the participants answer the questionnaire, they will give some time to explore the dashboard visualization to understand how it works. The participants who related to higher education from the age group of 18 to 65 are the individuals that are required to answer this questionnaire. The participants will be explained first about the instructions and objectives of this research on how to answer this questionnaire. Only 15 minutes required for the participants to answer this survey. Participants need to read the consent and agree with it first and all of the information provided will be kept confidential and for the research purpose only. The questionnaire consists of three parts which are Part A is respondent's demographic data, Part B about the main questionnaire and Part C about the recommendation for future improvement. The distribution of the questionnaire will start in January 2023 until February 2023. The format of the questionnaire is referred from the Post-Study System Usability Questionnaire (PSSUQ). PSSUQ is frequently used for measuring the user's perceptions of how satisfied they are with a website, product or system at the conclusion of a research (UIUX Trend, 2023).

3. Results and Discussion

Based on the usability test that have been done, there are 72.7% respondents has the experiences in using the analytical dashboard while 27.3% respondents have no experiences about the analytical dashboard. Besides, 72.7% respondents agreed if this dashboard visualization will help the university's administration, decision makers related to higher education and lecturers to monitor and making decision about the students' performance and 27.3% respondents think maybe the dashboard visualization will helps the stakeholders while there are no responses for respondents who thinks this dashboard will not helps the stakeholders. In addition, 54.5% respondents strongly agreed that the dashboard visualization is easy for them to find the information that they need meanwhile only 45.5% of the respondents only agreed with the statements. Therefore, the development of this dashboard will give many beneficial to the stakeholders.

4. Novelty of Research / Product

This data visualization for the higher education students' performance evaluation is beneficial for many parties. The evaluation results can be visualized in the dashboard. From the dashboard, it will display the outputs for the students' performance whether they are performed or otherwise based on the evaluation from the three main indicators; personal background, education patterns and students' performances. Usually, evaluation results from the dataset can be easily understood if it is visualized using data visualization. This is because the end-users can identify the trends of the dataset that will be represented in many ways. The attributes used in the dataset can be seen clearly in the data visualization so users can have the better insight for the dataset.

5. Conclusion

With the existence of the Data Visualization of Higher Education Students' Performance Evaluation, it can be concluded that the dashboard will helps the university in monitoring and keep tracks on the students' performances. Lastly, the teaching and learning method in higher education will be improved from time to time based on the students' performance.

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FUZZY ANALYTIC HIERARCHY PROCESS TO STUDY THE IMPACTS OF OPEN DISTANCE LEARNING ON UiTM PERLIS STUDENTS

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Abstract

On March 18ᵗʰ 2020, the Malaysian government imposed a Movement Control Order (MCO) due to the high infection rates of COVID-19. This new disease had a significant impact on several aspects namely economic, educational and social aspects. During the lockdown, the entire education system, from primary to higher education, collapsed not only in Malaysia but worldwide. Teaching and learning methods have also been changed from traditional methods to online distance learning in order to reduce the spread of the Corona virus. Although distance education is convenient, there are some obstacles that students have to overcome. The main objective of the study is to identify the main impacts of open distance learning (ODL) on UiTM Perlis students using Fuzzy Analytic Hierarchy Process. Therefore, the use of Fuzzy Analytic Hierarchy Process was proposed in this study. Fuzzy Analytic Hierarchy Process (FAHP) is a method of Analytic Hierarchy Process (AHP) developed using fuzzy logic theory. This study found that the greatest impact of ODL on UiTM Perlis students is time spent learning, followed by sleep patterns, student performance, engagement to learn and mental health. The results of the study show that the greatest impact of Open Distance Learning (ODL) on UiTM Perlis students is the time they spend learning.

Keywords: ODL, COVID-19, student, impact

1. Introduction

During Covid-19 hit, the learning mode was switched from physical to online. This is to prevent the Covid-19 epidemic from spreading. During distance learning, there are various challenges faced by students to undergo the learning process. Therefore, this study will focus on finding out the impacts of Open Distance Learning (ODL) on UiTM Perlis student. Students from Faculty of Computer and Mathematical Sciences from UiTM Perlis was chosen to be the respondents for this study. The main goal of this study is to determine the main impacts of ODL on UiTM Perlis student. This study was analyzed using the Fuzzy Analytical Hierarchy Process.

2. Methodology

Data was collected through a questionnaire. Then, Fuzzy Analytic Hierarchy Process was used to analyze this study. There are nine steps that used in this study to get the objectives of this study which is to determine the goal, construct a hierarchical structure model, construct the pairwise matrix, check the consistency ratio, aggregated fuzzy number for criteria, updated pairwise comparison matrix for criteria, the weight vector calculation, defuzzification, and normalization and final ranking.

3. Results and Discussion

According to the findings, the most factor that contributes to the impact of Open Distance Learning is an assignment deadline. While, lack of socialization is the second factor and family problems are the third factor that gives effects on respondents that contributes to the impacts of Open Distance Learning (ODL). In addition, internet connection, learning environment and financial problem is the least factor that contributes UiTM Perlis students to the impact of ODL. This research also determined the rank which impacts are most impactful to students during ODL. Based on the evaluation criteria, time spent

studying is the most impact of ODL for UiTM Perlis students followed by sleep pattern, the student's performance, engagement to learn and mental health. The findings are consistent with a few previous research that found time spend studying has an impact on student during ODL and the factor that contribute to the impact is because of assignment deadline, lack of socialization and family problems.

4. Novelty of Research / Product

There have been a number of research that have investigated what are the major cause of stress towards distance education student and perceived stress among students during ODL (Kwaah & Essilfie, 2017; Mariyah et al., 2021). There have also been some research on online learning experience and student's perspective towards ODL (Noori & Noori, 2021; Al-mawee et al., 2021). Previous research about the impact on distance learning on psychology and study habits was done (Alomyan, 2021; Aristeidou & Cross, 2021). However, there has not been any research on the impact of ODL that not focus to one aspect and the factor that contribute to the impact. Therefore, this research aims to know what the impacts that students faced during ODL and what the factor that contribute to the impacts.

5. Conclusion

This study investigated five impacts of Open Distance Learning on UiTM student Perlis which are mental health, student's performance, engagement to learn, sleep pattern, and time spent studying. Furthermore, six criteria have been studied, including financial problems, internet connection, a lack of socialization, assignment deadlines, family problems, and learning environment.

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FORECASTING UNEMPLOYMENT RATE IN MALAYSIA: COMPARISON BETWEEN ARIMA AND FUZZY TIME SERIES

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Abstract

According to Malaysia Labour Force Survey, the definition of unemployed is the person who was available for work but did not work during a reference period. Unemployment occurs when a person is available for work and actively looking for work but cannot find one. As unemployment is a gauge of economic health, a higher unemployment rate will negatively affect the labour market. In 2020, a new virus known as Coronavirus spread all through the world. According to the World Health Organization (2020), Covid-19 began as a localized health crisis but quickly became a global health crisis with severe economic consequences. Regarding Malaysia Informative Data Centre (MysIDC), the unemployment rate in Malaysia has rosily increased by 1.3% from 3.3% in 2019 to 4.6% in 2021. It will affect the country if it keeps increasing for the following year. Because of that, this study wanted to find the best model to forecast the unemployment rate. This study focused on the unemployment rate in Malaysia from 1982 to 2021. Two models; ARIMA and Fuzzy Time Series, will be used to determine which is better for forecasting by finding the minor error value. The result shows that the ARIMA (1,1,0) model better forecasts the unemployment rate than Fuzzy Time Series since it shows the smallest value for MAPE and MSE.

Keywords: ARIMA, Forecast, Fuzzy Time Series, unemployment rate

1. Introduction

The unemployment issue is one of the most common problems faced by many countries worldwide. When the country has inflation or any crisis, it will affect the company in that country. During the pandemic because of Covid-19, the Malaysian government imposed a Movement Control Order (MCO) to control the outbreak. As a result, many companies are allowing employees to work from home and some of the employees lost their jobs because the corporations wanted to minimize operational expenses. Hence, the study's primary goal is to find a suitable model to predict the unemployment rate in Malaysia. This study used secondary data of the unemployment rate in Malaysia from 1982 to 2021.

2. Methodology

The secondary data were collected from the government website (MysIDC). This study compares ARIMA and Fuzzy Time Series models toward the unemployment rate in Malaysia. Two error measures, Mean Square Error (MSE) and Mean Absolute Percentage Error (MAPE), were used to evaluate the best model to predict the unemployment rate. Firstly, the unemployment data were analyzed using the ARIMA model. We ran five possible ARIMA models and verified that ARIMA (1,1,0) is the best model due to the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC). In the second step, the data was analyzed using Fuzzy Time Series and got the error measure value. Lastly, we compared the ARIMA and Fuzzy Time Series model using the error measure obtained. The model with the lowest value of error measure indicates the best model to predict the unemployment rate in Malaysia.

3. Results and Discussion

The result found that the MSE and MAPE for the ARIMA model are 0.1491 and 7.1549, respectively. While Fuzzy Time Series results showed that MSE 0.2519 and MAPE 12.4772. Based on a comparison for the model of ARIMA and the Fuzzy Time Series, both error measure value for the ARIMA model is lower than Fuzzy Time Series. Therefore, it concludes that the Arima model is the best model to forecast the unemployment rate in Malaysia.

4. Novelty of Research / Product

A few studies have conducted the study case about the unemployment rate in Malaysia but using different models. Wang (2009) used Artificial Neural Network to forecast the unemployment rate in China and found that neural network is okay in predicting but hard to choose one to do the work. S. F. Ramli et al., (2018), compared ARIMA and Holt's Exponential Smoothing Method. They discovered that ARIMA (2,1,2) model is the best model compared with Holt's method. Dritsaki (2020) studied the unemployment rate in Greece using Sarima Model and concluded that the forecast value's result.

5. Conclusion

The main objective of this research is to find a suitable model to use to predict the unemployment rate is achieved. The best model to use is ARIMA (1,1,0) which has the smallest value among the other models. Since ARIMA (1,1,0) is the suitable method, the Malaysian Government can use this model to predict the rate of the unemployment rate for 2023.

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STAGNATION POINT FLOW OF NANOFLUIDS OVER STRETCHING/SHRINKING SURFACE WITH HEAT SOURCE/SINK AND CONSTANT WALL TEMPERATURE

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Abstract

This study presents a problem of nanofluid stagnation point flow over a stretching/shrinking sheet with impacts from heat source/sink and constant wall temperature. By using appropriate similarity transformations, the governing partial differential equations are converted into nonlinear ordinary differential equations. The Runge-Kutta-Fehlberg (RKF) and shooting methods are then used to numerically solve these equations for the relevant parameters. In this study, three different types of nanoparticle copper Cu, alumina Al_2O_3, and titania TiO_2 are used in a water-based nanofluid. The numerical solutions for the skin friction coefficient $C_f Re_x^{1/2}$, heat transfer rate $Nu_x Re_x^{-1/2}$, velocity profiles $F'(\eta)$, and temperature profiles $\theta(\eta)$ affected by the stretching/shrinking parameter λ, the heat source/sink parameter β, and the nanoparticle volume fraction ϕ are graphically represented and further discussed.

Keywords: *Runge-Kutta-Fehlberg (RKF), shooting, nanoparticle, skin friction coefficient, heat transfer rate*

1. Introduction

The study of heat and mass transport is gaining popularity among researchers due to its relevance in everyday life. It is significant in the engineering, medicinal, and other fields. Many researchers have conducted research on boundary layer flow over a shrinking sheet. It is because this flow generates turbulence and then the flow is not free to move over a boundary surface consequently, the problem appears that there we need to have an external force which helps to flow easily. When the external force is limited, the influence of suction is appropriate. The primary of this study is to investigate the stagnation point flow of nanofluids over stretching/shrinking surface with heat source/sink and constant wall temperature. The scope of study is limited to looks into steady, two-dimensional incompressible laminar boundary layer flows over stretching or shrinking sheets with heat source/sink in nanofluid. The governing equations for each problem investigated are changed to ordinary differential equations using the similarity transformation. The resultant similarity equations are then numerically solved using the shooting method.

2. Methodology

The similarity transformation is used to convert the nonlinear partial differential equations into a system of nonlinear ordinary differential equations. To solve the reduced nonlinear ordinary differential equations, the shooting method, RKF, and Newton Raphson correction are used. The numerical methods employed in this study were created using Maple software.

3. Results and Discussion

The numerical results are presented in tables and graphs for the skin friction coefficient and heat transfer rate number as well as the velocity and temperature profile for a range of various parameters such as

nanoparticles volume fraction, stretching/shrinking parameter and heat source/sink parameter. As a result, skin friction coefficient decreases with heat transfer rate decrease for all combinations of nanofluids when stretching/shrinking parameters increase. The skin friction coefficient of $Cu\,H_2O$ is higher than $Al_2O_3\,H_2O$ and $TiO_2\,H_2O$ when varying stretching/shrinking parameters. Next, the skin friction coefficient does not change while heat transfer rate decreases for all combinations of nanofluids when heat source/sink parameter increases. Furthermore, heat transfer rate of $Cu\,H_2O$ is higher than $Al_2O_3\,H_2O$ and $TiO_2\,H_2O$ when the heat source/sink parameter varies. The outcomes show that the heat transfer rate of $Cu\,H_2O$ is higher than other nanofluids because the thermophysical properties of Cu solid particles are the highest among the others. Last but not least, the results indicate that the solid volume fraction affects the fluid flow and heat transfer characteristics.

4. Novelty of Research / Product

To the best of the authors' knowledge, only one previous study used HAM to solve similar equations and boundary conditions, emphasising the novelty of the current work. Furthermore, no radiation effects were considered in the previously stated paper. This mathematical method is briefly described, along with its specific application to the issue being studied. Additionally, no nanoparticles $TiO_2\,H_2O$ in Ibrahim et al. (2013). Therefore, this study continues the work by including the effect of heat source/sink and stretching/shrinking parameter of boundary condition on the steady two-dimensional laminar boundary layer flow.

5. Conclusion

Stagnation point flow of nanofluids over stretching/shrinking sheet with heat source/sink impacts, as well as constant wall temperature had been numerically assessed. The numerical results are presented in tables and graphs for the skin friction coefficient and heat transfer rate number as well as the velocity and temperature profile for a range of various parameters such as nanoparticles volume fraction, stretching/shrinking parameter and heat source/sink parameter.

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EVALUATION OF FORECAST PERFORMANCE OF COVID-19 WITH DIFFERENT TIME HORIZONS

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Abstract

The first wave of the disease in Malaysia from 25 January to 16 February 2020 involved 22 cases. Accurate forecasting of COVID-19 case movements is crucial for the preparedness of the country's health systems in terms of outbreak management and resource planning. The study's main goal is to generate the forecast values for COVID-19 cases in Malaysia by using forecasting models Data from the Malaysia's Ministry of Health (MOH) have been obtained from 2020 to 2022 with 1016 observations. This study aims to determine the best "win" model and produce forecast values by using Time-series Cross-Validation. Five models and three error measures have been implemented in this study. There are Naïve model, Mean Model, Single Exponential Smoothing Technique, Holt's method, and Box-Jenkins model. While the error measures used are Root Mean Square Error (RMSE), and Mean Absolute Error (MAE) and Mean Absolute Scale Error (MASE). To execute these models, RStudio software is based on R programming language 4.2.2. The results show that the best "win" model for COVID-19 cases in Malaysia is Naïve model, Single Exponential Smoothing Technique, Holt's Method and ARIMA(0,0,0) and mean model, respectively. The finding of this study will improve Malaysians' decisions and awareness.

Keywords: COVID-19, error measure, Time-Series Cross-Validation

1. Introduction

Threat of COVID-19 in Malaysia rose when Malaysia's neighboring country, Singapore, declared its first COVID-19 positive case on 23 January 2020. The first wave of the disease in Malaysia from 25 January to 16 February 2020 involved 22 cases. Accurate forecasting of COVID-19 case movements is crucial for the preparedness of the country's health systems in terms of outbreak management and resource planning. The study's main goal is to generate the forecast values for COVID-19 cases in Malaysia by using forecasting models.

2. Methodology

Data was collected from 2020 to 2022 with 1016 observations from the Official Github account of Malaysia's Ministry of Health (MOH). Research findings evaluate the COVID-19 cases have used five forecasting models which are the Naïve model, Mean Model, Single Exponential Smoothing Technique, Holt's method, and Box-Jenkins model. The forecasting process is prepared with Microsoft Excel and this study completed by using R Studio. There are three time horizons were selected for this study that are daily (short-range forecasting), weekly (medium-range forecasting) and monthly (long-range forecasting). At the beginnings of data modelling, the data have divided into estimation part and evaluation part to get the accuracy of forecast values.

3. Results and Discussion

As a result of this study, the forecasting methods used in this study which is Time-Series Cross-Validation to predict COVID-19 cases is suitable since the error measure of each method can be analysed. The results show that the best "win" model for COVID-19 cases in Malaysia is Naïve model, Single Exponential Smoothing Technique, Holt's Method and ARIMA(0,0,0) and mean model, respectively. Government agencies will be able to address the impact and awareness of COVID-19 cases earlier if Malaysia can predict the occurrence of the COVID-19 cases more accurately.

4.   Novelty of Research / Product

There are many methods in forecast infectious diseases or pandemic, such as COVID-19 cases. This study create a new idea, which is proposed five statistical methods in order to forecast COVID-19 and evaluate each of the prediction methods. Previous researchers have attempted to forecast patterns in the future of unknown infectious diseases so that public health services can be prepared and can plan their responses (Petropoulos et al., 2022). Therefore, forecast of COVID-19 cases should be improved day by day to help the government agencies create plans for the future. This is line with previous study that compared forecast results based on three different time frames to prepare the government to make well-informed decisions to control COVID-19 and ease the way for the new-normal in the community (MA et al., 2020). All in all, the research aims to contribute to the government agencies in making decision for the future.

5.   Conclusion

Accurate forecasting of COVID-19 case movements is crucial for the preparedness of the country's health systems in terms of outbreak management and resource planning. This study's main goal, to generate the forecast values for COVID-19 cases in Malaysia by using forecasting models has been achieved. This study proposes to adapt Time-Series Cross-Validation to get better accuracy of the predictions.

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SELECTION THE TYPE OF INVESTMENT IN MALAYSIA USING FUZZY ANALYTIC HIERARCHY PROCESS (AHP)

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Abstract

Everyone has their own preference and unique choice of investment based on their desire, needs and goals. But nowadays, in the present day of the financial market, investment has become complicated especially for youth because there is a lack of knowledge about investment. Thus, this study is to choose the best type of investment by using Fuzzy Analytical Hierarchy Process. Besides that, the process to achieve the main objective of this study is to study the criteria for selecting the best type of investment and to rank the merit of criteria and alternatives by using Fuzzy Analytical Hierarchy Process. This study is using the Fuzzy Analytical Hierarchy Process method to determine the degree of uncertainty when converting human preferences into a score based on various selection criteria in investment. Based on the result shows that gold is the best investment for the investor to invest their assets at the moment.

Keywords: Fuzzy Analytical Hierarchy Process, investment, financial market

1. Introduction

Investment can be defined as when an individual saves current financial resources for future consumption by investment products. Numerous investment alternatives are available, including banks, fixed deposits, government bonds, the stock market, real estate, gold, and mutual funds. However, there are still a lot of people lacking in knowledge in investment and there is limited research about investment decision making. The aim is to choose the best type of investment by using the Fuzzy Analytical Hierarchy Process. This study used data collected from expertise in investment. The purpose of this study is specifically aimed for Malaysian citizens who want to invest their assets.

2. Methodology

Analytic Hierarchy Process (AHP) is a decision support approach developed to solve problems by breaking them down, grouping them, and then arranging them in a hierarchical framework. There are 8 steps in the Fuzzy AHP method. The first step is to formulate the hierarchy tree. In order to proceed to the second step, an interview had been conducted to two experts and the result had been calculated according to the steps. The fuzzy pairwise comparison matrix and the consistency need to be calculated in order to get the analysis of the best investment.

3. Results and Discussion

Based on the calculation, it can be concluded that investment on gold is the best investment that can be made to protect the investor during stock market declines and inflation. In fact, history shows that the performance of gold goes up in times of high inflation. The data was analysed using Fuzzy AHP that can be calculated using Microsoft Excel. The result was obtained when Gold has the highest value of scores of alternatives with respect to the related criterion. According to this study, it is shown that considering capital, profit, risk and sustainability of the investment are appropriate and relevant for use as a consideration in choosing the best type of investment in Malaysia.

4. Novelty of Research / Product

There is a limited amount of research before that study the selection of investment using Fuzzy AHP especially in Malaysia. However, there is a series of recent studies that have indicated the application of fuzzy if-then rules for a decision support system in stock trading. The three linguistic factors listed below may be used as input for the rule: expert opinion, earnings-per-share, and price-to-earnings ratio. The goal of this guideline is to help investors make stock selection decisions. Investors must make the appropriate judgment to make a significant profit in stock trading. (Mahmood et al.,2010). Besides that, In 2017, Emrouznejad & Marra (2017) chose AHP for the current study is to highlight the attention being paid to AHP by scholars working in various fields, to demonstrate how AHP is influencing multiple disciplinary contexts, and to demonstrate the utility and power of AHP as a method for assessing decision-makers in disparate fields. Therefore, the main focus of this study is to choose the best type of investment by using Fuzzy Analytical Hierarchy Process.

5. Conclusion

Fuzzy Analytical Hierarchical Processes are widely used for management fields especially for selection processes. This study has proved that Fuzzy AHP can also classify each of the criteria and can rank all the alternatives.

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PREDICTING STROKE USING ANT COLONY OPTIMIZATION ALGORITHM

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Abstract

Statistics from Malaysian government hospitals have revealed that there is an increase in stroke cases from year to year. Stroke illness detection requires additional work; however, it is not a simple process. Since the rule list for Ant-Miner is supposedly shorter than that of other rule induction techniques, this study employed it to predict stroke disease. Ant-Miner is an approach for ant colony optimization with data mining. The aim of this study is to develop a classification model for predicting stroke. Using WEKA as a tool, the data set is discretized by changing the numerical attributes to the nominal attributes. The dataset was then processed through the Gui Ant-Miner to discover the patterns and the degree of accuracy in predicting stroke condition. Later, J48 is used to compare the accuracy of Ant-outputs Miner's in order to improve classification. To observe variations in accuracy, the number of rules, and the number of conditions, the dataset was run using a range of ants, from 50 to 250. When the minimal case per rule value was changed, rules and condition number were also observed. Due to the test's low bias and variance, the cross-validation number was set at k=10 times throughout. Other parameters, such as the maximum number of uncovered instances and the convergence rules were kept at 10 and 100 respectively.

Keywords: ant miner, stroke, J48

1. Introduction

Stroke is a non-negligible global health problem. The third most common cause of death in Malaysia is a stroke (Tan & Venketasubramanian, 2022). The stroke dataset used in this study is provided by Fedesoriano et al., (2020) which is available on Kaggle. The set of data consists of 5,110 observations and 12 attributes. Each patient is classified as positive or negative. The data also includes characteristics and symptoms of stroke patients. Comprehending the problem, understanding the data, modelling, assessing the results, and implementing the model are all part of the research process. By choosing these attributes, it helps the agency or hospital to detect which patient is at risk of having a stroke. The main objective of this study is to develop a classification model to predict stroke using the ACO algorithm and the specific objectives of this study are to pre-process the dataset, train data using ant colony optimization and to validate the classification model.

2. Methodology

The method begins with the preparation of data, the data is prepared before use. The ant colony method needs to be carried out by nominal variables for classification, they will first be converted to discrete values consisting of quantitative and continuous variables. It will be examined with the help of the GUI Ant-Miner system. Next process is data pre-processing. It presents the data description of this study in an ideal form for modelling. Then the original data was discretised using the Waikato Environment for Knowledge Analysis (WEKA). After that, next process is model development which is the data will be trained in Ant-Miner to develop a set of classification rules. Lastly, for the model validation, Ant-Miner accuracy will be compared against the J48 accuracy. The prediction accuracy of an algorithm determines its excellence.

3. Results and Discussion

As a result of this study, the Ant-Miner method is excellent for creating a classification model to predict stroke since it can train the data several times to get the greatest percentage accuracy. Ant-Miner found

a rule set that is more accurate than the rule set found by J48. This study's findings may be summarized as the predictive accuracy by Ant-Miner is 95.24% while J48 accuracy is 95.13%, the lowest rule number is 10.10 and the lowest number of conditions is 15.2. To conclude, it can be said that the Ant-Miner algorithm is capable of predicting stroke disease among patients.

4. Novelty of Research / Product

We proposed a particular solution based on ACO for a new idea of combining prediction models. The combination process is driven by data reflecting the context where the resulting prediction model will be applied. The ACO algorithm may be used by doctors and healthcare organisations to create a classification model for predicting strokes. The combinatorial complexity of our solution was helped by an ACO algorithm, Ant-miner customized for combining J48. ACO algorithms are strongly dependent on the choice of well working greedy functions for the problem to be solved (Rodríguez Corominas et al., 2023).

5. Conclusion

It can be concluded that the Ant-Miner algorithm is effective in foretelling the risk of stroke in patients. The primary objective of this study is to develop a classification model for the detection of stroke using the Ant-Miner version of the ACO algorithm. The purpose of the Ant-Miner is to identify the classification rules in the datasets. After pre-processing the dataset for stroke, the dataset is trained using ACO before proceeding with the validation of the classification model. After finish the research, all the objective has been achieved.

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STAGNATION POINT FLOW OF HYBRID NANOFLUIDS OVER STRETCHING/SHRINKING SHEET WITH HEAT SOURCE/SINK AND CONSTANT WALL TEMPERATURE

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Abstract

In this research, the problem of stagnation point flow of hybrid nanofluids over stretching/shrinking sheet with heat source/sink impacts, as well as constant wall temperature is presented. The governing partial differential equations are transformed into nonlinear ordinary differential equations by applying suitable similarity transformations. These equations are then solved numerically using the Runge–Kutta–Fehlberg (RKF) method for some related parameters. For this research, the water-based nanofluid is considered with five types of nanoparticles: copper (Cu), alumina (Al_2O_3), silver (Ag) titania (TiO_2) and iron (Fe_3O_4). The numerical solutions on the skin friction coefficient, $C_f Re_x^{1/2}$, Nusselt number, $Nu_x Re_x^{-1/3}$, velocity profiles, $f''(\eta)$ and temperature profiles $\theta(\eta)$ influenced by the shrinking parameter, λ, the heat sink parameter, β, the first nanoparticle volume fraction, ϕ_1 and the second nanoparticle volume fraction, ϕ_2 are graphically displayed and discussed in more details. As a result, skin friction coefficient, $C_f Re_x^{1/2}$ decreases while heat transfer rate, $Nu_x Re_x^{-1/3}$ increase for all combinations of hybrid nanofluids when stretching/shrinking parameter, $(\lambda > 0, \lambda < 0)$ increase.

Keywords: *hybrid nanofluid, stretching/shrinking, heat transfer, heat source/sink.*

1. Introduction

The primary objective of this study is to investigate the stagnation point flow of hybrid nanofluids over stretching/shrinking sheet with heat source/sink and constant wall temperature. The study focuses on problems involving steady, laminar two-dimensional incompressible laminar boundary layer flows of hybrid nanofluids over stretching/shrinking sheet with suction in hybrid nanofluids. The governing equations for each problem are converted to ordinary differential equations (ODE) by applying the similarity transformation. The resulted similarity equations then solved numerically using Runge-Kutta-Fehlberg (RKF) methods. For the sake of simplicity, all the problems in this research proposal are limited to two-dimensional flows.

2. Methodology

The nonlinear partial differential equations are converted into a system of nonlinear ordinary differential equations using the similarity transformation. RKF and Newton Raphson correction are used to solve the reduced nonlinear ordinary differential equations. The numerical methods used in this study are programmed in Maple software.

3. Results and Discussion

The numerical results are presented in tables and graphs for the skin friction coefficient and local Nusselt number which represents the heat transfer rate at the sheet as well as the velocity and temperature profile for a range of various parameters such as nanoparticles volume fraction, stretching/shrinking parameter and heat source/sink parameter. As a result, skin friction coefficient

decreases while heat transfer rate increase for all combinations of hybrid nanofluids when stretching/shrinking parameter increase. The skin friction coefficient of $Al_2O_3 - Cu$ / water is higher than $Cu - Al_2O_3$ / water , $Ag - TiO_2$ / water and $Fe_3O_4 - Ag$ / water when varies stretching/shrinking parameter. Next, the skin friction coefficient does not change while heat transfer rate decreases for all combinations of hybrid nanofluids when heat source/sink parameter increase. Furthermore, heat transfer rate of $Fe_3O_4 - Ag$ / water is higher than the other hybrid nanofluids when varies stretching/shrinking parameter while the heat transfer rate of $Ag - TiO_2$ / water is higher than the other three hybrid nanofluids when varies heat source/sink parameter.

4. Novelty of Research / Product

To the best of the authors' knowledge, in only one previous study were similar equations and boundary conditions solved via HAM, highlighting the novelty of the current work. Additionally, no radiation effects were taken into consideration in the aforementioned paper. A short description of this mathematical method is given together with its specific application for the problem studied. Additionally, no combination of hybrid nanofluid of $Al_2O_3 - Cu$ / water , $Ag - TiO_2$ / water and $Fe_3O_4 - Ag$ / water in Jamaludin et al. (2020). Therefore, this study continuous the work by including the effect of heat source/sink and stretching/shrinking parameter of boundary condition on the steady two-dimensional laminar boundary layer flow past a Blasius and Sakiadis in a hybrid nanofluid by using Tiwari and Das (2007) model.

5. Conclusion

The outcomes show that the heat transfer rate of $Fe_3O_4 - Ag$ / water is higher than other hybrid nanofluids because the thermophysical properties of Ag solid nanoparticle is the highest among the others.

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ANALYSING THE EFFICIENCY OF LOCAL AND FOREIGN CARS IN MALAYSIA USING DATA ENVELOPMENT ANALYSIS (DEA)

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Abstract

The most important aspect in choosing your car is quality and durability and most people tend to ignore them as the car visualisation and well-known car seems to be the more important point. On the other hand, different size of wages for each individual shows that there is a specific car that matched their ability to pay and still have an impressive balanced in their bank account. This research helps people to value all the car that suits them by using Data Envelopment Analysis (DEA). DEA is a non-parametric approach used to analyse the relative efficiency of decision-making units (DMUs) under conditions where multiple inputs and multiple outputs are present. All the data on cars' specifications have been collected and converted to DEA-Solver, a software that measured the car's efficiency and effectiveness. ZIGWHEELS website is the platform for choosing all those cars and 25 cars had been chosen according to their best car in each segment (sedan, hatchback, MPV, and SUV) between 2020-2021 along with the specifications found on WAPCAR websites. The inputs and outputs chosen are top speed, horsepower, torque, safety recognition, price, service cost, fuel consumption, and engine capacity. As the result, few cars do not reach the efficiency value of 1 or inefficient DMUs, therefore, helping people to choose cars of their own and can save some time in choosing which car is the best for them.

Keywords: car, efficiency, DEA

1. Introduction

The main objective is to evaluate the overall car performance in Malaysia involving both local and foreign cars. This study has a specific goal of measuring the efficiency of cars and ranking the cars in Malaysia using the Data Envelopment Analysis method based on chosen factors. This study focuses on using the Data Envelopment Analysis (DEA) method to determine the car's efficiency and effectiveness. The secondary data is collected from the ZIGWHEELS website based on the best car from each category and the specification of the car is collected from the WAPCAR website.

2. Methodology

The data to know which cars are currently top in the Malaysian market and demand was collected through the ZIGWHEELS website and divided into two categories local and foreign cars. In addition, the car has been sub-categorized into four different car types: hatchback, sedan, MPV, and SUV. 25 different cars were chosen based on popularity and price suitability for various income Malaysians. The value is all in numbers for each specification, but it came up with an inconsistent size of the value, so it was done through data normalization to make it consistent. This project is carried out in two stages. Instead of physically measuring the DEA formula, new computing methods have been developed. Microsoft Excel is the optimal tool for

measuring output using the DEA approach. Excel's solvers, such as the DEA solver, will optimize any required formulation, whether linear or non-linear.

3.   Results and Discussion

There more than half of the cars chosen reach the efficiency value of 1 showing that the buyer will have more choices to own their next car or their first car. However, surprising results show that famous cars such as Myvi, Alza, and City did not reach the efficiency value of one and were considered inefficient DMUs proving that not all famous and fancy car is efficient if we take more important specifications into account. As of result, we can see that DEA is a good method for analysing and measuring car efficiency. From each sub-category, there are one or two cars that do not achieve the efficiency value of 1. Therefore, only one car will be taken to show how to implement the equation of the CCR-O Model which is the car that reaches the value of 1 efficiency and the cheapest car from each category. The car chosen is Bezza for sedan car, Axia for hatchback car, Grand Livina for MPV car, and Aruz for SUV car.

4.   Novelty of Research / Product

There have been several research that measured the efficiency of cars. According to Fariborz and Rebecca (2013), four different extensions of Data Envelopment Analysis (DEA) were used to rank the relative performance of sustainable vehicles. Another study by Christos Papahristodoulou (1997) evaluates the efficiency of personal cars using the non-parametric DEA approach. The result shows that smaller cars are more efficient than larger ones, especially Korean ones. Previous research about cars' efficiency that was also done using DEA Solver by Faqihah (2020) resulted in five out of twelve fully efficient cars. Therefore, the focus of this research is to provide some helps to individuals that looking to buy their car for the first time without considering their monthly income. Besides, this research separated into four different types of cars to ease the buyer into matching their needs and demands.

5.   Conclusion

In conclusion, it helps all the potential buyers to choose a car for them to use daily and gain some exposure in analysing all the cars that bring to their attention. On the other hand, more than half of local cars reach the efficiency value of 1 proving that our local technology is on the same level as other well-known car brands from all over the world.

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APPLICATION OF VANILLA LONG SHORT-TERM MEMORY NETWORKS (LSTM) AND AUTO-REGRESSIVE INTEGRATED MOVING AVERAGE (ARIMA) ON EXCHANGE RATE FORECASTING

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Abstract

Predicting foreign exchange rates is a difficult task in the area of financial forecasting. Changes in exchange rate affected the country's rate of economic growth. There are a lot of forecasting models used in order to predict the future value of the exchange rate. This study aims to determine the most accurate model between two different machine learning models which are Vanilla Long-Short Term Memory (LSTM) and Auto-Regressive Integrated Moving Average (ARIMA) in predicting the exchange rate of Malaysian Ringgit (MYR) and United State Dollar (USD). In addition, this study used a statistical package in Python software that uses machine learning to better handle the challenge of time series forecasting. Vanilla LSTM and ARIMA are trained using Python software in order to train the dataset. Coding programming in Python software runs to make better analysis to achieve the accurate model. Prediction is also made after the comparison of error measures of two models. The result of the comparison between the two models showed that the MSE and RMSE of the Vanilla LSTM is lower than the ARIMA model. The Vanilla LSTM model overcomes the ARIMA in forecasting the exchange rate. Therefore, the analysis of the study obtained that the vanilla LSTM model is the most accurate model to make predictions on the exchange rate with 0.0102 and 0.1011 for MSE and RMSE respectively. While for the ARIMA with 0.0113 and 0.1062 of MSE and RMSE respectively. The final prediction for July 2022 is RM 4.22.

Keywords: *ARIMA, Vanilla LSTM, Time Series Predictions, Machine Learning, Exchange Rate.*

1. Introduction

Predicting foreign exchange rates is a difficult task in the area of financial forecasting. Hence, the machine learning algorithms employed in this study are Vanilla Long-Short Term Memory (LSTM) and Auto-Regressive Integrated Moving Average (ARIMA) in predicting the exchange rate. The main objective of this study is to measure the performance of Vanilla LSTM and ARIMA models in forecasting the value of Malaysian Ringgit (MYR) exchange rate and make a prediction using the most accurate model obtained. The best model will be chosen by using Mean Squared Error (MSE) and Root Mean Squared Error (RMSE). The data is representing each month of the year from January 2010 to June 2022 with a total of 150 observations.

2. Methodology

The models were built by using python software. First, the data splitted into training and testing parts with a percentage ratio of 80:20. The data is adjusted to be stationary and the value of error measures are obtained in ARIMA model Next, for the LSTM model, the data is normalized within the range of 0 to 1 using the Min Max Normalization function. The parameter of vanilla LSTM is set to train the model, then obtain the value of error measure. The error measures of the two models are compared to decide the most accurate model. The model chosen is considered to predict the data in future.

3. Results and Discussion

For the ARIMA model, the data is stationary after performing a first order difference. Python had suggested 13 parameters and the ARIMA (1,1,0) is the best model suggested with lowest Akaike information criterion (AIC). Next, vanilla LSTM trained the training data for 50 epochs to fit the model. The lower epochs reach to the last epochs, which is better for the model. The LSTM model is a good fit model where the train loss decreases. Lastly, the comparison between the two models showed that the MSE and RMSE of Vanilla LSTM is lower than the ARIMA model. The Vanilla LSTM model overcomes the ARIMA in forecasting the exchange rate. Therefore, the analysis of the study obtained that the vanilla LSTM model is the most accurate model to make predictions on the exchange rate. Comparison between nonlinear (vanilla LSTM model) and linear (ARIMA model) is a good example to see the difference of outcome from the two models.

4. Novelty of Research / Product

Forecasting work has been applied in a variety of fields over the years, including science, economics, engineering, transportation, medical and others (Somboonsak, 2019). According to the researcher also, time series of linear and nonlinear varieties are widely used to forecast what will happen in the future. Time series analysis is used to forecast future data that will be advantageous for a variety of purposes. Nevertheless, these approaches usually have extremely high prediction errors (Labiad et al., 2018). As a result, this study used a statistical package in Python software that uses machine learning to better handle the challenge of time series forecasting. Besides, the vanilla LSTM is one of the most widely used network options. LSTM is well suited to handle time series prediction like exchange rate data. In addition, the auto-regressive integrated moving average (ARIMA) model is used to fit time series analysis data to assist in better understanding or forecasting (Yamak et al.,2019). Vanilla LSTM and ARIMA are trained using Python software in order to train the data. Coding programming in Python software run to make better analysis to achieve the accurate model. Predictions are also made after the comparison of error measures of two models.

5. Conclusion

In conclusion, the vanilla LSTM model is better than the ARIMA model. The vanilla LSTM model showed the best performance to predict the exchange rate with the lowest number of error measures. The LSTM model can be a good model to make a forecast on the exchange rate.

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RANKING THE EFFECTIVE PREVENTION MEASURES AGAINST COVID-19 BY USING FUZZY AHP METHOD

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Abstract

Knowledge, attitudes, and practices (KAP) about COVID-19 significantly impact a society's preparedness to embrace behavioural interventions from health authorities. Since the COVID-19 virus is spreading rapidly and wildly throughout the world, it would be essential to value the general public knowledge, attitude, and practice regarding COVID-19 among the community during the pandemic. The studies on KAP towards COVID-19 offered information that can identify the intervention necessary to alter prevailing perceptions of the virus. It can help to know the actions that should be taken and also help to determine the best preventive measures to curb this pandemic. This study used Multi-Criteria Decision Making (MCDM) methods to solve the decision-making problem and evaluated effective prevention measures against COVID-19 infection based on three criteria: knowledge, attitude, and practices. After collecting these criteria from the earlier study, we employed Fuzzy Analytic Hierarchy Process (AHP) technique to establish the best decision for the issue. Fuzzy AHP can be used for various decision-making problems and help make more effective, adaptable, and realistic decisions based on the available criteria and alternatives.

Keywords: prevention measures, knowledge, attitudes, practices, COVID-19

1. Introduction

Since COVID-19 virus is spreading fast and wildly throughout the world, it would be advantageous to assess the knowledge, attitude and practice that related to COVID-19 among the general public. Therefore, in order to discover and ranking the effective prevention measures against COVID-19, this study proposed to use the Fuzzy Analytical Hierarchy Process (FAHP) method. From this method, the study discovered other specific objectives such as providing a comparison of criteria as well as the value of alternative comparison to each criterion. Next, the study aimed to determine the weight of the three criteria, which are the knowledge, attitude and practice toward COVID-19 and the weight of four alternatives: hand hygiene, social distancing, mask, and personal care in pairwise comparisons.

2. Methodology

Data were collected from three experts who is active in COVID-19 activities to be the decision makers and evaluate the level influenced by these three criteria: knowledge, attitude and practice during COVID-19 pandemic. For the first step of fuzzy AHP method, the hierarchy structure will be demonstrated with the goal as the top level and the pair-wise comparisons matrix was created for each criterion by using fuzzy triangular numbers. Next, geometric mean of fuzzy comparison was calculated to find the weight of the criteria and then be defuzzied as the weight was still in triangular fuzzy number. The relative weight should be normalized if the total value was not equal to 1 since it was not a normalized weight to assign the weight to each alternative element. The same process will be repeated to identify the final weights and ranking of the alternatives with respect to criterion.

3. Results and Discussion

As a result, social distancing is the highest weights value to consider for effective prevention measures against COVID-19 with respect to the three main criteria, knowledge, attitude and practice. Due to the recent outbreak of COVID-19, social distancing is highly recommended by World Health Organization

(WHO) as a measure of reducing the COVID-19 outbreak. With regard to the preventative behaviour measures recommended by the government, hand hygiene practices and attitude are important not only during the coronavirus disease pandemic, but also important to prevent the possible spread of other infectious diseases. Next, the result also showed the weight value of personal care is higher than mask and so the lowest weight for effective prevention measures is mask. Wearing suitable mask to prevent COVID-19 is truly necessary and set the limitation of infection for the virus. However, there are several important preventive measures that need to be considered such as avoiding crowd places, frequently take the medicine advised by doctor or pharmacist and other personal care should be considered.

4. Novelty of Research / Product

There have been a number of researches that have investigated on this study related COVID-19 infection and focused on individual's knowledge, attitudes and practices during the pandemic. COVID-19 disease occurs in almost all countries around the world shortly after it appeared in China and many countries take various measures to fight with the disease, which has a high risk of transmission (Yildirim & Cinar, 2020). Not only that, a previous study about Iranian students' knowledge, attitude, risk awareness and practice of COVID-19 revealed that there is a need to educate students to receive health information from credible sources in order to minimize COVID-19 from spreading (Dashti et al., 2022). In general, people know that avoiding contact with infected people is essential to control COVID-19 spread but some of them observed with preventive measures and showed inadequate behaviour towards hand sanitizing (Chang et al., 2021). Since the issue is considered to be critical and there has not been any research on ranking effective prevention measures against the virus with respect to the criteria of knowledge, attitude and practice, this study aim to rank the effective prevention measures against COVID-19 by using Fuzzy AHP method as it can be carried in further research to evaluate the spread of coronavirus.

5. Conclusion

Fuzzy Analytical Hierarchy Process method is often used as it is convenient in a variety of decision-making situations and assist in making conclusions since it allowed for better decision-making while measuring the importance of criteria and alternatives. Based on the study, it is shown that knowledge, attitude and practice are relevant as a weight to determine the ranking for effective prevention measures against COVID-19.

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A NUMERICAL STUDY ON A HIV
TRANSMISSION MATHEMATICAL MODEL

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Abstract

In this paper, the numerical solution of the HIV transmission mathematical model by using improved Euler's method has been studied. The existence of HIV is dangerous because it is highly harmful and can worsen the human body's system. HIV will damage the immune system and weaken a person's immune system to fight infections. Therefore, we want to observe a system of ordinary differential equations as some parameters change to analyze the behavior of HIV transmission in HIV patients. In this study, P and β represent as the number of verified the removed rate and the average number of transmissions for an infected person in a time respectively has been varied. We observed the $S(t)$, $U(t)$ and $I(t)$ which are the number of susceptible individuals, the number of infected individuals, and the number of removed individuals, respectively. Therefore, we chose parameters value for $P = 0.75$, 5, 1, 20, 0 and $\beta = 0.25$, 6, 0.5, 2, 0.1 as a_0, a_1, b, μ and N will be using the same as the value used by Suparyanto & Rosad (2020). By this choice of parameters, we were able to obtain the behavior of HIV transmission. The population of HIV transmission increased which refers to $S(t)$ however the condition of HIV patients becoming slower due to 100 days at $U(t)$. Meanwhile, the cell population during at $I(t)$ were under control after taking the medicines and treatment from doctors. Thus, this means that doctors can predict and develop the evolution of HIV in each patient.

Keywords: Ordinary differential equations, HIV transmission, improved Euler's method, Mathematical modeling

1. Introduction

HIV gives feelings of anxiety to the most thoroughly global of diseases. Statistics have been proven by the Ministry of Health Malaysia which in 1986 reported the first case of HIV (Aids & Progress, 2014). Approximately 6978 cases occurred in 2002, however, 3564 cases reported decreased in 2019. To better understand HIV transmission mathematical models governed by are used to help doctors to predict the behavior of the population number of HIV spreads according to the approximation solution. Furthermore, the study of the model is to study the propagations of HIV transmission mathematical model, to examine a system of ordinary differential equations by using improved Euler's method, and to analyze the behavior of the system of ordinary differential equations as some parameters vary.

2. Methodology

The behavior of HIV transmission mathematical models was used in this study. The method applied for this model is improved Euler's method with the step sizes of 50. The mathematical model of HIV transmission divides into groups of $S(t)$, $U(t)$ and $I(t)$ which are the number of susceptible individuals, the number of infected individuals, and the number of removed individuals, respectively. Parameters vary for P and β represent as the number of verified of the removed rate and the average

number of transmissions for an infected person in a time has been analyzed by using Wolfram Mathematica 13.0.

3. Results and Discussion

Parameters vary for the P and β for HIV transmission mathematical models are P = 0.75, 5, 1, 20, and 0 while β = 0.25, 6, 0.5, 2, and 0.1, respectively. According to the approximation solution of 100 days, the condition of $S(t)$ are growth drastically since HIV is actively transmitted among HIV patients and other persons. During the $U(t)$, some people have received affection such as flu-like symptoms. The virus attacks and destroys the infection-fighting white blood cells of the immune system as referred to $I(t)$. Based on the numerical solution of HIV transmission, the behavior of HIV transmission probability is high since the patient only takes the medicine and no vaccine is provided.

4. Novelty of Research / Product

Methods of Improved Euler's had been used in this study to explore and understand the variety of solutions and properties of the equation of HIV transmission. Our research is based on the Yau & On (2011) presented the mathematical model of HIV transmission dynamics using the classical Euler's method. Although, the author applied the SIR Model to compute the amount of susceptible, infected, and removed people in a population. Additionally, the research continues improvement by using improved Euler's method. The step size of 50 presents the numerical solution of HIV transmission with the help of mathematical software. The solution shows the approximation solution of HIV transmission through HIV patients over 100 days.

5. Conclusion

The study of HIV patients found that their population likely increased due to the active spreading the HIV transmission over a 100-day period. According to the approximate solution, where HIV patients simply depend on medications, the behavior of HIV patients will assist the doctors in preventing the condition of HIV patients from getting better.

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SURVIVAL ANALYSIS ON PREDICTION OF WAITING TIME FOR KIDNEY TRANSPLANTATION

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Abstract

Kidney transplantation (KT) describes implanting a healthy kidney from a deceased or living donor. In 2020, the statistics stated that the waiting list remains significantly longer than the supply of kidneys, posing a continuing challenge. Therefore, this research aims to estimate the likelihood of getting a KT, determine the key factors influencing KT waiting time and choose the best model within two distributions. This study includes 46,750 secondary data collected from the Kaggle website between January 1, 2000, and December 31, 2017, involving the deceased donor transplants. Potential predictors included in this study are gender, gestation, prior transplant, age, dialysis duration, underlying disease, blood group and calculated panel reactive antibody (c-PRA) level. Firstly, the Kaplan-Meier (KM) technique predicts the survival curves for each determinant group before being compared using the Log-rank test. The KM plot for the age factor shows the greatest significant divergence compared to other factors indicating the remarkable impact on the KT waiting time. The Log-rank test shows that all variables are important and impact the KT waiting time. Next, the Cox proportional hazards (PH) regression model helps examine the influence of determinants on patients on the KT waiting list. Findings revealed that all determinants above significantly affect the waiting time. Lastly, the Exponential and Weibull models determine the best model for fitting the KT dataset. Both models generated similar significant variables, but the Weibull models apt the dataset better due to a lower Akaike Information Criterion (AIC) index.

Keywords: *Kaplan-Meier, Log-rank test, Cox proportional hazards regression, Weibull distribution, Exponential distribution, kidney transplantation*

1. Introduction

This research aims to study the waiting time for kidney transplantation by applying a survival analysis approach. The objectives are to illustrate Kaplan-Meier curves in estimating the likelihood of transplantations and to identify the significant determinant affecting the waiting time for kidney transplantation using Cox regression analysis. The last objective is to compare and determine the best model within parametric survival models, which are the Weibull and Exponential distribution based on Akaike Information Criterion (AIC). The potential determinants affecting the waiting time for KT included in this research are the number of dialyzes, sex, underlying disease, and blood type.

2. Methodology

The secondary data used is derived directly from the Kaggle website consisting of patients registered for kidney transplantation between January 1, 2000, and December 31, 2017, on the waiting list of the Sao Paulo State Organ Allocation System, Brazil. This research involved the deceased donor transplant and eight potential contributors, including age, dialysis duration and others. Firstly, the survival analysis started with KM curves, followed by the Log-rank test to compare the survival functions, and Cox proportional hazards (PH) regression to analyze the relationship between covariates and time. Then, the AIC will determine the best model between the Weibull and Exponential distributions.

3. Results and Discussion

When comparing the Kaplan-Meier survival curve of the binary variable, prior transplant curves differed substantially compared to gender and gestation. As for the numeric variable, the age curves reflected a significant divergence compared to other factors. Next, the Log-rank test and univariate Cox regression analysis show that all variables were relevant at a five percent significance level. Meanwhile, the multivariate Cox regression analysis does include all compelling variables found in the univariate analysis. After applying the Weibull and Exponential distribution, the result concluded that the Weibull distribution is more effective in the predicting the waiting time for kidney transplantation. This is due to the AIC value obtained for Weibull is slightly lower compared to the Exponential, even though they underlined the same significant factors.

4. Novelty of Research / Product

Based on previous research, some studies explore survival analysis, highlighting risk factors related to suicide attempts (Kim et al., 2018) and examining prognostic factors in gastric cancer patients (Habibi et al., 2018). There is also previous research on graduate employability survival function done through the analysis of explanatory variables (Shahadan et al., 2019) and research on kidney transplantation by developing a predictor model to calculate the length of a kidney transplantation waiting list (Bastos et al., 2021). There is also a past study on employing a machine learning prediction model for waiting time for kidney transplants (Sapiertein Silva et al., 2021). However, they included factors related to local features such as race and subregion and used a few survival models. Therefore, the primary goal of this research is to examine multiple survival models, including non-parametric, semi-parametric, and parametric survival models. This research also excludes local features to improve the model accuracy.

5. Conclusion

In short, this research successfully used all methodologies and distributions mentioned above in generating output. It also concluded all variables included are crucial features to be considered for future study.

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APPLICATION OF FUZZY DELPHI ON THE FACTOR INFLUENCING BUYING BEHAVIOUR FOR ORGANIC FOOD

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Abstract

There are challenges for organic food retailers to create a marketing strategy to develop their business because they cannot identify the main factors and patterns in consumer buying behaviour towards organic food. This study aims to determine the main factor influencing consumer buying behaviour for organic food and rank the factors based on the priority in purchase intention. To achieve such objective, the Fuzzy Delphi has been used to determine ranking of sub-factors for five factors which are price, behavioural intention, subjective norm, attitude and consumer knowledge. The primary data was collected by distributing questionnaires to five experts which includes retailers with organic food business backgrounds and consumers of organic food in Kuantan, Pahang. The findings derived shown that the most influential sub-factor affecting consumer purchasing behaviour towards organic food under behavioural intention was that people usually consider purchasing organic food that meets their taste with fuzzy score 0.68 while for subjective norms, the first ranking was concept of organically grown food with fuzzy score 0.68. Furthermore, the first ranking for price factor was reasonable price with fuzzy score 0.68 and for consumer knowledge, the first ranking was people are familiar with products that comes in environmentally safe packages with fuzzy score 0.68. Lastly, the first ranking under attitude factor was organic food keeps the consumer fit and healthy with fuzzy score 0.76. Based on this outcome, it shows that Fuzzy Delphi is a method that can help experts to make decisions under complicated situations and rank all the sub-factors with precision.

Keywords: *Fuzzy Delphi Method, organic food, factor influencing consumer buying behaviour for organic food*

1. Introduction

The objectives of the study are to determine the factors influencing consumer buying behaviour for organic food using Fuzzy Delphi and to determine a ranking of the sub-factors based on the priority in purchase intention. The study focuses on sub-factors influencing buying behaviour for organic food in Kuantan, Pahang. This study used primary data, a questionnaire based on expert opinion. It consists of five experts as respondents to the dataset in this proposal. The experts include retailers with organic food business backgrounds and consumers of organic food.

2. Methodology

The questionnaire is designed based on the expert's opinion from previous studies. The factors affecting consumer buying behaviour towards organic foods that will be considered in this study are obtained from the previous study. The factors considered are behavioural intention, subjective norms, price, consumer knowledge and attitude. There are five steps involved in this study of the FDM method. The first step is data collection from experts while the second step is establish fuzzy triangular numbers. The third step is a calculation of the threshold value (d-construct). The next step is the determination of item acceptability and the last step is the defuzzification process.

3. Results and Discussion

All items are accepted but there are four items that were rejected. Item P3; people are willing to pay a premium for organic products that are essential for living a healthy life and item P4; buyers select organic products whose prices are similar to regular products were rejected because the fuzzy score is

lower than 0.5. Next, in item C1; people can identify the brands and labels of environmentally safe organic products and in item C5; buyers are aware of the organic food options that are available in the market were rejected due to the percentage of experts' consensus were less than 75%. According to the first ranking for behavioural intention, people usually consider purchasing organic food that meets their taste. The first ranking for subjective norms was the concept of organically grown food, while the first ranking for price factor was reasonable price. As for consumer knowledge, the first ranking was people are familiar with products that come in environmentally safe packages and the first ranking under attitude factor was organic food keeps the consumer fit and healthy.

4. Novelty of Research / Product

A number of research studies have investigated the benefit of organic food. The use of healthy and environmentally friendly food has increased customers' awareness of and concern for the environment (Al-Swidi et al., 2014). Previous research has asserted that organic food is healthier, tasty, and has more nutritional value (Krystallis and Chryssohoidis, 2005; Perrini et al., 2010). Meanwhile, there is also research on the factors influencing the buying behaviour of customers for organic food in Punjab state. The study related to exploring factors influencing organic food purchase behaviour using fuzzy analytical hierarchy process (AHP) (Arora et al., 2022). However, there has not been any research on the factors influencing the buying behaviour of customers for organic food in Pahang state. Therefore, the main focus of this research is the factors influencing the buying behaviour of customers for organic food in Pahang state.

5. Conclusion

The Fuzzy Delphi Method has been applied and successfully achieved the objective of this study, specifically to determine and rank the important factor that influenced consumer buying behaviour for organic food. Therefore, Fuzzy Delphi is one of the suitable methods for ranking.

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THE USE OF TRAPEZOIDAL RULE TO APPROXIMATE THE VOLUME OF CLODS OF SOIL AT GUNUNG PERLIS TAMAN NEGERI PERLIS

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Abstract

A slope is a soil formation with certain angles. Malaysia has a generally sloping and steep natural environment and receives a lot of rain every year. The consequences of slope failure for humans and wildlife take various kinds . During heavy rain, the treeless catchment region will congregate like little ponds. The main objective of this study is to find the volume of soil clods at Gunung Perlis, Taman Negeri Perlis using Trapezoidal's rule. The survey focuses at Gunung Perlis, Taman Negeri Perlis, which is hilly and uneven. The volume of clods of soil in the area will be calculated to determine whether the slope might collapse. Secondary data were collected form Google Earth. In order to determine which areas are prone to collapse, three sloped areas were taken. The three area were labelled as Line A, Line B and Line C. There are several steps to conduct this project. Firstly, determine and create the contour line of Gunung Perlis to represent a topography. Then, create the cross-section based on the drawn contour. The next step is established the location of the clod soil to find the area of clod soil. Use the area in step three to calculate the volume of clods soil using Trapezoidal's Rule. After all the three line calculated, the slope that has high possibility to collapse will be chosen. The higher the volume calculated, the higher possibility for the slope to collapse.

Keywords: *Trapezoidal's Rule, Volume, Slope, Collapse, Landslides*

1. Introduction (Objectives and Scope)

A slope is a soil formation with certain angles. Malaysia has a generally sloping and steep natural environment and receives a lot of rain every year. The consequences of slope failure for humans and wildlife take various kinds During heavy rain, the treeless catchment region will congregate like little ponds. The main objective of this study is to find the volume of soil clods at Gunung Perlis, Taman Negeri Perlis using Trapezoidal's rule. The survey focuses at Gunung Perlis, Taman Negeri Perlis, which is hilly and uneven. The volume of clods of soil in the area will be calculated to determine whether the slope might collapse.

2. Methodology

Secondary data were collected form Google Earth. In order to determine which areas are prone to collapse, three sloped areas were taken. The three area were labelled as Line A, Line B and Line C. There are several steps to conduct this project. Firstly, determine and create the contour line of Gunung Perlis to represent a topography. Then, create the cross-section based on the drawn contour. The next step is established the location of the clod soil to find the area of clod soil. Use the area in step three to calculate the volume of clods soil using Trapezoidal's Rule. After all the three line calculated, the slope that has high possibility to collapse will be chosen.

3. Results and Discussion

Based on the volume calculation by using Trapezoidal's Rule, Line B was chosen as the area that have high possibility to collapse. The volume of slope at line C is 130,080.514 m^3 compared to volume of Line A and Line C which are 112,382.4849 m^3 and 124,771.1053 m^3. The difference between the volume A of slope Line A and Line C is 12,388.6204 m3 but the higher the volume, the higher the possibility for the slope to collapse. After determining the region at risk of landslides, any

steps to avoid the occurrence of landslides can be done. To establish if a place is at high risk of risks such as landslides, accurate calculations are necessary. As a result, accurate estimations may also aid in the repair of any earthworks that need to be repaired in order to stay secure. If the computation is erroneous, it might put people in risk and cost the government money and time if the earthwork is finished.

4. Novelty of Research / Product

There have been a few of research that have investigated about the contour line, landslide problem, land calculation by using Trapezoidal's Rule. Landslides are frequently caused by continuous, intense rainfall in tropical humid regions, particularly Malaysia (Komoo & Lim, 2003). According to Mokhtar Jaafar et al., (2011), Malaysia's equatorial climate contributes to its high annual rainfall distribution due to an average annual rainfall of 2,400 mm.. The trapezoidal rule is a numerical integration method for calculating the integral or area under a curve (Yeh, 2002).

5. Conclusion

Landslides are a natural catastrophe event that have a huge impact on the socioeconomics of a country's people. If any property damage occurred, the government or private parties were required to cover the cost loss, either directly or indirectly, as a result of the incident. In reality, landslides can be fatal if they occur in residential areas or along roadways on a wide scale.

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AN APPROACH OF FUZZY AHP TO ANALYZE THE FACTORS OF DOMESTIC VIOLENCE AMONG WOMEN IN MALAYSIA

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Abstract

The number of women who be victims of domestic violence is increasing. Hence, the responsible party must take appropriate action to prevent this problem expand. This study's goals are to rank the factor of domestic violence among woman in Malaysia and identify the most important sub-factor that influence domestic violence among women in Malaysia happened. Fuzzy Analytic Hierarchy Process method had been chosen to rank the factors of domestic violence among women in Malaysia: hot-tempered partner, jealousy, and substance abuse. This project will focus on the factors of domestic violence in Malaysia. This study used data collected from counseling unit of UiTM Perlis, checking for common factors for this study.

Keywords: domestic violence, Fuzzy Analytic Hierarchy Process, hot-tempered, jealousy, substance abuse.

1. Introduction

A pattern of violence, abuse, or intimidation towards a partner with whom you are or have been in an intimate relationship is known as domestic violence. Abusers frequently combine different types of violence to instill fear or pressure a partner into acting in ways they don't want to. 8% of women in Malaysia have been through domestic violence. This article is to analyze the main factor of domestic violence among women in Malaysia by using Fuzzy Analytic Hierarchy Process. Besides, the purpose of this article is to rank the factors and sub-factors of domestic violence among women in Malaysia by using Fuzzy Analytic Hierarchy Process

2. Methodology

Data were collected by using an interview process. A survey was conducted to analyze the factors that influence domestic violence among women in Malaysia such as hot-tempered, jealousy and substance abuse. Three questionnaires were given to the three experts by unit counseling at Uitm Perlis. The questionnaires have three parts which are part a, b, and c. part a is about the demographic profile of the expert while part b and c is about to access the factors and sub-factors of domestic violence. The standard Saaty's Scale was used to utilize for both parts.

3. Results and Discussion

After ranking all the factors by using Fuzzy Analytic Hierarchy Process, it can be seen that the most influential factor that causes domestic violence among women in Malaysia is hot-tempered followed by jealousy and substance abuse. All these factors were ranked by looking at the normalized weight of all factors. All these factors are a very given big impact on the statistics of cases of domestic violence among women in Malaysia. A hot-tempered partner gives effect in domestic violence followed by jealousy partner and substance abuse. In conclusion, the goals of this article were achieved since the factors can be ranked by using Fuzzy Analytic Hierarchy Process.

4. Novelty of Research

There were several numbers of research that makes articles about domestic violence (Sukeri & Man, 2017;)(Semahegn & Mengistie, 2015;)(Alam & Islam, 2015). The previous research about domestic violence was done by (Mohd et al., 2018) through the statistic of domestic violence by Malaysian Royal Police reported from 2000 – 2017. There are also several articles about the rank method which is the Fuzzy Analytic Hierarchy Process method (Akbarei et al., 2020;)(Milburn, 2021;)(Rouyendegh & Erkan, 2012); however there still do not have any research about rank the domestic violence factors and sub-factors. Therefore, the main of this research is to rank the factors of domestic violence using Fuzzy Analytic Hierarchy Process with the factors from the previous research.

5. Conclusion

The aims of this study, which is to analyze and rank the significant factor and sub-factors, have been done effectively by using the Fuzzy AHP approach, which combines the fuzzy theory with AHP that influence the domestic violence cases among women in Malaysia. Based on the result of this research, it shows that the goals of this research can be achieve by ranking the factors and sub-factors.

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THE USE OF SIMPSON'S RULE TO APPROXIMATE THE VOLUME OF CLODS OF SOIL AT GUNUNG PERLIS, TAMAN NEGERI PERLIS

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Abstract

Landslides can occur at any time due to unpredictable weather and persistent heavy rains. The goal is to use Simpson's rules to calculate the approximate volume of soil clods. The goal is to use Simpson's rules to calculate the approximate volume of soil clods. This research focuses on the Gunung Perlis slope in Taman Negeri Perlis. Google Earth Map was used to obtain secondary data. Three sloped areas were examined to identify which have the potential to collapse. There are several steps involved in carrying out this project. After calculating the three lines using Simpson's Rule, which slope was most likely to collapse was determined. The greater the volume, the greater the chance of the slope collapsing.

Keywords: Simpson's Rule, Volume, Clods of soil, Slope, Collapse, Landslides

1. Introduction

In the humid tropics, particularly in Malaysia, landslides are frequently brought on by the occurrence of continuous, intense rainfall and Perlis state park is exception. Most of the rocks in the study area are fairly pointed and sharp. Climbers are forced to take adequate safety precautions and be extra cautious because to the rickety and damp surface of the rock when it rains. Unpredictable weather and prolonged heavy rains at any time can contribute to the occurrence of landslides. The aim is to find the approximate volume of clods of soil using Simpson's rules. This study focuses on the slope of Gunung Perlis, Taman Negeri   Perlis.

2. Methodology

Secondary data were collected from Google Earth Map. Three areas with slopes were taken to determine which areas have the potential to collapse. The area has been labelled as Line 1, Line 2, and Line 3. There are several steps to conduct this project. Firstly, create a contour at Gunung Perlis to represent a topography. Then, create the cross-section based on the drawn contour. Established the location of the missing clods of soil and find the area. Use the area in step 3 to calculate the volume of clod of soil by using Simpson's Rule. Once all of three lines had been calculated, choose which slope have high possibility to collapse. The higher the volume, the higher possibility for the slope to collapse.

3. Results

Based on the volume calculation by using Simpson's Rule, Line 3 was chosen as the area that have high possibility to collapse. The volume of slope at Line 3 is 128012.6472 m3 compared to volume of Line 1 and Line 2 which are 111497.1964 m3 and 128006.8408 m3. Although the difference between the volume of slope Line 2 and Line 3 is only 5.8064 m3 but the higher the volume, the higher possibility for the slope to collapse. After determining the region at risk of landslides, any steps to avoid the occurrence of landslides can be done.

4. Novelty of Research / Product

There have been number of research that have investigated about contour line, landslide problem, land calculation by using Simpson's Rule. Unpredictable weather and prolonged heavy rains at any time can contribute to the occurrence of landslides. Damage to some older retaining walls encourages surface water concentration and drainage in specific areas and speeds up ground water seepage and erosion(Komoo & Lim, 2003). It might also negatively impact the climbers, visitors, and residents, such as causing death and damage. According to Mantey & Aduah (2021), various approaches can be used to estimate the volume of earthworks. When we know the area's volume, we can figure out how much material we will need for a certain job without guesswork. One of the formulas for calculating the approximate value of a definite integral is Simpson's rule(Gałaj & Wojciechowski, 2019). Simpson's rule provides the most precise approximation of a definite integral among these(Slavinić & Cvetković, 2016).

5. Conclusion

The estimated volume of earthwork is one of the most essential criteria in determining the potential of a landslide occurrence which saves time and money when an unanticipated event happens. Taman Negeri Perlis is a popular recreational location for the public, and resident's area are nearby. It is critical to measure the volume of clod of soil in the region to avoid landslides from happening. Landslides can occur at any time according to a variety of circumstances.

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FACTORS INFLUENCING THE SELECTION OF HALAL PRODUCTS AMONG PERLIS COMMUNITY USING FUZZY AHP

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Abstract

Researchers and academics are interested in this study because it aims to understand the factors and sub-factors that affect the selection of Halal products. The researcher was unaware of any prior research or studies conducted to ascertain how much consumers consider the factors and sub-factors influencing their decision to purchase Halal products and how consumers rate those variables. This paper aims to identify and rank the top factors and sub-factors that affect consumers' decisions to select Halal products in Perlis. Through the use of questionnaires, the information of three experts from Jabatan Agama Islam Perlis was gathered. This data was initially analysed using the Fuzzy Analytical Hierarchy Process. The results, which were analyzed based on value after normalization, indicated that product awareness is the best factor and ranked first, while its sub-factor, which ranked first is religious responsibility towards the product, directly influences the choice of Halal products among the Perlis community. In light of the importance of Halal products, the researcher expects that this study will help the public consumer, product manufacturer, seller, other researchers, and shop owners by sharing and raising about the factors of Halal products.

Keywords: Halal products, factors, Fuzzy AHP, Halal products in Perlis

1. Introduction

In such a challenging environment, choosing a Halal product is important, and the process of choosing Halal products is not too complex. More benefits will occur if the Perlis community chooses Halal products. This article analyses the best factors and subfactors influencing the selection of Halal products in Perlis using the Fuzzy-AHP method. The aim is to rank the factors and subfactors influencing selection of Halal products among the Perlis community. This research considers four relevant factors and three subfactors for each factor. Three Halal experts from JAIPs are the decision makers. Fuzzy-AHP is the method used in this study

2. Methodology

Data were collected by giving questionnaires to three Halal experts from Jabatan Agama Islam Perlis. There are two components of the questionnaires. Section A includes inquiries regarding the expert's racial and ethnic background, job status, and level of education. Section B evaluates the factors, whereas Part C assesses the sub-factors for Section B. The classic Saaty's Scale is applied to both components. For example, the first expert evaluated that product ingredients and product quality is equally important. Data findings were used in order to identify and rank the factors and sub-factors influencing the choice of Halal products in Perlis by using the Fuzzy AHP method.

3. Results and Discussion

Based on the normalization value of factors that influence the selection of Halal products, the highest value is product awareness, followed by product price, product quality and product ingredients. It means that product awareness is on the first rank while second rank is product price. Product quality ranked third place and forth rank is product ingredients. Religious obligation ranked first, which has the highest normalization value, is the best sub-factor that has an impact on the product awareness factor then followed the awareness of various aspects and the JAKIM-certified Halal logo. The best sub-factor

which is first ranked that influences the product price is choosing price over taste. Following with the displayed price and the reasonable price based on income. The best sub-factor that has an impact on the product quality is not harmful which ranked first. Good Manufacturing Practices and safety and hygienic come next. Next, the best sub-factor that influences the product ingredients is material used not declared illegal by Islamic law which rank in the first place. Free from non-Halal animals and ingredient labels on products follow next. Due to their obligation to uphold religious principles, the Perlis community chose Halal products in accordance with product awareness. Additionally, they gave product ingredients less consideration because they chose a product simply based on whether it was made without the use of non-Halal animals.

4. Novelty of Research / Product

Many studies have looked into Halal products. Previous study about Halal products was done through the review study of Halal products and its impact on non-muslims purchase intention (Aransyah et al., 2019). There has also been research on non-muslim customers' purchase intentions on Halal food products in Malaysia (Sang-Hyeop Lee et al., 2016). Other than that, the previous research about Halal products was done through the nexus of consumer purchasing behavior towards Halal products among the Malaysian community (Sidek S, Rosnah R, Daud R et al., 2022); however, there are still limited studies on the Halal products especially in Perlis. Therefore, the primary goal of this research is to identify and rank the best aspects and supporting factors influencing Perlis consumers' decisions to purchase Halal products. Overall, the research tries to understand the factors used by the Perlis community to select Halal products.

5. Conclusion

From the outcome, the ranking of the factors may be determined. Product awareness is ranked first among the factors that affect the community of Perlis' selection of Halal products. Religious responsibility is a sub-factor of product awareness top ranked among its sub-factor. Therefore, product awareness is the best factor and religious responsibility is the best sub-factor that influences the selection of Halal products among the Perlis community.

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ANALYSING ON INFLUENCING FACTORS OF STUDENTS' CAREER CHOICE USING FUZZY ANALYTIC HIERARCHY PROCESS (FAHP)

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Abstract

The number of professions available to students has grown over time, making it more difficult for them to choose a career after finishing their studies. The study examined the factors that have the greatest influence on students' career choices to assist them in making that decision. The aim is to identify the main factor and rank the main factor and subfactor that influence students' career choices using fuzzy Analytic Hierarchy Process (AHP). A questionnaire was distributed to collect data for the study using Classic Saaty's Scale. Based on the value collected, the study implemented a fuzzy analytic hierarchy process (AHP) to identify the main factor influencing students' career choices and rank the main factor and sub-factor that influence students' career choices. To identify the main factors, factors with a normalized weight that have the highest value are the factors that most influence students' career choices. To rank factors and sub-factors, the ranking went from the highest normalized weight to the lowest normalized weight. In the results, the main factor that most influences students' career choices are the personal interest factor, which has the highest normalized weight. In ranking the factors influencing students' career choices, experts agree that personal interest is the most influential factor. For sub-factors, the workplace is the most influential factor in students' career choices, while the sub-factor with the least influence is safety under the parental factor, which is also the least ranked of the factors influencing students' career choices.

Keywords: *students' career choice, personal interest, workplace*

1. Introduction

The number of professions available to students has grown over time, making it more difficult for them to choose a career after finishing their studies. The study examined the factors that have the greatest influence on students' career choices in order to assist them in making that decision. The study concentrates on the four main factors and three sub-factors. The aim is to identify the main factor and rank the main factor and subfactor that influence students' career choices using fuzzy Analytic Hierarchy Process (AHP).

2. Methodology

Two experts from the professional field distributed questionnaires to collect data for the study in order to evaluate the factors that influence students' career choices. An interview was held through a physical interview and an online interview by giving a questionnaire to experts to get their opinion on what factors are most influential in influencing a student's career choice based on their experience using Classic Saaty's Scale. Based on the value collected, the study implemented a fuzzy analytic hierarchy process (AHP) to identify the main factor influencing students' career choices and rank the main factor and sub-factor that influence students' career choices. To identify the main factors, factors with a normalized weight that have the highest value are the factors that most influence students' career choices. To rank factors and sub-factors, the ranking went from the highest normalized weight to the lowest normalized weight.

3. Results and Discussion

In the results, the main factor that most influences students' career choices are the personal interest factor, which has the highest normalized weight, followed by work environment, academic influence, and parental influence. In ranking the factors influencing students' career choices, experts agree that personal interest is the most influential factor, as students have freedom in deciding their future and what is best for them, alongside the advice of the people they are close to. The experts indicated that the workplace is the most influential factor in students' career choices, as their primary concern in life is their parents. They would not be concerned about their parents' health if they lived nearby or with them. Furthermore, when living with their parents, students can make proper financial plans by seeking advice from their parents, who are wise with money. The sub-factor with the least influence is safety under the parental factor, which is also the least ranked of the factors influencing students' career choices.

4. Novelty of Research / Product

There have been a variety of articles and research studies that used the fuzzy Analytic Hierarchy Process (AHP) method and proved that the method can be used to rank the variables of research accurately. According to the research on Application Monte Carlo and Fuzzy Analytic Hierarchy Processes for Ranking Floating Wind Farm Locations written by Díaz et al, (2022), the fuzzy set theory was first described by Zadeh (1965). It was demonstrated that fuzzy AHP models are accurate at locating the highest-caliber characteristics and practical when ranking equivalent or rival alternatives. The technique proved to be a practical method for dealing with real-world multi-criteria decision-making issues (Kabir & Ahsan Akhtar Hasin, 2011). The benefits of being able to capture the haziness of human thought and to support the solution of the study challenge in a straightforward and systematic manner The fuzzy AHP method collects data using a questionnaire, allowing for a pair-wise comparison of all boundaries and their categories to analyse and rank them (Das & Sengar, 2022). Pairwise comparisons are used by fuzzy AHP to handle the hierarchical process of interrelationships between factors (Zabihi et al., 2020). All in all, the research using fuzzy AHP is accurate, as it is strong at managing vagueness and inconsistency in human judgement.

5. Conclusion

According to the findings of this study, the most important factors are personal interest, followed by work environment, academic influence, and finally parental influence. For the sub-factor the most important sub-factors are workplace, followed by passion, salary, friends, CGPA level, difficulty, gender, scholarship, race, parents' expectations, family tradition, and safety.

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APPLICATION OF FUZZY AHP ON THE SELECTION OF ONLINE SHOPPING PLATFORM IN MALAYSIA

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Abstract

E-commerce, popular known as an online shopping platform is a digital platform that helped ease people buying or selling without having to go to a physical store. There are numerous kinds of these platforms in the whole world, but only a few are supporting shipping to Malaysia like Shopee, Lazada, Carousell, et cetera. However, users sometimes feel it difficult to choose a preferred online shopping platform, since there are platforms with better navigation, but not many choices of products, and so on. Hence, this study aims to determine the optimal factors and sub-factors that influence users in choosing an online shopping platform in Malaysia and to rank those factors and sub-factors. The fuzzy Analytic Hierarchy Process has been used as the method to achieve the objectives of this research by ranking the four factors which are user-friendly, trusted, price and promotion, and responsive, with three sub-factors for each factor. This study used primary data collected by distributing questionnaires to two experts, an online marketer from a business company and a lecturer with marketing expertise from UiTM Arau, Perlis. The findings show that price and promotion is the factor that influences users the most when choosing an online shopping platform whose normalised weight is 0.5083. For the major sub-factors, sales promotion benefit has a normalised weight of 0.2350. In conclusion, the Fuzzy AHP method can help researchers to rank all the factors and sub-factors with accuracy, and help users determine a suitable online shopping platform for them to use.

Keywords: Fuzzy Analytic Hierarchy Process, E-commerce, Online Shopping Platform, price and promotion, sales promotion benefits.

1. Introduction

Online shopping platforms all offer various features and benefits as well as a selection of goods and services. The availability of a large number of online shopping platforms makes it challenging for customers to select their preferred choice. They must take into account a platform that enables simple and enjoyable online buying experiences. This study aims to find out what aspects people in Malaysia take into consideration when selecting an online shopping site. Specifically, to analyze and rank the major factors and sub-factors that influence users' decisions about the ideal online shopping platform using Fuzzy Analytic Hierarchy Process (AHP). This study focused on evaluating the factors and sub-factors that influence users when choosing the best online shopping platform in Malaysia, which consists of four factors and 12 sub-factors. Two respondents with marketing expertise were chosen to answer the questionnaire.

2. Methodology

An interview to answer the prepared questionnaire was conducted with two experts in the marketing field. The questionnaire's results were calculated using the Fuzzy AHP method and created the pairwise comparison matrix is the first step. Next, the consistency ratio was calculated and when the value was less than or equal to a 10% consistency ratio, the pairwise comparison matrix was adjusted, otherwise, the pairwise comparison matrix was transformed into fuzzy numbers to set up the Triangular Fuzzy Number (TFN). Afterward, fuzzy geometric mean, fuzzy weight, and normalized weight were computed and the criteria were ranked.

3. Results and Discussion

Based on the normalised weight, the results demonstrate that users are most influenced by price and promotions when selecting an online shopping platform followed by user-friendly, trusted, and responsive. The main sub-factor for the user-friendly factor is easy navigation while the trusted factor is payment security. Sales promotion benefits were the main sub-factor for the price and promotion factor whereas, for the responsive factor, the main sub-factor is rating reviews. The ranking of the factors and sub-factors was done by sorting the highest normalised weight value to the lowest value. In conclusion, the Fuzzy AHP technique surely can both assist users in selecting an appropriate online shopping platform and assist researchers in accurately ranking all the factors and sub-factors.

4. Novelty of Research / Product

There have been a number of researches that have investigated what elements influence users to select their preferred online shopping platform, particularly those intended for digital commerce, digital marketing, and conversion rate (Zumstein & Kotowski, 2020). A previous study by Rababah & Masoud (2010) said that Important factors that determine success or failure include delivering a high-quality website rather than just having an online presence or charging a low price. Therefore, web security was included as one of the elements in this research. (Bucko et al., 2018) studied the elements that influence consumers' willingness to buy products from online stores but they assessed the criteria that people use to decide when making purchases online and used principle components analysis to whittle down the number of those criteria to just seven. Another study by (Lim et al., 2016) wanted to establish the link between purchase intention and online shopping behaviour as well as the relationship between subjective norm, perceived usefulness, and online shopping behaviour. Since the study used Structural Equation Modelling to examine the model, this research used Fuzzy AHP to calculate the elements.

5. Conclusion

In conclusion, the Fuzzy AHP method helped achieve the objectives of this research to find the factors and sub-factors influencing users when choosing an online shopping platform. Briefly, users choose an online shopping platform based on the sales promotion benefits first, and customer service is the least to focus on.

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CLASSIFICATION OF DIABETIC PATIENTS WITH IMBALANCED CLASS DISTRIBUTION BY USING A COST-SENSITIVE FOREST ALGORITHM

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Abstract

In the medical data set, the majority class consist of healthy patients, whereas the minority class consist of a few sick patients. Although many machine learning algorithms have been developed by researchers, the class imbalanced distribution still makes it challenging for classifiers to properly learn and differentiate between the minority and majority classes. This study focused on fitting an imbalanced diabetic data set to a CSForest algorithm. The accuracy of the CSForest was then compared to the RForest. It was found that the accuracy of RForest was 76.70% while the accuracy of the CSForest was 78.72%, indicating that CSForest performs better than the RForest in classifying diabetic patients.

Keywords: *Imbalanced class, cost-sensitive forest, random forest, diabetic patients*

1. Introduction

The city of Sawahlunto was chosen to represent Indonesia at UNESCO as the world's cultural city in 2016 and this was unforeseen because this city has been declared as a dead city. In order to overcome the social and economic situation, the city's authorities have transformed the city by referring to the city's past as a mining city. This article analyses the meaning-making process in constructing the image of the city by utilizing collective memory, particularly in constructing the name of Lubang Tambang Mbah Soero as a tourism site. The aim is to explore the meaning-making process and the power relation within the process.

2. Methodology

Data were obtained by using a secondary data set collected by Teh et al. (2020), which focused on the imbalanced binary class distribution of diabetic patients. The dataset comprises 158 patients, with 39 of them having diabetes, while the remaining 119 patients are negative. This article used cost-sensitive forest and random forest. The dataset was imported into WEKA before continuing to perform simple binning discretization since the features were continuous. Then, transformed it into Attribute-Relation File Format (ARFF). Next, the data were fitted into a random forest, and the data were split into 70% allocated to training and the remaining 30% for testing. The same steps were repeated for the cost-sensitive forest. The value of accuracy was used to compare both algorithms.

3. Results and Discussion

After the data were fit into both algorithms, the results were obtained and it can be seen that cost-sensitive forest had a greater percentage rate compared to random forest. This article utilized performance measures such as accuracy to evaluate the performance of the classifiers. The result obtained in this article demonstrated the potential of cost-sensitive forest in classifying imbalanced data. These findings lead to the conclusion that both algorithms were effective in classifying diabetic patients with the imbalanced class problem. However, cost-sensitive forest delivered a better outcome due to their significantly greater percentage rate when compared to random forest.

4. Novelty of Research / Product

There have been a number of studies that have used random forest for classifying imbalanced class distribution (Sadeghi et al., 2022); (Wang et al., 2021); (Zhang et al., 2019). There have also been several studies about cost-sensitive forest for classifying imbalanced class distribution (Xiaoli & Qiang, 2019); (Chen et al., 2019). However, there has not been any research about the comparison between these two algorithms, which are random forest and cost-sensitive forest in classifying an imbalanced class. Therefore, the main focus of this study is to fit random forest for the classification and then validate the performance of cost-sensitive forest with conventional random forest. All in all, the research aims to contribute for future research as it can be used as a basic reference and apply it to various additional problems.

5. Conclusion

The main objective of this study is to fit random forest algorithms for the classification of imbalanced class diabetic dataset. 70% of the total sample was used as training data to determine the optimal model parameters and the remaining 30% was used as testing data. The research utilized performance measures such as accuracy to evaluate the performance of the classifiers. The results obtained from cost-sensitive forest accuracy are higher than random forest with 78.72% compared to random's forest 76.60%.

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A FUZZY CONJOINT ANALYSIS APPROACH FOR EVALUATING CREDIT CARD SERVICES: A CASE STUDY OF MALAYAN BANK

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Abstract

This study evaluate credit card services offered by Malayan Bank using a fuzzy conjoint analysis approach. This method allows for the consideration of imprecise and uncertain information, which is particularly relevant in the context of evaluating customer perceptions of credit card services. The study collected responses from 50 customers of Malayan Bank who have a credit card, and applied the fuzzy conjoint analysis approach to determine the most important attributes and levels of importance among the customers. The results indicate that customers place a high importance on the credit celling, follow by period of purchase and lastly penalty fee offered by the bank. This study provides a valuable insight for Malayan Bank to improve their credit card services and to attract more customers by focusing on these attributes.

Keywords: Fuzzy conjoint analysis, credit card, credit celling, attribute

6. Introduction

The state of Perlis was chose in approach for evaluate the credit card service. In order to overcome the economic situation that can be happen in the future, people need to understand the used of credit card. In order to understand what drives customers to use credit cards, it is important to identify the attributes that have the most influence. Once these attributes have been identified, we can then rank credit card packages using different combinations of attributes and levels, such as credit ceiling, period of purchase, and penalty fee, to determine which package is preferred by the customer.

7. Methodology

The data were collected responses from 50 individuals who are currently employed in the Perlis. Once we have these responses, we can begin the process of determining the weight of each attribute (wi) using a calculation method. Next, we need to find the membership value of each element in set L, which represents the attributes that were identified in the responses. After that, we need to determine the degree of similarity between set L and set Rk, which represents the group requirements. The attribute with the highest degree of similarity will be chosen as the most important. Finally, we will list the ranking for each group requirement based on the degree of similarity.

8. Results and Discussion

In the recent depiction of credit card, from private bank and from the customer, there is no other ways other than understanding the used of credit card and all of it function. This is complicated and creating the controversy. Base on the respond of the respondent according to the questionnaire 26 people do strongly agree with package 10 which have the highest credit celling 80%, the longest period of purchase which is 60 days and the lowest penalty fee 5%. While there is 25 people were strongly disagree with package 9 that have the lowest credit

celling which is 40%, shortest period of purchase which is 30 days and the highest penalty fee 10%. This article will reveal what is want by potential customer before they decide to purchase for this service and how well the knowledge is need to be a well money planner.

9. Novelty of Research / Product

There have been a number of research that have investigated the approach for evaluate the credit card services, particularly those who intended to improve the credit card services and to know the preference of their potential customer. In finding the perception of customer (Nur Liyana & Zurina Kasim, 2022). In previous research about credit card was done through the approach for evaluating credit card services: a case study of iranian bank (Baheri et al., 2011). There also been several research about fuzzy conjoint method (R Osman et al 2019). Therefore, the main focus of this research is how to improve the credit card services that can influence potential customer to purchase the credit card. All in the research aim to calculate the analysis using the fuzzy conjoint analysis in making the future more bright and systematic. There will always be a competition between every private bank in order to gain more customer

10. Conclusion

After analyzing various credit card packages, it was determined that package 1, 8, 10, and 12 have the best rank. All of these packages have a penalty fee of 5%, and two out of them have the highest credit ceiling of 80%. On the other hand, package 6 and 9 were found to be the worst packages. Both of these packages have the combination of the lowest credit ceiling of 40% and the highest penalty fee of 10%. Note that due to the fuzzy nature of the data, some of these packages were placed in one class.

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SELECTION THE BEST TYPE OF INVESTMENT IN MALAYSIA USING FUZZY TOPSIS

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Abstract

Investment is described as an asset that is directly or indirectly owned or controlled by investors and possesses features such as the commitment of funds or other resources, the expectation of gain or profit, or the assumption of risks. The 21st century provides greater opportunities for investment choices due to the current financial market. With a variety of investment instruments available, the market became more appealing with higher returns and risk preferences to be explored by potential investors. This study possesses two objectives which are to study the criteria of the investment and to find the best type of investment in Malaysia. Four criteria played a role in determining the best type of investment which include risk, capital, return, and the sustainability of an investment. Besides that, this study aims to identify the best type of investment in Malaysia through Fuzzy TOPSIS. Property investment, precious metal investment, cryptocurrency investment, and stock trading investment will be ranked in this study as the best type of investment in Malaysia. In addition, the variables will be sorted according to the correlation using Fuzzy TOPSIS. The final finding suggests that stock trading investment is the best type of investment in Malaysia with a correlation coefficient of 0.467109. The results of this study could be helpful to a myriad of people. Meanwhile, the project's scope could be expanded in the future by adding a variety of criteria and options.

Keywords: investment, Fuzzy TOPSIS, Cryptocurrency, Stock Trading, Property Investment, Precious Metal investment

1. Introduction

The purpose of this study is to help Malaysian citizens succeed in investment. This study will collect data from several investment experts. Besides that, this study will focus on Malaysian citizens who are interested in investment. There are four criteria that play a role to determine the best type of investment which are risk, capital, return, and the sustainability of the investment. The specific objective for this study is to identify the best type of investment in Malaysia using Fuzzy TOPSIS and to study the criteria of the investment to find the best type of investment.

2. Methodology

Data were collected from several investment experts. In this study, Fuzzy Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) will be used. Fuzzy TOPSIS offers a solution for decision-makers when dealing with real-world data, which are typically multi-attribute and entail a complicated decision-making process. The Fuzzy Positive Ideal Solution (FPIS), which is chosen as the best option in the TOPSIS technique, is one which is both the closest to and the furthest from the Fuzzy Negative Ideal Solution (FNIS). FPIS comprises the optimal performance values for each alternative, whereas FNIS comprises unfavourable performance values. So, we need compute the distance from each alternative to the FPIS and FNIS in order to get the closeness coefficient for each alternative. The alternative with the highest closeness coefficient is the one that will be the best type of investment in Malaysia.

3. Results and Discussion

The current financial market provides a superior opportunity to invest in our contemporary period. The market is now more alluring for potential investors to investigate and invest in thanks to the availability of variable investment instruments. This study aimed to identify the best type of investment in Malaysia using Fuzzy TOPSIS. Result of this study shown that, the Stock Trading Investment is the best type of investment in Malaysia. This type of investment has the highest proximity coefficient of 0.467109. In overall, Stock Market can maximize profit while minimizing losses better than other type of investment. Other than that, this study also aimed to study the criteria of the investment to find the best type of investment. Based on this research, it shown that return is the most important criteria in order to find the best type of investment in Malaysia.

4. Novelty of Research / Product

There have been a few research that have investigated about investment awareness among young generation (Azhar et al., 2017). Previous research about investment awareness in Malaysian also was done through the perspective of Malaysian citizens on investing in stock market (Wah et al., 2017). There have also been several research that explained about some type of investment that are popular in Malaysia (Ashford, 2017; Baum et al, 2021; Chen, 2022; Fernando, 2022; Palmer, 2019). However, there has not been any research on what the best type of investment in Malaysia is. Therefore, the main focus of this research is to find the best type of investment in Malaysia by using Fuzzy TOPSIS method.

5. Conclusion

Stock trading investment was the best types of investments out of the common ones in Malaysia, which include property investment, stock trading investment, cryptocurrency investment, and precious metal investment. The findings from this session have demonstrated that all of the study's objectives have been met.

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ONLINE EMPLOYMENT PLATFORM SELECTION BY USING FUZZY ANALYTIC HIERARCHY PROCESS

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Abstract

E-recruitment is the application of technology to assist in the hiring process. In the modern world, e-recruitment has changed how the organisation conducts their traditional recruitment procedure. These days, there are numerous networking sites that help companies find qualified candidates. For instance, MYFutureJob, LinkedIn, Indeed, and JobStreet have become important sources for finding qualified candidates for companies. These are the greatest employment portals in our country, assisting individuals in the recruitment process as there are more options to select the best applicant for each open position. So this study identifies the most preferred criteria and alternatives in choosing an online platform. To achieve these objectives, fuzzy AHP will be used to make a comparison between LinkedIn, MyFutureJob, Indeed, and Jobstreet which are often used by job-seekers to apply for jobs in Malaysia. A total of three jobseekers participated as maker decisions. Questionnaires were developed based on articles from journals and papers based on previous studies. Based on findings, LinkedIn is the superior employment platform website in Malaysia, surpassing MYFutureJob, JobStreet, and Indeed.

Keywords: E-recruitment, MYFutureJob, JobStreet, Indeed, LinkedIn

1. Introduction

This study focuses on online employment platform selection and fuzzy AHP is used to make a comparison between LinkedIn, MYFutureJob, Indeed, and Jobstreet which are often used by job-seekers to apply for jobs in Malaysia. The criteria for this study are accessibility, user-friendly, current system, security, and privacy. For this research, there are three respondents considered. The main objective of this research is to determine the best online employment platforms in Malaysia which are between LinkedIn, MYFutureJob, Indeed, and Jobstreet. Besides, the sub-objectives for this study are to identify the most preferred criteria in choosing an online employment platform.

2. Methodology

The questionnaire used in this study is developed based on previous research of the same area. Active jobseekers, fresh graduate and final year student are among the respondents that took part in the survey. The questionnaire is divided into two parts, Part A and Part B. Part A consists of four demographic questions that focuses on respondents' background information, which include gender, age, and occupation. Section B is to evaluate and determine the respondents' view on the available alternatives and criteria of this study. Fuzzy Analytical Hierarchy Process is then used to examine and analyse the survey data. A rank for the alternatives and criteria which is based on the normalised score are presented as a result.

3. Results and Discussion

LinkedIn is found to be the best employment platform website in Malaysia, with a normalised value of 0.64919. With a normalised value of 0.20576, JobStreet is ranked second and MyFutureJob is at third with normalised value of 0.09596. Meanwhile, Indeed is the least popular of the four websites examined, with a normalised value of 0.04909. Based on the factors that have been considered by the decision-makers, it can be concluded that LinkedIn is the first job platform website in Malaysia. Despite

being the oldest of these four websites, Jobstreet cannot surpass LinkedIn as the best one. The review of the three experts on some of the research's criteria revealed that LinkedIn is superior.

4. Novelty of Research / Product

There have been numerous studies comparing online employment platforms in Malaysia, particularly those focusing on the various sources of e-recruitment within the organisation, such as ease of use for the organisation, faster hiring, staying ahead of competitors, cost savings, candidate ease of use, and a large candidate pool (Ahlawat & Sangeeta, 2016). However, no study has been done to determine the top online employment platforms based on accessibility, the user-friendly, current system, and security & privacy. Overall, the study intends to identify LinkedIn, MYFutureJob, Indeed, and Jobstreet as the top online employment sites. Additionally, this study will help students and researchers who want to apply for jobs in a variety of sectors. Therefore potential employees can learn more about employment platforms that suit their needs.

5. Conclusion

Based on the results using Fuzzy AHP, the most important criteria are accessibility followed by the current system, then user friendly, and lastly security & privacy. For alternatives, we can conclude that LinkedIn is the superior employment platform website in Malaysia, surpassing MYFutureJob, JobStreet, and Indeed.

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TOURIST TRIP DESIGN PROBLEM WITH USER PREFERENCE AND POPULARITY: A CASE STUDY OF LANGKAWI ISLAND

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Abstract

Langkawi Island received more than 1.8 million tourists in 2022 after the Malaysian Government introduced Langkawi Travel Bubble. This study aims to resolve the Tourist Trip Design Problem (TTDP) given user preference and popularity of Points of Interest (POIs). TTDP formulation falls under Orienteering Problem, which adopts the Integer Programming Formulation (Benjamin et al., 2019; Ruiz-Meza & Montoya-Torres, 2022). This study proposed enhancement in the greedy algorithm approach (Benjamin et al., 2019). A greedy algorithm solves a problem that selects the most appropriate option based on the current situation. Clarke Wright Saving Algorithm has been embedded in a greedy algorithm to find the shortest route between POIs selected by the algorithm, and it will create a sequence of POIs. The algorithm will choose POIs based on categories selected by the users. Users will choose three categories out of the six categories listed. The categories are; Forests, Island Adventure, Beaches and Waterfall, History and Culture, Shopping, and Fun. Then the algorithm will select POI if the cost of POI does not exceed the allocated budget. The algorithm also considers the popularity of POIs, operating hour, and touring time of POI. The carbon footprint is calculated for the best itinerary found.

Keywords: orienteering problem, tourist trip design problem, point of interest

1. Introduction

According to the Ministry of Tourism & Culture of Malaysia (2021), Langkawi Island has been identified as the world's leading country on the tourism board since it receives a significant number of foreign and domestic visitors annually. Langkawi had more than 1.8 million visitors in 2022 after the launch of the Langkawi Tourism Bubble. This study aims to solve the Tourist Trip Design Problem (TTDP), which considers user preference and the popularity ranking of the Points of Interest (POIs). This study considered 36 POIs, which fall under six categories; Forest, Island Adventure, Beaches and Waterfall, History and Culture, Shopping, and Fun. The algorithm also considers the popularity of POIs, operating hours, touring time, travel time, and adult entrance fees.

2. Methodology

The TTDP formulation is viewed as Orienteering Problem in which the Integer Programming Formulation was adopted (Ruiz-Meza & Montoya-Torres, 2022). This study proposed enhancement for the greedy algorithm (Benjamin et al., 2019) for the problem. A greedy algorithm is an approach that solves the problem by selecting the best POIs available at one time without considering the future. A savings algorithm is embedded in the Greedy algorithm as an enhancement to find the best distance. The algorithm embeds user preferences based on the categories selected (out of 6) and then finds the best sequences of POIs to be visited such that the user budget is not exceeded.

3. Results and Discussion

The enhanced greedy algorithm was coded in Matlab and run several times with different categories selected. A maximum of three categories can be selected at one time, while there is no limit to the budget that can be input. The starting node is fixed at the Jetty Point, and the duration time starts as early as 9.30 am based on the opening hours of POIs and ends at 10 pm. Although the earliest POIs are at 8 am (for example, Mardi Agropark and Galeria Perdana), this study considered these POIs can be

visited at 9.30 am due to their closed time in the evening. For a one-day visiting duration, if the user chooses categories Island adventure, shopping, and fun. The best sequences found include visiting Day Cruise if the budget is not exceeded because the adult entrance fee is quite expensive at RM 200 on average. It is observed that a maximum of 6 POIs can be visited in a one-day trip.

4. Novelty of Research / Product

This study contributes to the body of knowledge by proposing an enhanced greedy algorithm that considered user preferences. The enhancement is done by finding the best sequences of POIs to be visited in the shortest distance. A savings algorithm is embedded in the greedy algorithm to obtain the shortest distance. Existing studies considered maximizing POIs to be visited, POIs popularity, and minimizing the cost, while this study add the distance between POIs criteria. In addition, this study considered 36 POIs with the addition of 3 recently opened POIs. Therefore, this study is to research finding the best sequences while considering POIs' popularity and user preferences and at the same time, minimize the routes of the best sequences. Alternatives routes for visiting POIs were also found.

5. Conclusion

This study develops an enhanced greedy algorithm for solving the tourist trip design problem (TTDP). The algorithm considered 6 categories of user preferences and popularity. The enhanced algorithm greedily decides the options given at once, the budget, the allocated time, and the opening hours. The enhanced algorithm is embedded with Savings Algorithm for route improvement. Finally, the algorithm will calculate the carbon footprints for the best itinerary found.

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ANALYZING FACTORS AFFECTING TO E-LEARNING SUCCESS BY FUZZY ANALYTIC HIERARCHY PROCESS (FAHP)

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Abstract

Over the past few years, virtual education institutions have adopted some form of online education. The Analytic Hierarchy Process (AHP) has been used in previous research to establish critical success factors. However, the AHP approach leads to a less-than-optimal result since it cannot account for the fuzziness. Several researchers have proposed the fuzzy sets theory as a way to improve AHP's ability to cope with problems involving uncertainty and fuzziness. The purpose of this study is to use Fuzzy Analytic Hierarchy Process to rank the various factors and sub-factors that affect the success of e-learning. This research will look at four main factors, each of which has three sub-factors. Regarding the choice criteria for successful e-learning, this study focuses solely on the student's and lecturer's opinions. At the end of this research, both objectives were accomplished. The results of this study show that the quality of the infrastructure and system is the most important factor on the success of e-learning from the lecturer's perspective. For the most important sub-factors affecting e-learning success from the lecturer's perspective, students' attitudes toward e-learning ranked first. Besides, according to student's perspectives, the most important factor in e-learning success is the characteristics of students toward e-learning, and the sub-factor that ranked first is students' attitudes toward e-learning.

Keywords: Fuzzy Analytic Hierarchy Process, E-learning success, lecturer,student.

1. Introduction

This research aims to identify the most important factor and sub-factor influencing the success of e-learning from lecturer's and student's perspectives. The advent of the COVID-19 disease has had a massive impact on people's daily lives. Therefore, the world of education had been caught off guard by e-learning. Hence, it is important to analyse the many aspects that affect the implementation of e-learning (Anggrainingsih et al., 2018). Even if educational institutions have already returned to normal face-to-face learning system by the middle of 2022, the research of e-learning should still be emphasised as people cannot predict the future. In addition, at the beginning of 2023, a new virus from China, the Langya Virus, shook the world and could lead to the same bad situation as COVID-19.

2. Methodology

The data on factors and sub-factors affecting to e-learning success are collected by providing questionnaires to the expertise of e-learning which are lecturer and excellent student of the calculus subject at UiTM Perlis Branch Arau Campus. The factors and sub-factors are graded on a scale from 1 to 9. This study is analyzed by using the method of Fuzzy Analytic Hierarchy Process which consists of six steps. The six steps include choosing expert group for the process of decision making, calculate the fuzzy triangular number, calculate the geometry mean of fuzzy comparison value, compute fuzzy weights, defuzzification and normalise the defuzzification results. The criterion with the highest score will be considered as the most important factor and sub-factor based on the results.

3. Results and Discussion

There are four factors to be studied in this research along with three sub-factors under each respectively. The factors are quality of infrastructure and system, quality of design and courses, characteristics of students and lecturers toward e-learning. For the sub-factors, level of product reliability, understanding

the used of infrastructure, design and user interface system, course quality, relevance and completeness of content, expertise in using computer and internet, students' attitudes toward e-learning, lecturers' attitudes toward students and e-learning, and lecturers' timely response, were considered. According to the result and analysis, the quality of the infrastructure and system has the greatest influence on the success of e-learning from the perspective of the lecturer. For the most important sub-factors affecting to e-learning success from the lecturer's perspective, students' attitudes toward e-learning came in the first ranking. Meanwhile, according to student's perspective, the most important factor in e-learning success is characteristics of students toward e-learning, and the sub-factor that ranks first is students' attitudes toward e-learning. At the end of this research, both objectives were accomplished to determine most influential factors and sub-factors of e-learning success. E-learning process will be successful with excellent result by considering the factors and sub-factors affecting the process of e-learning.

4. Novelty of Research / Product

Researchers in the past have conducted studies to analyse the factors that affects the success of e-learning, but there have not been many such studies conducted in Malaysia, particularly using the Fuzzy Analytic Hierarchy Process (FAHP) method. For example, a research was conducted at Sebelas Maret University in Indonesia utilising the Fuzzy AHP technique to analyse the relative importance of several factors that affect the success of e-learning. The implementation of the learning system in each country is different (Wierstra et al., 1999). Factors that affect the effectiveness of e-learning abroad cannot be compared to Malaysia because of the different learning environment. If there is any research related to the topic of examining the factors that affect the success of e-learning in Malaysia by Fuzzy AHP method, the analysis is conducted based on opinions in general, not splitting the focus between lecturers and students. Therefore, the primary goal of this study is to analyse the elements that affect the success of e-learning from two different opinions, lecturer and student in Malaysia as both have extensive expertise in organising e-learning classes and have experience in such e-learning systems.

5. Conclusion

Globally, educational institutions use e-learning platforms extensively for the purposes of teaching and learning. Consequently, it is critical to look into the factors that contribute to the success of an e-learning. This research examines four factors, each of which has three sub-factors. Using the Fuzzy Analytic Hierarchy Process, the purpose of this study is to identify the most influential factors on the success of e-learning and to determine the ranking of e-learning success sub-factors. Also, this study examines previous research on e-learning, including its benefits and the factors that contribute to its level of success. In addition, this study gives an explanation of related relevant literature in the usage of Fuzzy AHP as well as specific applications of this method used in a variety of fields.

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EARLY DIABETES RISK PREDICTION USING ANT COLONY OPTIMIZATION ALGORITHM

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Abstract

Diabetes is a deadly disease that causes serious health complications to its sufferers. It costs the sufferers' health as well as their money. It is crucial to detect diabetes risk early to prevent the disease from worsening and becoming hard to treat. Therefore, this study has developed a classification model for predicting early diabetes risk using an Ant Colony Optimization (ACO) algorithm. The ACO-based classification algorithm, Ant-Miner is used to train the diabetes dataset of 520 new diabetes or potential diabetes patients from Sylhet Diabetes Hospital in Sylhet, Bangladesh. The average predictive accuracy from Ant-Miner is compared to the average predictive accuracy from J48. It is found that the average predictive accuracy of the model produced by Ant-Miner is at par with J48. The average predictive accuracy of the model produced by Ant-Miner is 95.51%, while J48 is 95.38%.

Keywords: *Ant Colony Optimization, Ant-Miner, machine learning algorithm, diabetes, diabetes risk prediction*

1. Introduction

Early detection and treatment can control and even prevent complications caused by diabetes. However, it is difficult to predict early diabetes risk accurately without the help of technology. The use of computer technology can help to precisely detect diabetes (Gupta et al., 2020). Therefore, the main objective of this study is to develop a classification model for predicting early diabetes risk using an Ant Colony Optimization algorithm, Ant-Miner. This study used the data from the research paper 'Likelihood Prediction of Diabetes at Early Stage Using Data Mining Techniques' by Islam et al. (2020). The ACO-based classification algorithm, Ant-Miner is used to train the diabetes dataset of 520 new diabetes or potential diabetes patients from Sylhet Diabetes Hospital in Sylhet, Bangladesh.

2. Methodology

There are three stages in the research framework: data pre-processing, model development, and model validation. In the data pre-processing stage, the diabetes data is discretized to convert the attribute Age into an ordinal attribute or bins. Next, in the model development stage, there are three steps to generate a term for a rule. Firstly, the entropy is calculated. Secondly, the normalized heuristic functions is applied to the entropy values. Thirdly, the probability value is calculated. The term with the highest probability is chosen as the first rule. All three steps are repeated to get one more term from the available attribute. These steps are repeated until the entire attributes had been attempted. Every time a new term was added, the number of training instances will be reduced, therefore this process will continue until there were no more training instances remain. Lastly, in the model validation stage, this study used 10-fold to determine the average predictive accuracy of the developed classification model. Majority of researchers suggest 10-fold partition because 10-fold will produce the best estimate of error (Witten et al., 2011, p. 153). In addition, the average predictive accuracy of the prediction model by Ant-Miner is compared to the average predictive accuracy from J48. J48 is an implementation of C4.5 (Parpinelli et al., 2022) algorithm, C4.5 is an industrial standard algorithm for classification-rule discovery.

3. Results and Discussion

It is found that the average predictive accuracy of the prediction model by Ant-Miner is higher than J48. The average predictive accuracy of the model produced by Ant-Miner is 95.51%, while the average predictive accuracy of the model produced by J48 is 95.38%. The number of rules and the number of terms generated using ACO for average predictive accuracy 95.51% are 7.6 and 13, respectively. Thus, this study proves that the ACO algorithm, Ant-Miner can help to develop the classification model for predicting diabetes risk at early stage.

4. Novelty of Research / Product

The Malaysia Healthcare Travel Industry Blueprint 2021-2025 aims to produce world standard healthcare facilities with state-of-the-art technology (Malaysia Healthcare Travel Council, 2021, p. 13). The use of ACO algorithm, Ant-Miner to develop a classification model for predicting early diabetes risk is in line with the government aspiration as it uses leading-edge technology. Health systems and clinicians can use the ACO algorithm, Ant-Miner to develop a classification model for predicting early diabetes risk. The use of intelligent diagnostic systems such as ACO can help to minimize errors and improve diabetes diagnostic precision (Wu et al., 2022).

5. Conclusion

The results show that the developed classification model, namely the early diabetes risk forecasting model, should help health systems and clinicians to find new ways of predicting diabetes risk at early stage and improve the prediction of early diabetes risk.

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COMPARISON BETWEEN ARIMA MODEL AND FUZZY TIME SERIES: FORECASTING ENDEMIC COVID-19 CASES IN MALAYSIA

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Abstract

The coronavirus disease 2019 (COVID-19) began in December 2019, with Wuhan, China serving as the originating of the disease. Chinese government disclosed the discovery of the new coronavirus to the world, and the World Health Organization (WHO) declared the confirmation of the virus. Up to January 25, 2020, the virus began to spread in Malaysia from the three Chinese nationals who had previously had intimate contact with an infected individual in Singapore. On April 1, 2022, Malaysia announced the transition phase of COVID-19 from pandemic to endemic due to the success of COVID-19 vaccination. However, despite the endemic phase, the cases of COVID-19 still persist in Malaysia and surpassed thousands of cases daily. Thus, this led to this study on forecasting the endemic COVID-19 cases in Malaysia by comparing two methods to find the best model. In order to meet the aim, Fuzzy Time Series (FTS) Chen Model and ARIMA method were used to evaluate the endemic cases of COVID-19. The best model was chosen by evaluating the smallest value of Mean Squared Error (MSE) and Mean Absolute Percentage Error (MAPE). ARIMA (3,1,2) model was chosen as the best model to forecast the endemic cases of COVID-19 since it generated smallest value of error measure.

Keywords: COVID-19, ARIMA, FUZZY TIME SERIES, FORECASTING

1. Introduction

According to the Malaysian Ministry of Health, COVID-19 cases still affect people in Malaysia, despite the country having passed the endemic phase of the disease. Much research were conducted to model and forecast COVID-19 cases during the pandemic. Government announced that Malaysia will enter the 'Transition to Endemicity' phase starting April 1, 2022. However, the number of cases still increasing. Therefore, our objective of this study is to forecast the endemic COVID-19 cases in Malaysia from April 1, 2022, to November 30, 2022, using the proposed method. ARIMA model and Fuzzy Time Series are used to compare the best model for the forecasting method to predict the endemic COVID-19 cases in Malaysia.

2. Methodology

Data of endemic COVID-19 cases was collected daily from April 1,2022 to November 11, 2022. The data obtained has been analysed using the ARIMA model and Fuzzy Time Series. In the ARIMA model, the data were divided into two parts; estimation (75%) and evaluation (25%). Then, it was generated by using three steps: model identification, model estimation and diagnostic and forecasting. While Fuzzy Time Series (FTS) generated by using Chen model and calculated the forecasting value. The best model between ARIMA and FTS will be chosen based on the smallest value of error measure. Two error measures were used; Mean Squared Error (MSE) and Mean Absolute Percentage Error (MAPE).

3. Results and Discussion

This study aimed to find the best effective model in forecasting COVID-19 cases in Malaysia during the endemic phase using the ARIMA model and the Fuzzy Time Series (FTS). Mean Squared Error (MSE) and Mean Absolute Percentage Error (MAPE) are used to evaluate the accuracy of forecast data. The lowest value of the error measure indicates the best model. The ARIMA model proposed ARIMA

161

(3,1,2) as the best model. The error measure obtained; 199342.52 for MSE and 13.9408 for MAPE. FTS achieved 824541.72 MSE and 41.4560 MAPE using the Chen model. Thus, ARIMA was the superior model above FTS since it had the lowest MSE and MAPE. As a result , ARIMA model performs better in the COVID-19 forecast.

4. Novelty of Research / Product

Several research had been proposed by previous researchers in forecasting COVID-19 cases in Malaysia and other countries. Shaharudin et al., (2021) had perform a study in forecasting COVID-19 cases in Malaysia from 30 April to 31 May, 2022. The study conducted to produce the accuracy of forecasting result by using Recurrent Forecasting-Singular Spectrum Analysis method. Another study by Dehesh et al., (2020) had perform an ARIMA model in forecasting COVID-19 by using data between January 22, 2020 and March 11, 2020 in five different countries. An application of hybrid method of Fuzzy Time Series and Particle swarm optimization (PSO) in forecasting COVID-19 cases in Vietnam is proposed by Tinh, (2020). Forecasting COVID-19 has done by many researchers. However, most of the study was performed in forecasting the pandemic phase of COVID-19 and applying other method than ARIMA and Fuzzy Time Series. Thus, in this study, the application of the ARIMA model and Fuzzy Time Series is used to forecast the COVID-19 cases in Malaysia for endemic phase. The two method is applied to compared which model is the best as the forecasting method.

5. Conclusion

Based on the result, ARIMA model chosen as the best model compared to Fuzzy Time Series since the model proposed lowest value of MSE and MAPE. Thus, this indicates that ARIMA model is suitable model for forecasting the endemic COVID-19 cases in Malaysia.

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ANALYSING STUDENTS' PERCEPTIONS OF ONLINE MATHEMATICS LEARNING

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Abstract

Online distance learning is increasingly popular, particularly among students. Because students' learning abilities variety, it takes motivation and support from their surroundings to learn new things. Most students, especially non majors, consider mathematics to be one of the most difficult subjects. Because mathematics is such a broad topic, students must start with the basics. The purpose of this study is to analyze mathematics majors' learning using the fuzzy conjoint method. This chapter reviewed the sample size that will be used in this study, which will include as respondents Degree of Management Mathematics (CS248) final year students and Diploma in Mathematical Sciences (CS143) students from semester 4 and 5 of UiTM Perlis branch. The findings of this study will compare two levels of education: diploma and degree. As a result of analyzing the perception of online mathematics learning using the fuzzy conjoint method, the main objective of this study was achieved. Meanwhile, this study meets the specific objectives of comparing degree and diploma students' perceptions of online mathematics learning. According to the findings of this study, both diploma and degree students were rated neutral toward mathematics is hard to learn through online learning and the lecturers always give feedback on student assessment. However, students strongly disagreed that they are copying during the online tests and quizzes.

Keywords: online distance learning, mathematics, Fuzzy Conjoint Method, ranking

1. Introduction

Mathematics involves not only calculations or formulations but also helps in problem-solving through mathematical modelling. It also widely used in all fields of industry such as the physical sciences, life sciences, economics, social and human sciences, engineering, and technology. This study focuses on students' perception toward online mathematics learning among 80 undergraduate management mathematics and diploma mathematical sciences students at UiTM Perlis respectively using fuzzy conjoint method. The characteristic in each category is ranked based on its values for similarity.

2. Methodology

Data were collected by using questionnaire distributed to 80 students of degree in management mathematics and diploma in mathematical sciences from UiTM Perlis branch. This study focuses on three major attributes namely students' opinions on online distance learning, students' performance in online distance learning, and lecturer's role in online learning using fuzzy conjoint method. There are seven, five, and five sub attributes for each attribute, respectively. The criteria from Kasim & Muhamad Sukri, (2022) were used in this study with some adjustments to suit online learning. In this study, the fuzzy sets were used to represent the Likert Scale in linguistic terms. This method is effective since it gives the researcher a

degree of consensus agreement on fuzziness and vagueness for each specifically chosen attribute.

3. Results and Discussion

From the results of the attributes that were analysed using fuzzy conjoint method, it shows that online mathematics learning gives not really positive feedback to students. The attribute in each category is ranked in order of largest similarity. Students' performance shows the affected attributes towards online mathematics learning for two levels of education. A comparison of two levels of education has been done through this research. However, the ranking shows that there is not much difference between the two levels of education since both get approximately the same ranking especially for the second criterion. Mostly, both level of education rated neutral because they are less convinced in the options they chose.

4. Novelty of Research / Product

There have been several research that have investigated on students' perceptions using fuzzy conjoint method. Previous research was done to investigate students' perceptions of calculus learning at a particular government institution in Selangor, Malaysia Osman et al., (2021). There have also research using fuzzy conjoint approach is being used to specify and choose the ideal combination of credit card features and levels in a real case of "Eghtesad-Novin Bank" in Baheri et al., (2011) Iran. The research using fuzzy conjoint also done by Suparlan et al., (2019) to analyse students' perceptions of game-based mathematics classes. However, there has not been any research on students' perception on online mathematics learning using fuzzy conjoint method and identifying the attributes that influence students in online mathematics learning. There is also a research on evaluated lower secondary school students' perceptions of mathematics learning in Malaysia Gopal et al., (2021). The most significant characteristic showed that students attempted a problem multiple times if they were unable to solve it the first time.

5. Conclusion

The purpose of this study is to evaluate mathematics majors' learning using the fuzzy conjoint technique. The findings of this study will compare two levels of education: diploma and degree. the main objective of this study was achieved by applying the fuzzy conjoint method to analyse the perception of online mathematics learning. Meanwhile, this study meets the specific objectives of comparing diploma and degree students' perceptions of online mathematics learning.

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Reconstruction the Rational Quadratic Bezier Curve Using Properties of Rational Quadratic Bezier and Segmentation

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Abstract

For geometric modelling and computer graphics, Bezier curves are essential in CAGD. They provide a lot of useful features and simple tools for modifying the shape of a parametric polynomial curve. The rational quadratic Bezier curves with three control points, P_0, P_1 and P_2 are used in this study. The primary goal of this study is to determine the control point by using properties of rational quadratic Bezier curve and to reconstruct the curve of the rational quadratic Bezier curve by using segmentation In this investigation, the Harris method was employed to obtain the dal that formed the 10 segmentation. This segmentation generates the coordinates x and y, which serve as a control point for P0 and P2. The control point P1 can be found by substituting the control points P0 and P2 into the equation of the simplest rational quadratic Bezier curve. Furthermore, the rational quadratic Bezier curve's basis is used to find the control point P1. Using the Matlab software, a rational quadratic Bezier curve is constructed for 10 segments of varying weight after all x and y coordinates for controls points are obtained. The Dal was then reconstructed for the four weights using the rational quadratic Bezier curve. Aside from that, this research focused on image smoothness using segmentation and different weights for a rational quadratic Bezier curve. The results show that weight has an effect on image smoothness for rational quadratic Bezier curves. Following that, the positive and negative weights created different curves of the Dal. Positive weight had a smoother curve and shape once compared to negative weight.

Keywords: rational quadratic Bezier curve, segmentation, weight, CAGD

1. Introduction

The study will focus on the rational quadratic Bezier curves. The limitation of this study is that the software being used such as the Math Lab as well as Maple are costly. The purpose of this study is to determine the control point by using properties of rational quadratic Bezier curve and to reconstruct the rational quadratic Bezier curves by using segmentation.

2. Methodology

The Harris algorithm was used in this study to obtain the Dal that formed 10 of segmentation. This segmentation generates the coordinates x and y, which serve as a control point for P0 and P2. The control point P1 can be found by substituting the control points P0 and P2 into the equation of the simplest rational quadratic bezier curve. Furthermore, the rational quadratic Bezier curve's basis is used to find the control point P1. Using the Matlab software, a rational quadratic Bezier curve is constructed for 10 segments of varying weight after all x and y coordinates for control points are obtained. Finally, the Dal was reconstructed using the rational quadratic Bezier curve for the 4 weights.

3. Results and Discussion

The properties of rational quadratic Bezier curves are used in this study to estimate the appropriate location of control points in a control point estimation procedure. P0 and P2 got from the corner point of each segment where the segment is divided by using Harris algorithm. MATLAB programming software is being used to reconstruct the rational quadratic Bezier curve for each segment with varying weight. Aside from that, this research focused on image smoothness using segmentation and different weights for a rational quadratic Bezier curve. The result shown that the weight effecting the smoothness of the image for rational quadratic Bezier curve by using segmentation.

4. Novelty of Research / Product

A number of researchers have attempted to reconstruct the Bspline curve and investigate the curvature distributions of the Bezier curve by demonstrating that if three criteria were met, the curvature of the Bezier curve would be monotone (Lu et al. 2016; Wang et al., 2019). Aside from that, a few researchers make use of the properties of the rational quadratic Bezier Curve (Bashir et al., 2012; Yang et al., 2020). Following that, previous research on segmentation was conducted by identifying curve-shaped chart patterns based on least square fitting of ellipses, determining control points for Bezier curves approximating segments of obtained image outline, and generating Bezier curves that encompass the region of interest (Lei et al., 2021; Won et al., n.d; Chen et al., 2021). However, no research has been conducted on the reconstruction of the rational quadratic Bezier curve using the properties of the rational quadratic Bezier and segmentation. As a result, the focus of this research is on determining the control point using the properties of a rational quadratic Bezier curve. Finally, the study intends to use segmentation to reconstruct the Dal curve.

5. Conclusion

As we all know, rational quadratic Bezier curves have a weight, and this study shows that the weight has an impact on the smoothness and shape of the curve. Following that, the positive and negative weights created different curves of the Dal. Positive weight had a smoother curve and shape once compared to negative weight.

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ANALYSING INFLUENTIAL FACTORS IN UNIVERSITY SELECTION USING FUZZY TOPSIS

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Abstract

Students must carefully choose their university because it will affect their motivation for studying, dedication, and engagement with the university. Normally, students will consider some factors that influence their choice of university. Therefore, this study aims to determine the most important factor that influences students' choice of university. The study also analyzes the preferred university either IPTA or IPTS. Besides, the study is conducted to rank the six variables which are the influence of family, the influence of friends, the university's image, the university's environment, suitability with personality and interest, and financial support. The data was collected by distributing questionnaires to 30 experts which are teachers and counselors. They are required to evaluate the issues in this study using linguistic variables ranging from "unaffected" to "very affected". The data was analyzed using Fuzzy TOPSIS. The finding shows that the most influential factor in deciding the university selection is the suitability with personality and interest with a closeness coefficient of 0.4869. The influence of friends is the least important in university selection with a closeness coefficient of 0.4713. This study's findings might benefit communities such as students, parents, and teachers. Universities may also benefit from it because they need to attract more students to expand their market.

Keywords: *factors in university selection, Fuzzy TOPSIS, rank*

1. Introduction

University selection is an important stage for all students before starting their third level of education. Public universities (IPTA) and private universities (IPTS) are the two sectors that provide tertiary or higher education programs for all high school leavers. Therefore, 30 respondents from teachers and counselors were chosen as the experts in this field since they have more experience in factors affecting students' decisions. They have been giving some advice to their previous students on which factors they should consider. The aim of this study is to figure out the main factor that affects university selection among high school leavers and rank those factors. It can also determine which type of institution, either public or private universities, that the respondents prefer.

2. Methodology

Data were collected by distributing the questionnaires using the platform google form. The criteria and alternatives are rated on a scale of 1 to 5. There are six factors used in this study which are the influence of family, influence of friends, university's environment, university's image, suitability with personality and interest, and financial support. The data collected were analysed using Microsoft Excel before being calculated using Fuzzy TOPSIS methodology. The alternative of this study is the six factors while the criteria are IPTA and IPTS. The method consists of eight steps and ranks were chosen based on the closeness coefficient calculated at the last step.

3. Results and Discussion

Based on the result, the most influential factor that affects the universities selection is suitability with personality and interest. It has the highest closeness coefficient value which is 0.4869. It means that most students choose to pursue their study at a university that provides the course that they prefer according to their personality and interest. The second place is the university's image with a closeness coefficient of 0.4865. Then, the education cost with 0.4841 closeness coefficient, followed by the influence of family and university's environment with 0.4792 and 0.4727 closeness coefficients. The influence of friends has the least closeness coefficient which is 0.4713. The result also shows that more respondents prefer IPTA compared to IPTS since the aggregate weightage for IPTA is higher. Public universities, IPTA, provide more benefits such as lower cost and have more branches so it is more suitable for all people.

4. Novelty of Research / Product

There have been some studies related to university selection such as a study by Muhammat Pazil et al. (2018) which is to identify the major factor influencing Malaysians' choice of university. The factors used in the study are affiliation, cost of education, course offered, and reputation. As the result, the institution's affiliation was ranked the first with highest closeness coefficient value which is 0.75. However, the previous study only focused on the university factors and not the students' factors. Therefore, the factors chosen in this study are related to both universities and students. There are six factors used in this study. The factors that relate to students are suitability with personality and interest, the influence of family, and the influence of friends meanwhile, the factors that relate to universities are the university's image, the university's environment, and education cost, so it can benefit both the students and the university's organization. The result shows that suitability with personality and interest is the main factor that affects the university's selection because it has the highest closeness coefficient of 0.4869.

5. Conclusion

The study is able to help a lot of people such as students, parents, teachers, and universities to prioritise the factors affecting the choice of universities. For future research, it is recommended to add more alternatives to further expand the scope of the study since the factors might change due to time.

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NUMBER OF STAFF OPTIMIZATION OF TOLLMAN SCHEDULING WITH INTEGER LINEAR PROGRAMMING

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Abstract

Scheduling problem is a great concern for several company. Larger organizations have to maintain proper scheduling of their employees to ensure good service. The schedule of toll booth collectors is one of the important elements of the company. Due to the rise of highways users, toll plaza has to make sure that they have enough workers manning the toll booths due to the increase in highways users in order to prevent any issues. They must take into consideration the staffing costs even if they can hire additional employees to make sure they do not run out of staff. Therefore, the purpose of this study was to determine optimum number of tollman working per day in order to minimize staffing costs. To achieve these objectives, Integer Linear Programming and LINGO Software were applied. The issue of too many or too few tollman will be reduced once the ideal number of tollman working has been reached. The cost of hiring new employees might be automatically decreased as a result. The data obtained those 30 workers needed per day for this company and the staffing costs per day is RM1800. Based on findings, it is recommended that a toll plaza needs a minimum of 15 tollman per day with staffing cost reduced to RM900 which has decreased staffing costs per day which still fulfil the company constraints.

Keywords: *Integer Linear Programming; Optimization; Tollman; Staffing costs; LINGO Software*

1. Introduction

Due to the rise of highways users, toll plazas have to make sure that they have sufficient staff manning the toll booths to avoid any problem occurring especially at manual booths. Therefore, this study aim is optimizing number of tollman needed and minimizing total staffing costs while fulfilling company requirements. This study focuses on Bentong Toll Plaza tollman on May 2022. The morning shift begins at 5.45 am until 1.45 pm, the evening shift begins at 1.45 pm until 9.45 pm, and the night shift at 9.45 pm until 5.45 am. All shifts start at the same time each day and rotate. The study will also consider the average cost of staffing per day.

2. Methodology

Integer Linear Programming method has been used to complete this study. This study contains four steps which are data acquisition, data pre-processing, model development and model application. The data obtained has been executed using general formula of Integer Linear Programming which consists of three components; notation, objective function, constraints. Notation has been used to construct the model and function equation. Objective functions are the objectives that this study wants to achieved while the constraints are the requirements state by the toll plaza also has been executed into the formula. LINGO software has been used to complete this study.

3. Results and Discussion

The objective of this study has been achieved when the number of tollman needed at Bentong toll plaza have minimized. From that, the staffing costs of hiring tollman also have been reduced. The actual schedules and costs provided was compared with the optimal solution of the Integer Linear Programming model that was carried out. From the results, 50% from their original staffing costs by hiring no more than half of their current tollman while still complying with company requirements. These findings show that Integer Linear Programming also can be apply to other scheduling problems and also can help in solving staffing costs problems.

4. Novelty of Research / Product

There have been a number of research that have conducted study about Integer Linear Programming on staffing costs and scheduling. a study from Trilling et al., 2006 has solved job scheduling problem by comparing two method which are Integer Linear Programming and Constraint Programming. A study on staffing and labour scheduling at the main security gate of a large industrial organization has been proposed using Integer Programming (IP) method (Alfares, 2001). Choi et al., (2009) has proposed IP in scheduling restaurant workers to minimize labor costs and meet service standards. Another study computed focused in determining the number of workers which will help in minimizing total staffing costs and meeting the staffing needs for each hour or shift (Mohamad & Said, 2013). Even though many research has been conducted in optimizing staff and minimizing staffing cost, it is hardly to find the research that conducted study for toll plaza in Malaysia using Integer Linear Programming.

5. Conclusion

The ideal number of tollmen has been established, the problem of having too many or too few tollmen has lessened. As a result, the cost of hiring a tollman automatically reduced. These results demonstrate that Integer Linear Programming can also be used to address other scheduling issues and reduce staffing expenditures.

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A FUZZY PROMETHEE APPROACH FOR CHOOSING THE MOST PREFERABLE HEALTH INSURANCE COMPANIES

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Abstract

An insurance is a firm or agency that will guarantee coverage for a specified loss, damage, illness, or death in exchange for the payment of a specific premium. A person pays for protection from any unforeseen financial losses when they get insurance. The insurance company would pay them if something unfortunate happens to them. Selecting an insurance company is challenging because it necessitates careful consideration and study to make the best choice. The decision-making process is harder by each person's individual perception. Different people have different tastes when it comes to insurance companies. Because of this, it is crucial to follow the right procedure while choosing the best insurance company. The objectives of this study are to rank insurance companies by using fuzzy PROMETHEE and to evaluate the performance of the insurance companies by the comparison of fuzzy PROMETHEE ranking and the original ranking. Three insurance companies which are Great Eastern, AIA, and PRUDENTIAL will be ranked in this study. The contribution, coverage, deductible, and waiting period are the criteria that will be considered in this study. The insurance companies will be ranked by using the fuzzy PROMETHEE. A decision maker is required to rate the alternatives and criteria in this study. As a result, the most preferable health company is Great Eastern as the first, AIA as the second and PRUDENTIAL as the last. The findings of this study will be beneficial for many people. Future researchers are recommended to widen the scope of the project by considering varieties of alternatives and criteria.

Keywords: *insurance companies, fuzzy PROMETHEE, ranking*

1. Introduction

This research is studied to rank the insurance companies namely Great Eastern, AIA and PRUDENTIAL using fuzzy PROMETHEE. It is also to evaluate the performance of the insurance companies by the comparison of original ranking and fuzzy PROMETHEE ranking. Seven criteria are considered in this study namely contribution, coverage, deductible and waiting period using fuzzy PROMETHEE method. The criteria and alternatives are rated by a decision maker using linguistic variables in this study.

2. Methodology

Data were collected by interviewing a decision maker who is an employee who just started working and still in confusion to choose an affordable insurance company. The information about each of the insurance companies was explained briefly to the decision maker. The companies were ranked by the decision maker based on the information given. Next, the quotations of the decision maker based on his details from each company were then explained in specifics. The insurance companies were rated based on each criterion by the decision maker. The ratings were then evaluated using fuzzy PROMETHEE method to find the ranking of the insurance companies. By the ranking, the performance of each insurance companies was analysed.

3. Results and Discussion

For this research, Great Eastern, AIA and PRUDENTIAL were considered as the alternatives and contribution, coverage, deductible and waiting period of each company as the criteria. The ratings from the decision maker were calculated using the steps in fuzzy PROMETHEE. The alternatives were

ranked by their net flows where net flow is the subtraction of the fuzzy leaving flow and fuzzy entering flow. By the calculation of fuzzy PROMETHEE, Great Eastern was the first rank, AIA was the second and PRUDENTIAL was the third with the net flow of 0.2542, -0.0877 and -0.1666 respectively. To choose the best alternative, the highest net flow was the right choose. We can conclude that Great Eastern with the lowest net flow is the most preferable insurance company.

4. Novelty of Research / Product

There have been a few of studies about the investigation of various applications using fuzzy PROMETHEE. Previous research about ranking the most popular cancer treatment methods such as chemotherapy, radiotherapy, hadron therapy, immunotherapy, hormone therapy, and surgery were studied based on some criteria. (Ozsahin, 2019). A previous researcher used fuzzy PROMETHEE and the standard criterion preference functions to evaluate a green supplier preference using four alternatives, five decision makers and seven criteria. (Abdullah, 2019). In the study of previous research, fuzzy PROMETHEE was used to examine the efficacy of several natural wastewater treatment strategies, including stabilisation ponds (SP), built wastelands, aquatic plant use (AP), soil filters (SF), and wastewater reuse for irrigation (RWI). (Gichamo, 2020). A study was conducted for landslide susceptibility mapping (LSM) production using FAHP and PROMETHEE II on eight landslide-related raster-based layers. (Roodposhti, 2014). In a government-high priority industry, such as information and communications technology, a researcher proposed a research to analyse and choose early-stage yet high potential start-up companies. (Afful-Dadzie, 2015). These are all the researches that have been studied by the previous researchers. However, there has not been any research on ranking insurance companies namely Great Eastern, AIA and PRUDENTIAL in Malaysia. Therefore, the goal of this research is to provide the ranking of insurance companies using scientific method that can be proved and trusted which is fuzzy PROMETHEE.

5. Conclusion

Fuzzy PROMETHEE can successfully rank the health insurance companies. Similarities and differences can also be determined by the evaluation of the insurance companies' performance by the comparison of fuzzy PROMETHEE ranking and the original ranking. Future researchers are recommended to widen the scope of the project by considering varieties of alternatives and criteria.

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THE NUMBER OF EMPLOYED PEOPLE AND TOURIST ARRIVAL IN MALAYSIA USING ARIMA AND FUZZY TIME SERIES MODEL: PRE, DURING AND POST COVID-19

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Abstract

Covid-19 has cause enormous challenge to Malaysia when this pandemic has lowered the tourism demand and cause the number of tourist arrival in Malaysia to decrease from 26.1 million in 2019 to 4.3 million in 2020. Many workers have also been laid off by their company due to the incapabilities of the business to generate revenues to pay their workers. Forecasting the number of tourist arrivals and the number of employed people is studied and correlation between the two figures are calculated in order to overcome the problems. The main objectives this paper aims to achieve are to find the relationship between the number of employed people and the number of tourist arrival in Malaysia and in finding the forecasted values for both data sets. The aim in finding the relationship between these data is to determine whether the number of tourist arrivals affects the number of employed people or otherwise. The data sets used were from the Tourism Malaysia website, CEIC data and Department of Statistics Malaysia (DOSM) dating from January 2018 until September 2022. ARIMA and Fuzzy Time Series methods are chosen to find the forecast value while the correlation regression is to assist in finding the correlation. MSE, RMSE and MAPE were also utilized to compare the error measures gathered between the two methods. The result shows that ARIMA(2,1,0) is the best method to forecast the number of employed people while Fuzzy Time Series is better for the number of tourist arrivals. However, the correlation values calculated suggested strong relationship only during the endemic phase.

Keywords: ARIMA, Fuzzy Time Series, employed people, tourist arrival, forecast, Covid-19

1. Introduction

Three main objectives that this study would like to achieve are to determine the relationship between tourist arrival and employed people using correlation regression, to forecast number of employed people and tourist arrival using ARIMA and Fuzzy Time Series model, and to find the best method between ARIMA and FTS using error measures. This paper utilized data of the number of employed people, gathered from Department of Statistics Malaysia (DOSM,) and the number of tourist arrival in Malaysia, gathered from Tourism Malaysia website, dating from January 2018 until September 2022. The data of unemployment rate in Malaysia would not be considered in this study.

2. Methodology

Methods used in this study to forecast the number of tourist arrival and the number of employed people are ARIMA model and Fuzzy Time Series model. For the ARIMA model, the best model is chosen based on few criteria such as the Akaike Info Criterion (AIC), Schwarz Criterion, Hannan-Quinn Criterion, Box Pierce Q Statistics, and MSE. The best model between ARIMA and FTS for both datasets are determine based on the error measure, MSE, RMSE and MAPE. The forecasted values from the best models for both data is used to find its relationship for pre, during and post Covid-19. The relationship is calculated using correlation regression.

3. Results and Discussion

The result obtained in this study for the best model in forecasting the number of employed people in Malaysia is ARIMA(2,1,0) model while Fuzzy Time Series is the better model to forecast the number of tourist arrival. Both models were chosen as it exhibits the lowest values from all the error measures calculated. The forecasted values using ARIMA(2,1,0) for the number of employed people and forecasted value using FTS model for the number of tourist arrival will be divided by phase, which are by pre, during and post pandemic Covid-19 phases. The relationship between the two data is collected for each phase and the results shows that the endemic phase has the strongest correlation values at above 0.8 for the relationship between the actual data and the forecasted values. Meanwhile, other phases indicate a weak to moderate correlation only.

4. Novelty of Research / Product

Research by Nor et al. (2018) & Nur Afiqah Ismail et al. (2022) have been focusing mainly on forecasting the number of employment rates using exponential smoothing methods, ARIMA and ARFIMA models. There is also a study regarding forecasting the tourist arrival but somehow it focuses more on tourist arrival in homestay at Pahang instead of the total number in Malaysia (Maizatul Akhmar Jafridin et al., 2021). Meanwhile, there is a study regarding the relationship between the number of tourist arrival and unemployment in Malaysia that also utilized the regression analysis to attain the result (Tee et al., 2020). However, there is not much study that focuses on the predicting the number of employments in Malaysia. Hence, this paper focus on that matter and finding the relationship of the figure with the number of tourist arrival. Aside from that, this study also divided the data based on the phase of pre, during and post Covid-19 and find the correlation value for each phase.

5. Conclusion

In conclusion, Covid-19 does affect the number of tourist arrival and employed people as both number drops during the pandemic. However, both figures started to gain its momentum back when Malaysia slowly reach the endemic phase. Perhaps in the future, if this pandemic is getting better, the tourism industry and number of employed people might stand in the same way as it did before Covid-19.

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THE PREFERRED SOCIAL NETWORKING SITE (SNS) FOR INFORMATION DISSEMINATION AMONG UiTM STUDENTS USING FUZZY AHP METHOD

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Abstract

Social Networking Sites (SNS) are a platform all generation groups use to obtain information and make connections with others. In addition, SNS is also used by students to obtain information provided by the university. However, there is a lack of SNS that students cannot use to get important information; hence the individual who is responsible for distributing the information needs to take the initiative to make students easy to get the information. This study aims to determine the preferred SNS among UiTM students to obtain information, rank the criteria of SNS for disseminating information to students, and rank the chosen SNS based on the criteria. Furthermore, the method of the Fuzzy Analytic Hierarchy Process has been used to achieve the objective of this study. The criteria that need to rank are functionality, content, usability, and privacy. Data used in the study is primary data that was collected through interview sessions and distributing questionnaires to three experts which is Majlis Perwakilan Pelajar, Jawatankuasa Perwakilan Kolej, and Ahlijawatankuasa Manatics, involved in distributing the information to students. The findings show that the most important criterion to disseminate the information with the highest is functionality of SNS with a normalized weight of 0.3090. Moreover, based on the final ranking of preferred SNS, Telegram is the highest normalized weight value of 0.3120. Based on the results, it can be concluded that Fuzzy AHP is a method that can assist experts in making decisions in difficult conditions and precisely rank all the criteria.

Keywords: social networking site, Fuzzy AHP, information dissemination, UiTM students

1. Introduction

The social networking site was chosen to decide the most preferred for students to get important information from university. In order to overcome the information not reaching students, the disseminator of information need to know which social networking site (SNS) that students preferred. This article analyses the criteria of a SNS that students prefer to get information such as functionality, content, usability and privacy of the SNS. The aim is to determine the preferred SNS among UiTM students to obtain information, to rank criteria of SNS for disseminating information to students and to rank the chosen SNS based on the criteria.

2. Methodology

Data were collected from interviews 3 person who in charge in disseminating the information from 3 committees in UiTM Arau, Perlis which are the multimedia person in Majlis Perwakilan Pelajar (MPP), Jawatankuasa Perwakilan Kolej (JPK) and Kelab Manatics. Research findings evaluate the preferred Social Networking Site (SNS) to develop the information and easy to students to get the information. Method that uses in the study which is Fuzzy Analytic Hierarchy Process (AHP) which is method for ranking the SNS. From the data that collected, we can find the highest ranking of SNS and that means the highest value is the most preferred SNS to disseminate the information.

3. Results and Discussion

Based on the result, the preferred SNS among UiTM students is Telegram. It is because Telegram has the highest weight in ranking of the preferred SNS by using Fuzzy AHP and followed by Instagram, WhatsApp and Facebook. However, the criteria of the SNS also very important to disseminate the

information. From previous research by (Ezumah, 2013) in 2012, the most preferred SNS is Facebook and after 10 years, Facebook be in the last ranking because of the usability of the Facebook in 2022 to disseminate information is low. This article will finally can be conclude that preferred SNS depends on the evolution of time and the use of SNS based on that people.

4. Novelty of Research / Product

There have been a number of research that have investigated the social networking site which is the functionality of it (Zamroni et al., 2019; Hussain, 2012). Previous research about the SNS was done through the reasonable college student use the social networking site (Ezumah, 2013). There have also been several researches on method of Fuzzy AHP that to make decision by ranking of the criteria (Putra et al., 2018; Paul & Ghosh, 202; Saifullah, 2019; Bobar et al., 2020) however, there has no research that has be done about ranking of preferred social networking site among students UiTM. Therefore, the main focus of this research is how the important information can be reach by students easily without missing the information. All in all, the research aims to disseminate the information through the SNS that students preferred.

5. Conclusion

The Fuzzy AHP method has been applied and has successfully achieved the objectives of this study, specifically to determine and rank the preferred SNS based on criteria that influence students to obtain the information. From the result, the ranking of the factors can be achieved by referring to the normalized weight values.

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MATHEMATICAL MODELLING ANALYSIS OF DIET PLANNING FOR THALASSEMIA PATIENTS

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Abstract

The purpose of this study is to develop a mathematical model of meal preparation for thalassemia patients. This study aims to find the cost of the food combinations, the amount of nutrients thalassemia patients needed, and the optimal model between linear programming and integer programming. The diet problem describes its limitations and objectives functions. Planning good meals requires taking into consideration a variety of constraints, including the required nutrient composition, the amount of food to be taken, and food allergy with the smallest cost possible. The formulation of mathematical models that correspond to all requirements and limitations. This article clarifies how the linear and integer programming approach provides an optimal and feasible solutions to the diet problem for thalassemia patients.

Keywords: *Linear Programming, Integer Programming, Diet Planning, Optimisation, Mathematical Modelling, Thalassemia*

1. Introduction

Diet planning for thalassemia patients was chosen to find out how much of certain nutrients they need in their daily intake as requirement. The main objective of this study is to formulate a linear programming and integer programming model for the diet planning problem of thalassemia patients. The sub-objectives are to determine the amount of nutrients needed for thalassemia patients and to evaluate the cost of food combinations for thalassemia patients. This study focuses on the good nutrients for thalassemia patients such as calcium, vitamin D, folate, zinc, copper, ceruloplasmin, selenium, vitamin C and vitamin E. The data was collected from one thalassemia patient at a government hospital.

2. Methodology

The research is based on secondary data from Hospital Tuanku Fauziah (HTF), Kangar, Perlis, Standard Operating Procedure of Consulting Services for Individual with Thalassemia and book Nutrient of Composition of Malaysian foods is used to compile information on the recommended adult nutrient intakes. The information acquired includes the minimum and maximum amounts of nutrients that patients with thalassemia should consume. The data collected included the upper and lower limits nutrient content requirements for people with thalassemia (Vichinsky et al., 2021).

3. Results and Discussion

By using the linear programming approach and integer programming approach, the cost of the food menu can be minimised. A suitable method was also developed for thalassemia patients to design their meal menu in keeping with the mathematical model, in addition to ensuring a healthy diet that contains all the necessary nutrients. A more feasible strategy is provided by the integer programming, in which the food is served using integer value (Sufahani et al., 2021). When the integer programming method was used in place of linear programming, the cost increased significantly from RM7.95 to RM9.80. The study provided insight into the nutritional needs of thalassemia patients and the application of linear programming and integer programming to achieve a considered and optimal diet. The mathematical model constructed in this research known as linear programming and integer programming could be considered a useful tool to support decision making processes in healthcare and patients with thalassemia.

4. Novelty of Research / Product

There have been lots of research that have studied into applications of linear programming and integer programming such as (Varghese et al., 2022) previous research was done through optimisation of a linear objective function in circumstances with numerous decision factors has long been studied through linear programming. There has also been research about cost reduction, production quantity maximisation and capacity utilisation maximisation are the three goals of the linear programming model (Jyothi et al., 2019). In order to deal with the Nurse Rostering Problem in contemporary hospital environments (Rahimian E et al., 2017), used a novel hybrid Integer Programming was used. However, there has not been many research on how to use mathematical modelling for diet problem. Therefore, the main focus of this research is to construct a mathematical modelling for the diet problem by taking into consideration of food item and recommended nutrient needed. This research aims the optimisation of nutrients needs and cost of food combinations for thalassemia patients by using linear programming is flexible since it can include variables that are most suitable for the diet planning problem.

5. Conclusion

A suitable method was also developed for thalassemia patients to design their meal menu in keeping with the mathematical model. The study provided insight into the nutritional needs of thalassemia patients and the application of linear programming and integer programming to achieve a considered and optimal diet.

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RANKING FIVE MODELS OF LAPTOPS USING FUZZY PROMETHEE

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Abstract

In modern college classrooms, computers are a common sight. Laptops are apparently brought by students as a learning aid since they make e-books easily accessible, can replace handwritten notes, enable rapid online access to material relating to the day's lecture, and allow for quick computations for arithmetic or statistics issues. It is crucial to research students' needs in this study. Four key features—price, battery, storage, and weight—were identified by several students after observation and comments. That's why, it is prior to looking at other characteristics, this is a crucial quality to consider while choosing the finest laptop model. This research has considered five brands of laptops from five different companies. This research has three goals in mind. Foremost, to determine the most important criterion for buying a laptop. In addition, the study aims to rank laptop brands using the fuzzy Preference Ranking Organization Method for Enrichment Evaluation (PROMETHEE) and its final objective is to compare the fuzzy PROMETHEE ranking with the original ranking. Twenty respondents are required to evaluate this issue using linguistic variables ranging from "very poor" to "very good". The components are ordered using Fuzzy PROMETHEE. The findings of this study might be beneficial to many students. Future research might broaden the scope of the project by including a variety of criteria and objectives.

Keywords: Ranking, Fuzzy PROMETHEE, Laptops

1. Introduction

The objectives of this research are to determine the most important criterion for buying a laptop, to rank laptop brand by using fuzzy PROMETHEE and to compare the fuzzy PROMETHEE ranking with the original ranking. This study will focus on ranking five models of laptops from five different brands and companies which are Acer Aspire 5, Asus Vivo book S15, Lenovo Legion Y740, HP Omen 17, and Dell G5 15. The criteria that will be considered in ranking the laptops are price, storage, weight, and battery. The laptops will be ranked using fuzzy PROMETHEE.

2. Methodology

Data were collected from student UiTM Perlis Branch who is the user of one brand of laptop from five type of brand that be ranked. Data for this study will be collected by asking the decision makers to assess the importance of the alternatives criteria and rate the performance of alternatives based on criteria using linguistic variables. The linguistic variables will then be converted into their corresponding fuzzy numbers. By doing this, the fuzzy weight of criteria and fuzzy performance of the alternative will be obtained.

3. Results and Discussion

The alternative for this research is Acer Aspire 5, Asus Vivo book S15, Lenovo Legion Y740, HP Omen 17 and Dell G5 15. Meanwhile, for the criteria are price, storage, weight, and battery. The ranking has been decided by their net flow value. The highest Net Flow value is ranked by the highest rank. Meanwhile, the lowest Net Flow value was ranked by the lowest rank. Fuzzy PROMETHEE method resulting, Acer Aspire 5 is rank by first place with highest Net Flow value 0.367339, second is Asus Vivo book S15 with 0.042305 net flow value, third placing by Lenovo Legion Y740 with 0.000297, fourth place rank by HP Omen 17 with net flow value -0.07212 and Dell G5 15 is ranked by place 5 with Net Flow value -0.33782.

4. Novelty of Research / Product

There is collection of research that using PROMETHEE method in solving problems. For example, Abdullah et al.; (2019), using the PROMETHEE and the conventional criterion preference functions, suggested a preference for green providers. Afful-Dadzie et al. (2015) used the (fuzzy PROMETHEE) method to analyze and choose early-stage but high-potential start-up enterprises in a government high-priority field like information and communications technology. Academics and practitioners have been interested in the PROMETHEE family of outranking algorithms and their applications since Behzadian et al. (2010). This study established the ideas for a new family of outranking systems (Brans & Vincke, 1985). D. U. Ozsahin et al. (2017), aims to analyze and compare the most prevalent nuclear medicine imaging devices using a multi-criteria decision-making technique choice, with fuzzy PROMETHEE as the theory of interest. (Li and Li, (2010). (PROMETHEE) techniques were applied to a manufacturing organization by Tuzkaya et al. (2010) to demonstrate their usefulness. However, there hasn't been any research on ranking the brands of the five distinct laptop manufacturers that Malaysia has imported from: Acer, Asus, Lenovo, HP, and Dell. Therefore, the purpose of this study is to present a rating of five selected laptop brands utilising a verifiable scientific PROMETHEE approach.

5. Conclusion

Fuzzy PROMETHEE can handle the subjectivity and ambiguity of human thoughts. When making choices, people can become confused. Humans have always made decisions based on a single criterion, even though multiple criteria should be considered.

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PREDICTION OF BREAST CANCER DISEASE USING MACHINE LEARNING APPROACH

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Abstract

The most prevalent invasive cancer in women, and the second leading cause of cancer mortality in women is breast cancer. Researchers' interest in breast cancer research and prevention has increased recently. However, the advent of data mining techniques has made it possible to efficiently extract more valuable information from large databases, and the information so retrieved may be used for prediction, classification, and clustering. Three different classification models, including Decision Tree (DT), Random Forest (RF), and Logistics Regression (LR), are used for the classification of datasets related to breast cancer in this study to develop an accurate model to predict breast cancer disease and reduce the risk of breast cancer death. Wisconsin Breast Cancer Database (WBCD). Three metrics are utilised to assess how well these three classification models performed: Precision, Recall, and F1 Score. Prediction accuracy numbers are also included. An examination of comparative experiments demonstrates that the random forest model can outperform the other two techniques in terms of performance and accuracy. As a result, it has been determined that the study's model has clinical and referential value in real-world applications.

Keywords: Breast cancer, predict, early prevention, Machine learning, Random Forest, Decision Tree, Logistic Regression, accuracy

1. Introduction

Breast cancer is the most frequent type of cancer overall, regardless of age, gender, or lifestyle, particularly in the USA. In order to create an appropriate model for breast cancer disease prediction, the study employs a dataset of US patients with breast cancer. There are 699 instances and 11 variables in the dataset. The paper analyses the best model that has the highest accuracy and predicts the outcome of breast cancer disease using machine learning technique to avoid final stage cancer and assist to early preventive of disease. This paper uses Phyton and Machine Learning Approach to forecast illness diagnosis.

2. Methodology

The data were gathered via the UCI Machine Learning Repository, a secondary data source where patients from the USA donate their data for mathematical research. In a classification model, the dataset has two values for benign and malignant conditions. The independent and dependent variables in the data must be identified prior to the modelling procedure. The dataset also has to be profiled, meaning that all null values must be removed, along with any outliers in the data. Since data visualisation is a crucial ability in machine learning, the data will be summarised into a chart or graph before the models are developed. It oversees giving the provided data a qualitative interpretation. Three classification methods—Decision Tree, Random Forest, and Logistic Regression—will be used to model the data. The most effective strategy to forecast the outcome will be the one with the highest accuracy among the three.

3. Results and Discussion

Three mathematical measurements—Accuracy, Confusion Matrix, Precision, Recall, and F1 Score— will be used to evaluate the models' output from the three-classification technique in the study. The metrics will be used to determine which model has the best accuracy and to compute and assess the results.

4. Novelty of Research

Madhuri and Bharat et al. introduce a comparative study using supervised machine learning techniques to identify breast cancer patients. They used a variety of machine learning algorithms, such as logistic regression, rainforest, decision tree, and multi-layer perceptron. When compared to other algorithms, multi-layer perceptron's perform well (Gupta & Gupta, 2018). Takada developed a novel computational technique for predicting the pathological complete response to neoadjuvant chemotherapy in patients with primary breast cancer using alternating decision trees (Takada et al., 2012). Furthermore, when compared to other data classification techniques, ML algorithms produce more accurate results in constant disease prediction. Many studies have already demonstrated that supervised based classification techniques achieve excellent accuracies in the field of disease prediction (Javed & Shamrat, 2020). This research will advance the understanding of how to use machine learning to develop an accurate model that can predict the development of breast cancer. This research is an extension of earlier studies that may aid cancer patients in the early detection and initiation of treatment. As a result, it is possible to decrease the number of deaths from breast cancer, lower the cost of therapy, and improve the quality of life for patients.

5. Conclusion

Experimental results showed that the highest accuracy score is pointed to Random Forest, conforming that it is the best forecast model. The value of accuracy score obtained by Random Forest model is 97.81% higher than Decision Tree which is 96.35% and Logistic Regression with 97.08% indicating the forecasted values are closest to the actual values.

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HEAT SOURCE AND CONSTANT WALL TEMPERATURE OF MHD FERROFLUIDS ON EXPONENTIALLY STRETCHING AND SHRINKING SURFACE UNDER STAGNATION POINT REGION

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Abstract

The problem of magnetohydrodynamic flow and heat transfer ferrofluids with a heat source and constant wall temperature is presented in the study. Under the stagnation point region, the surface is assumed to stretch or shrink exponentially and the wall temperature also is assumed to be constant. By using the similarity transformation, the governing partial differential equations are transformed into nonlinear ordinary differential equations (ODE). For some values of parameters, the equations are then numerically solved using the Range-Kutta Fehlberg (RKF) method in Maple Software. For this study, two types of ferroparticles, magnetite and cobalt ferrite with water as a base, are considered. The numerical solutions for the skin friction coefficient, heat transfer rate, velocity and temperature profile as influenced by the magnetic parameter, stretching and shrinking parameters, and heat source parameter are graphically displayed and discussed in depth. In the shrinking case, cobalt ferrite appears to have a higher skin friction coefficient and heat transfer rate than magnetite. Meanwhile, in the stretching case, cobalt ferrite has a higher skin friction coefficient, but magnetite has a higher heat transfer rate. Magnetite has a higher skin friction coefficient and heat transfer rate than cobalt ferrite for magnetic parameters. Magnetite also appears to have a higher heat transfer rate in the presence of heat source than cobalt ferrite.

Keywords: *MHD ferrofluid, heat transfer rate, skin friction coefficient, stretching/shrinking surface, heat source.*

1. Introduction

The main objective of this study is to investigate the heat transfer of MHD ferrofluid on exponentially stretching/shrinking surface under stagnation point region with the presence of heat source/sink. This research also aims to build a mathematical model of MHD ferrofluid on an exponentially stretching/shrinking surface with a heat source and constant wall temperature, as well as to solve the velocity and temperature of MHD ferrofluid using similarity transformation. This study is limited to a problem involving a surface that is assumed to stretch or shrink under the stagnation point region, accompanied by ferrofluid flow with MHD also heat source effects. The equation for each problem are transformed into ordinary differential equtions by using similarity transformation. Then, by using Range-Kutta Fehlberg (RKF), the resulting similarity equations are then solved numerically.

2. Methodology

The continuity, momentum, energy and concentration equation are derived based on the boundary layer theory. Then, the governing partial differential equations are transformed into ordinary differential equations by using similarity transformation. The ordinary differential equations are then solved by using the Range-Kutta Fehlberg method. Using the Maple software, the numerical techniques used in this study were developed.

3. Results and Discussion

Tables and graphs are used to present the skin friction coefficient and heat transfer rate, along with the velocity and temperature profile for a various range of parameter such as stretching/shrinking parameter, magnetic parameter and also heat source/sink parameter, and volume fraction of solid ferroparticle. As a result, values of skin friction coefficient and heat transfer rate are decreasing when stretching/shrinking parameter values increases. For shrinking case, cobalt Ferrite have higher value of skin friction coefficient and heat transfer rate compare to magnetite. Next, for magnetic parameter, we can conclude that both skin friction and heat transfer rate are decreasing when magnetic parameter increase and magnetite have the highest number of skin friction coefficient and heat transfer rate. With the presence of heat source, the number of heat transfer rate increase when heat source parameter increase, but values of skin friction coefficient seem to remain constant since heat source parameter do not give any impact.

4. Novelty of Research / Product

There have been a number of research that have investigate the heat transfer rate and skin friction coefficient for ferrofluid with water as a base with the influenced of various parameter such as stretching/shrinking surface, magnetic parameter, wall mass transfer parameter and volume fraction of solid ferroparticle (Rasli et al.,2021). Thus, this study continuous the work by including the effect of heat source as well as constant wall temperature and wall mass transfer parameter that are studied before are being removed.

5. Conclusion

The analysis yields a brief summary in which cobalt ferrite has a higher value of skin friction coefficient and heat transfer rate compared to magnetite for stretching/shrinking parameter. Next, magnetite has the highest number of skin friction coefficient and heat transfer rate when magnetic parameter are changing. With a presence of heat source, Magnetite also appears to have a higher heat transfer rate than cobalt ferrite.

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WEB-BASED UITM BOOK STORE MANAGEMENT SYSTEM INTEGRATED WITH WHATSAPP API AND GOOGLE SERVICES

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Abstract

Web-Based UiTM Book Store Management System Integrated with WhatsApp API and Google Services is a web development project to purchase and sell vast quantities of books, mainly used books. This approach helps UiTM students obtain books quicker and more cheaply. Web-Based UiTM Book Store Management System also designs and develops a system for UiTM students, integrates it with WhatsApp API and Google services, and tests its usability and network performance. Web-Based UiTM Book Store Management System uses hostinger.com to store and manage its content. The customer's transaction data will also appear in a Transaction notification email confirming payment or book purchase. When students register, email verification adds security. Google Form in Web-Based UiTM Book Store Management System lets users request book refunds from the admin. The admin may see all Web-based UiTM Book Store Management System refund requests in a Google Spreadsheet. WhatsApp API allows the admin to notify a user about the refund status. ToyyibPay Payment lets students purchase books online without cash. The waterfall concept is used for System Development Life Cycle. 30 UiTM Perlis students completed four-category surveys to evaluate the Web-Based UiTM Book Store Management System. The system evaluation showed that most participants liked all categories. Network performance on the website speed test for mobile and desktop devices was satisfactory. It is a practical, cost-effective, trustworthy option that can help students in book sales transactions and can generate additional income for students.

Keywords: Web-Based UiTM Book Store Management System, WhatsApp API, Google Services, System Development Life Cycle, UiTM Perlis students, Usability testing

1. Introduction

Web-Based UiTM Book Store Management System Integrated with WhatsApp API and Google Services is a web development project as a major center for buying and selling various types of books in large stocks. The system aims to make it easier for UiTM students to find and purchase books faster and cheaper, especially used books. The project's objectives are to design and develop the system, integrate it with WhatsApp API and Google services, and evaluate its usability and network performance. The project's scope includes creating a system where users can be assigned different roles and permissions, manage account information, keep track of contact information, manage all aspects of books, view and edit user transactions, capture and maintain user history and information about book sales, and provide support for related transactions. Additionally, the system allows the viewing of detailed user interactions.

2. Methodology

The Waterfall methodology will be used for this system, which includes stages such as planning, analysing, designing, implementing, testing, and maintaining the system. Planning involves gathering UiTM students' needs and preferences. The analysis stage involves evaluating the gathered information about hardware and software to create a design plan. The design stage involves creating a detailed system design, including the integration of WhatsApp and Google services. Implementation involves web development, database management, and API integration. Testing ensures the system works and

meets requirements. Finally, the maintenance stage involves providing support and updating the system after it has been deployed.

3. Results and Discussion

The usability testing results for the Web-based UiTM Book Store Management System were conducted on 30 participants from the Faculty of Computer and Mathematical Sciences. Moreover, a set of 15 questionnaires was given to the participants after testing the system to gain feedback from them. This system was measured into four categories: user interface satisfaction, usefulness, ease of use of the system, usability, and the Integration with WhatsApp API and Google Services function in the system, which showed that the system is effective in providing a convenient and efficient platform for buying and selling books. The integration of WhatsApp API and Google services allows for easy communication and transaction management between users. Participants were generally satisfied with the user interface, system functions, and the effectiveness of the Integration with WhatsApp API and Google Services. Network performance testing also showed that the system could handle a high volume of concurrent users and transactions without major issues. Overall, the Web-based UiTM Book store management system integrated with WhatsApp API and Google services is a successful solution for providing a convenient and efficient platform for buying and selling books for UiTM students.

4. Novelty of Research / Product

The proposed research aims to integrate WhatsApp API and Google services with the current bookstore management system of Universiti Teknologi Mara (UiTM) to improve efficiency and convenience for students purchasing books. This research addresses the issues of limited access to books and lack of convenience in the current system and is expected to improve the overall user experience. (Hassan, 2018; Jalil, 2020) This research also builds on previous studies that have shown the potential of WhatsApp API in improving customer service in e-commerce (Nawaz, 2019) and the benefits of integrating Google services in management systems (Zakaria, 2019) by integrating both in a unique way for the specific context of a university bookstore. It is also expected to provide valuable insights into the potential of integrating WhatsApp API and Google services in similar contexts, such as other university bookstores or e-commerce platforms (Mohd, 2018).

5. Conclusion

In conclusion, the proposed project is to design and develop a web-based bookstore management system for UiTM students, including WhatsApp API and Google Services integration. The system aims to improve convenience and accessibility for users and will be evaluated through usability and network performance testing to ensure it meets its goals.

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FACIAL EXPRESSION RECOGNITION USING DEEP LEARNING TECHNIQUES

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Abstract

Human's feelings can be judged by their face expressions. Face expressions, in general, are a natural and direct way for humans to communicate their emotions and intentions. Trying to recognize the expression on a human face using devices is very difficult. Main objective of this research is to recognize several kinds of human face expression by implementing Convolutional Neural Network (CNN) technique in the facial expression recognition system. The system will display the result of the expression made by the user. The expressions that will be detected are "angry", "disgusted", "fearful", "happy", "neutral", "sad", and "surprised". In conclusion, this research successfully developed a working facial expression recognition (FER) system with a high accuracy result.

Keywords: CNN, facial expression, FER system, emotion, artificial intelligence

1. Introduction

Nonverbal communication can be characterised by facial expressions. It is an important role of facial expression in human interaction. Without understanding facial expressions, it is hard to communicate with someone. We cannot be sure whether the person is happy, sad, angry, mad, etc. To recognize facial expressions using a facial expression recognition (FER) system is very hard and difficult. That is why Artificial Intelligence (AI) techniques are needed to improve and solve this problem. This research proposed a facial expression recognition (FER) system based on Convolutional Neural Network (CNN) technique.

2. Methodology

The first step is to collect an image facial expression recognition dataset as training and testing input. The dataset from Kaggle FER2013 is chosen based on the literature reviews. It includes 35,887 grayscale images of faces, each labelled with one of seven emotion categories: angry, disgusted, fearful, happy, sad, surprised, and neutral. After that, develop a facial expression recognition (FER) system based on CNN technique. The FER system built using Python programming and running using a personal laptop. Finally, analyse the functionality and performance of the developed FER system.

3. Results and Discussion

The kind of testing that had been done were Functionality Testing and Usability Testing. For Functionality Testing, the FER system successfully detected all of the 7 emotions (" angry", "disgusted", "fearful", "happy", "neutral", and "sad"). The system needed to scan some video before outputting the result of the emotion. For Usability Testing, a survey was conducted using UiTM students as participants. The student has to make an emotion in front of the camera and will be recorded for further use. The student needs to maintain an emotion for 2 – 4 seconds to see if the system is functioning properly. Based on the analysis, the student found it easier to maintain a "happy" expression than the other expressions. The hardest expression to detect is "fearful."

4. Novelty of Research

There have been several researches that have developed the FER system but most of them using other AI techniques. With CNN, it can be trained end-to-end, meaning that the input image can be passed through the network and the output can be a label indicating the recognized expression. It also can manage large and complex data sets, such as images.

5. Conclusion

This research successfully developed a working facial expression recognition (FER) system with a high accuracy result. The FER system is based on CNN technique that can identify expressions such as "angry", "disgusted", "fearful", "happy", "neutral", "sad", and "surprise". Hopefully, this research can highlights the potential of CNN technique and FER system to be apply in other fields.

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ANALYSIS ON RANSOMWARE CHARACTERISTICS USING STATIC ANALYSIS METHOD

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Abstract

Ransomware attacks pose a serious risk to the security of both personal and business systems. Using evasion techniques, payload distribution, and infection methods, these attacks infiltrate systems and encrypt valuable files, then demand money in exchange for the decryption key. Current ransomware analysis tools can provide general information about malicious binaries, but there are limitation in providing specific information about the behaviour of a specific ransomware sample, making it difficult to protect end-user machines from unknown attacks, particularly the most recent ransomware variants. This project intends to investigate the most recent ransomware attacks and study their characteristics using static analysis. A methodology for the static analysis of ransomware characteristics is proposed by utilising a secure lab environment, VMware Workstation and Windows operating system for host and guest, and various static analysis tools such as PeStudio, CFF Explorer, HxD, and HashMyFile to extract and analyse the functionalities of ransomware samples. The technology can detect unknown ransomware variants by recognising the variant's distinctive characteristics. Real-world ransomware samples were used to validate the methodology. This research provides significant information for security experts and researchers in the realm of cybersecurity and can aid in the protection of systems against ransomware attacks.

Keywords: ransomware, static analysis, characteristics

11. Introduction

At this point in time, ransomware offers a significant challenge that is also the one that is expanding at the fastest rate for all users, ranging from individual families to large enterprises and government agencies. The ransomware families of today use complex encryption and transmission strategies, which drastically reduces the possibilities of successfully recovering the data and brings them almost to zero. The objectives of this project are to study the main characteristics of the latest ransomware attacks and to analyse and differentiate the evolution of ransomware characteristics according to it's generation. This project will use VMware Workstation as the secure lab environment during the implementation and analysis phase. Windows operating system will act as both host and guest machine.

12. Methodology

Ransomware samples were collected from trusted resources in the internet such as Virus Share and Malware Bazaar. The process of the analysis is held in the secure lab environment which is inside the VMware Workstation. Static analysis tools such as PeStudio, CFF Explorer, HxD editor and HashMyFile are used to analyse the ransomware characteristics. The process of understanding, assessing, or inspecting data or samples in order to discover the characteristics and properties of the specific ransomwares is the analysis that were done. All of the results were compiled and entered in a table. The obtained results determined the main characteristic of the ransomware according to its generation.

13. Results and Discussion

Every sample of ransomware has been analysed with a wide variety of reverse engineering and ransomware analysis tools. During the course of the investigation, it was found that vital information regarding the DLLs and the primary Windows functions utilised by each and every ransomware, in addition to information regarding the supplementary tools, such as the decryption components, was uncovered. In order to investigate the similarities and differences between the first generation, the second generation, and the third generation of ransomware, comparisons of their primary characteristics were made. The findings of this study could be put to use in the development of effective and efficient mitigation measures for ransomware according to its generation, which exhibits their own characteristics. These measures could be developed using the results of this research.

14. Novelty of Research / Product

There have been a number of studies and research projects that have investigated and studied the characteristics and properties of ransomware through the use of static and dynamic analysis; however, there is a gap in the analysis of ransomware with regard to the year in which it was first propagated and generated. Previous studies on the WannaCry ransomware utilised both dynamic and static analysis techniques to investigate the malware's primary characteristics (Vidyarthi, 2019). In addition, several pieces of research have been done on static malware analysis in order to identify ransomware characteristics (Akbanov, 2018). Moreover, there are also research on implementation on ransomware analysis using static and dynamic analysis (Riadi, 2015).

15. Conclusion

The purposed of this study is to study the characteristics of ransomware according through its generation through static analysis of the ransomware. So, all the objectives of this study were successfully achieved. Based on the analysis result, we can see the main characteristics of the ransomwares and the similarities on how they encrypt and decrypt files.

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WEB-BASED JEWELRY MANAGEMENT SYSTEM USING WEB SCRAPPING

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Abstract

Inventory record inaccuracy is one of the unsolved problems faced by the manufacturing organization (Shiau Wei Chan, 2017). Yet, many jewellery stores still rely on manual and paper-based systems. To address this, a web-based jewellery management system has been developed to improve efficiency and accuracy in managing sales and inventory. The system allows jewellers to easily track and manage their inventory, as well as process sales transactions. In addition, it also provides useful analytics and sales reports to aid in decision making. The development methodology used for this project is the Waterfall Model which is a linear sequential approach to software development. This methodology involves a strict progression through the requirements analysis, design, development, testing and documentation phases. This methodology is suitable for this project as it allows for a clear and systematic approach to software development. A User Acceptance Testing (UAT) was conducted with 30 jewellers to evaluate the system's performance. The results of the testing showed that the majority of the jewellers were satisfied with the system and found it easy to use with a total mean score of 4.55. The system will be an important tool for managing sales and inventory for jewellers and help them to improve their business.

Keywords: *Jewellery management, Sales and inventory, Web-based system, User Acceptance Testing (UAT), jewellers*

1. Introduction

The objective of this project is to investigate and improve the management of jewel sales by jewellers, by developing a web-based application to assist in price management. The application will retrieve gold prices from an API using web scraping techniques, and will be able to calculate prices based on the purity of gold (999, 916, 875, 835, 750). User Acceptance Testing (UAT) will be used to determine jewellers' acceptance and satisfaction with the system. This project's scope is limited to the use of an internet connection and a focus on gold purity levels of 999, 916, 875, 835, and 750. It attempts to increase the efficiency and accuracy of jewellers' sales management.

2. Methodology

The Waterfall Model was used to develop a web-based jewellery management system. The process began with a requirements analysis to identify the needs of jewellers in managing sales and inventory. The next phase is the design, where a sitemap is created to provide a clear view of the project structure. The development phase involves the programming of the web application using a specific programming language and data is stored using specific database technology. User Acceptance Testing was done to get feedback from 30 jewellers. Lastly, the final phase is documentation of all information gathered during the development process.

3. Results and Discussion

The responses of 30 jewellers were evaluated through a User Acceptance Test (UAT) where they were prompted to rate the system on a scale of 1-5. The UAT results determined the satisfaction, efficiency, reliability, and usefulness of the system for managing jewellery sales and inventory. However, it has limitations such as not fully automate the sales process, such as online payments. Furthermore, additional reporting and analysis features for sales data, such as forecasting, may be unavailable. These limitations may cause dissatisfaction among users and make it difficult for jewellers to make informed business decisions. Some suggestions were made by the participants, such as adding an online payment feature for making purchases directly through the application, a product image feature for uploading photos of products to the system, and multi-currency support for adding product prices in different currencies when the product comes from international vendors. The result can be concluded that the system can effectively manages sales and inventory, making it an important tool for jewellers to improve efficiency and accuracy in their business operations.

4. Novelty of Research / Product

Through the web-based jewellery management system, jewellers can easily track the current gold price using web scraping techniques with Simple HTML DOM. This feature allows jewellers to stay updated with the latest gold prices and make informed decisions about purchasing and pricing their jewellery products. The system also allows jewellers to view the sales trend of their products over a period of time, helping them to identify which products are performing well and which ones may need to be re-evaluated. This information can be visualized using Google Chart API. Google Charts API is simple to use and provides a variety of options for customization of graphical chart reports for better analytics (Asma Khalid, 2020). This allows jewellers to quickly and easily identify patterns and trends in their sales data, helping them to make better-informed business decisions. Overall, the web-based jewellery management system provides a comprehensive set of tools for managing sales and inventory while also providing insights into gold prices and sales trends, allowing jewellers to grow their business and make more informed decisions.

5. Conclusion

In conclusion, the web-based jewellery management system can clearly help jewellers to manage their sales and inventory efficiently. Furthermore, the majority of participants had a positive experience with the system after assessing it thorough User Acceptance Testing (UAT). Thus, all of the project's objectives have been met.

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EMPLOYEE ATTENDANCE SYSTEM USING FLUTTER

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Abstract

The proposed mobile application, developed using the Flutter framework and Dart programming language, is designed to replace the traditional, manual process of recording attendance through paper. The application will not only record the attendance of the employees but also will be recording the location from where the employee clock in or out. The development process follows the Waterfall method of the System Development Life Cycle. The primary objective of this project is to design and develop an attendance application that improves the accuracy and reliability of attendance records while also increasing the convenience and efficiency of the attendance recording process for employees. The functionality and usability of the application will be thoroughly tested to ensure it meets the needs of the users.

Keywords: Flutter, attendance, location, employee, mobile application.

1. Introduction

An attendance application was developed using the Flutter framework to allow employees to record their attendance and detect their location. The app has been tested for functionality and usability, and is intended for use by small and medium sized companies with both full-time and part-time employees. The application is designed to streamline the process of recording attendance and ensure that employees are in the correct location during work hours. The use of the Flutter framework allows for a fast and responsive user interface, making the application easy to use for employees. Overall, this project aims to provide a convenient and efficient solution for tracking employee attendance.

2. Methodology

The Waterfall technique is a sequential linear approach to the System Development Life Cycle (SDLC) that was used to design this Employee Attendance System using Flutter. The process follows a strict sequence of initialization, planning, designing, developing, testing, and documentation. The development process was followed by a rigorous testing phase in which data was collected via surveys and functional testing to confirm that the application fulfilled the requirements and performed properly.

3. Result and Discussion

The testing phase for the employee attendance system developed using Flutter was crucial to ensure that the application met the requirements and was easy to use for the end-users. Usability testing was conducted to gather feedback from users on the overall user experience. The majority of users reported that they found the application was easy to use and user-friendly. Functionality testing was also conducted to ensure that all buttons and pages within the application could perform as intended. The testing process involved simulating different scenarios and user interactions to verify that the application could handle different inputs and conditions. The results of the usability testing has provided valuable insights into how the application could be further improved and the functionality testing were positive, indicating that the application was able to perform all of the intended functions without any errors.

4. Novelty of Research/Product

There are a few related system for recording attendance that has been found. A system proposed by (Siti et al., 2015) is a mobile application for students to record their attendance that uses a bar code scanner technology. Next system is developed by (Jun, 2016) where it is almost identical to the system developed by (Siti et al, 2015) but the only difference is in recording the attendance. Students need to take selfies or put their signatures as their attendance then the system will use image identification tecgnology to prevent a dishonest attendance record. Time Attendance Management System (TAMS) is a cloud-based system that uses NFC technology to track employee attendance and has been proposed by (Sai et al., 2018). This proposed system includes the following primary features where it can be online access for workers and managers, the ability to utilize current NFC cards and scanners, no employee limitations, no data storage limitations, and the ability to generate reports to satisfy the user requirements.

5. Conclusion

The employee attendance system developed using Flutter is a convenient and efficient solution for tracking employee attendance. It was tested for usability and functionality, which ensured that it met the requirements and was easy to use for the end-users. Overall, the system is a valuable tool for small and medium-sized companies to manage their employee attendance.

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STAFF RESIDENT COLLEGE (SRK) REPORT MANAGEMENT SYSTEM USIGN FLUTTER

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Abstract

This project's aim is to create a Staff Resident College Report Management System (SRK) for UiTM Arau, Perlis. The current management system at SRK uses google forms and WhatsApp to record information such as daily reports and case chronologies in case of emergencies. However, the systems and databases available for recording student activity outside office hours at UiTM are limited, resulting in insufficient storage capacity for data. The data is also poorly organized and difficult to track, record, and retrieve, making it time-consuming for SRK to report on student conditions before closing cases. The proposed SRK system aims to address these issues by providing a more efficient and organized method of recording and tracking student information. The system will include features such as daily report submissions, incident management, and past report retrieval. Usability and functionality testing will be conducted to evaluate the effectiveness of the system. The results of the tests will be analysed and discussed, and recommendations for future improvements will be made.

1. Introduction

This research aims to develop a Staff Resident College Management System (SRK) to improve data storage, organization and handling at UiTM Arau, Perlis. The current system used by SRK is through google forms and WhatsApp, which has limited storage capacity and is difficult to track and retrieve past reports. The scope of the project includes developing a system for recording daily reports, case chronologies, and student activity outside office hours. The system will also include a feature for SRK to periodically report on student conditions and easily track, record and retrieve past reports. The development process includes literature review, methodology, system design and development, testing and evaluation, and conclusion and recommendation.

2. Methodology

This project employed the Waterfall model for software development as its methodology. The system was designed and developed utilising PHP, MySQL, the flutter and Laravel frameworks, as well as additional applications. In addition, testing and debugging were performed to assure the system's functionality. The system's functioning and usability were then evaluated using questionnaires provided to respondents. In addition to analysing and discussing the data, limitations and suggestions for improvement were noted. This project's methodology was successful in developing a Staff Resident College Management System that addresses the concerns of inadequate storage capacity and poor data management at UiTM.

3. Results and Discussion

The Staff Resident College Report Management System is highly-liked by users and performs well in terms of functionality, as determined through testing and review. The majority of respondents deemed the system to be user-friendly and simple to operate, and their satisfaction with its performance was very high. Nonetheless, some issues and recommendations for improvement were also discovered during testing. Overall, the system is regarded as a great resource for managing student information at UiTM Arau, Perlis, and it may be utilised to improve the organisation and efficiency of the management of student activities outside of office hours. Additional research and development can be conducted to overcome the system's shortcomings and enhance its functionality.

4. Novelty of Research

Combining the Laravel and Flutter frameworks in the creation of a Staff Resident College Management System is fresh to this study (SRK). The suggested system utilises the capabilities of these frameworks to automate data collection and storage, as well as to provide a user-friendly interface for simple access and retrieval of information. The use of Laravel, a PHP web application framework, allows for the efficient management of databases and the implementation of various functionalities in the system (Soegato,2018). The use of Flutter, a mobile application development framework, enables the system to be accessed and used on mobile devices (Tashildar et al., 2020). By using the Laravel framework for the back-end and the Flutter framework for the front-end, the system is able to increase the Staff Resident College at UiTM Arau, Perlis' data management efficiency and precision. This research contributes to the current body of knowledge by illustrating the real-world implementation of these frameworks.

5. Conclusion

By constructing a management system utilising the Laravel and Flutter frameworks, this study sought to address the problem of inadequate storage capacity and poor data organisation at UiTM's Staff Resident College. The results of the functionality and usability tests revealed that the system was efficient and user-friendly, hence answering the problem statement. However, limits and future enhancement recommendations were also recognised and discussed. This system can improve the overall administration and organisation of student activity data at UiTM through its installation.

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UiTM PRIHATIN DONATION SYSTEM USING A RESPONSIVE WEB DESIGN APPROACH

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Abstract

In today's fast-paced, globally connected world, time and money are highly valued commodities. People are constantly looking for ways to make their lives easier and more enjoyable. This is especially true when it comes to charitable acts such as giving or helping others. People want to help, but they don't want to spend their time going to mosques or giving money to the homeless. Additionally, asking for assistance in person can be awkward and frightening for those in need. It's possible that they lack the courage to seek help. This thesis describes the creation of the web based UiTM Prihatin Donation System, which aims to support and meet the needs of modern society. Because of the system's responsive web design, users can easily navigate and use it. The system was created using the Waterfall model's phases of planning, information gathering, requirements analysis, design, development, implementation, and testing. The UiTM Prihatin Donation System priorities user experience and responsive web design to make it easy for users to donate and apply for donations. Additionally, the system includes email integration, allowing the administrator to notify users of system status via email. After the UiTM Prihatin Donation System was completed, prospective end users were tested for usability and functionality. The response time of the system was further evaluated using network performance testing, and the success rate was calculated based on user feedback. The testing involved 42 people, and the results show that the UiTM Prihatin Donation System met all of its objectives.

Keywords: responsive web design, response time, donation, integration

1. Introduction

Through the creation of an approachable and intuitive online donation system, the purpose of this project is to facilitate, improve, and standardise the donation and application process for the students and employees of UiTM Arau. The Unit Hal Ehwal Islam of UiTM Arau will be in charge of managing the system, which will allow for it to be easily tracked and kept up to current at all times. The website will be developed with a user-cantered approach, with a primary concentration on the requirements and preferences of the faculty and students of UiTM Arau. It will have a straightforward interface that is simple to browse, which will cut down on the amount of time and effort required to make a gift. The technology will be designed to reduce the likelihood of errors caused by humans, hence making the donation process more effective for all parties involved. In conclusion, the website will function as an invaluable resource for anyone who is interested in making a contribution or applying for aid in a way that is straightforward and efficient.

2. Methodology

This project utilized the Waterfall model, which is a linear sequential methodology that encompasses the steps of planning, data collection, requirements analysis, design, development, implementation, and testing. Usability and functionality testing with possible end-users and network performance testing to determine the system's response time are employed. The procedure comprises the creation of a responsive web design to facilitate navigation and use by users. The system is intended to assist students in making and requesting donations. Students can fill out a form for donation and application purposes. Donations and applications can be viewed, approved, and rejected by administrators. Email and Whats App integration for user status notifications are also offered. The system will be created and maintained

by the Unit Hal Ehwal Islam of Uitm Arau, and it will be simple to track and update the status of donations and applications.

3. Results and Discussion

Usability and functionality testing revealed that the Uitm Prihatin Donation System achieved all of its goals. Participants found the system's design and layout to be intuitive and pleasing. In addition, they agreed that the system was user-friendly and contained all relevant information. Testing of the network's performance found a fast response time, making the system efficient and dependable. Infer able from the conversation is that the Uitm Prihatin Donation System is a valuable resource for both donors and receivers. The responsive web design makes it simple for users to access the system from any internet-connected device, and the integration of email and WhatsApp enables real-time information on the status of donations and applications. The simplicity and usability of the system make it accessible to a wide range of users, including those who may be uncomfortable with more conventional donation methods. Overall, the Uitm Prihatin Donation System provides a convenient and effective solution for donation and application, hence increasing the number of contributors.

4. Novelty of Research / Product

The novelty of this study is in the development of a web-based Uitm Prihatin Donation System employing a responsive web design. This system is specifically designed to meet the needs of students and faculty at Uitm Arau, making it easy and fast for them to donate and request gifts (Kyrnin, 2020). The system integrates email and What's App, enabling real-time information on the status of donations and applications (Kalyanam, 2018). This feature enables the administrator to tell the user of their donation and application status in real time. Additionally, the system's user-friendly design makes it simple to navigate and utilize, especially for people who are uncomfortable with conventional contribution methods. Additionally, the system's user-friendly design makes it simple to navigate and utilize, especially for people who are uncomfortable with conventional contribution methods. The system's simplicity and usability make it accessible to a broad audience. This research is exceptional in that it provides a novel solution to the donation procedure, making it more comfortable and accessible to everybody.

5. Conclusion

In conclusion, the Uitm Prihatin Donation System is a user-friendly, responsive web application designed to enhance the donation process for Uitm Arau students and staff. It offers a convenient and fast way to donate and apply for donations, and includes tools such as email and What's App connection that enable real-time updates on the progress of donations and applications. The system is an innovative solution that can help to improve the contribution process by making it more accessible and comfortable for everyone.

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FOOD COURT MANAGEMENT SYSTEM

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Abstract

Food court is an essential section in a huge building because people can chill while fill their stomach with various type of cuisine. Moreover, it become important because everybody need to eat in order to gain energy from the food consumption. Due to the fact that food court is a place that will be visit by many people that intended for dining, it will be filled with people and further cause a crowd. Thus, Food Court Management System was developed in order to reduce the crowd in the food court. There are two objective of this research which to develop a Food Court Management System that suits any personal device by using a web-based system that will manage the ordering process in the food court followed by to test the functionality and the usability of the system whether it ease the user for ordering process purpose. For the methodology, this research utilized the agile model that consist of five phases including planning, analysing, design and implementation, testing and end with maintenance. In order to realise this research, two different software has been used to develop the system which are Visual Studio Code and XAMPP control panel. Apart from that, for the testing phase will be carried out the functionality and usability testing then the result will be analysed based on the graph. The user mostly agreed on this system is learnable and satisfied with the system. Finally, the users concurred that this web-based system is organised properly.

Keywords: *food court, web-based system, agile model, reduce crowd*

1. Introduction

Since food court is like a one stop centre for food vendor, it will attract many people to come there buy some desired dishes that satisfy their needs, and it will cause crowd. Therefore, there is needed to develop a Food Court Management System that suits any personal device by using a web-based system that will manage the ordering process in the food court to reduce the crowd. The second objective is to test the functionality and the usability of the system whether it ease the user for ordering process.

2. Methodology

Methodology that being used for this research was agile model that associate with the Software Development Life Cycle (SDLC). This method was utilized in order to maintain the quality of the system. The system based was sketch first and it is including the flow process diagram, sitemap diagram and entity relation diagram (ERD). The development was constructed based on the design diagram before until the development of the system finish. The complete system was tested by doing the functionality and usability testing. The analysing process will refer on the result from the usability testing.

3. Results and Discussion

There were two results from this research which are the functionality of the system and the user experience after testing the system. Data were collected from the usability testing that been held via google form. 30 respondents were randomly chosen with the range of age above 18 years old. The survey is required roughly around 5-10 minutes. The questionnaire consists of four different type of question category which are learnability, memorability, system performance and user satisfaction. Overall, based on the testing result, majority of the user is satisfied with the system. the highest mean for question set category is user satisfaction while the lowest mean is memorability. Based on this result,

this research can conclude that the memorability concept needs to be improved to give more ease for the user.

4. Novelty of Research / Product

Since the web-based use a URL to reach the site, this system will link the URL into a QR code that will be used by the user to surf the web page site. The usage of QR code is coincides of the technology which are the QR code content is accessible through mobile devices, can store more content, allows for more multi-media content, resilient and reliable (Claeys, 2023). Moreover, web-based design also has the benefits in term of implementation the maintenance is quiet easier if compared to mobile application (Ratibor Sekirov, 2021). Web-based system also consume less storage device and the data security is more secure since the store data is centralized (Ratibor Sekirov, 2021). For the system benefits, the ordering process and management become more systematic since all of the process will be digitalised and also it will become more convenient due to the reduce of crowd. This system also can reduce the mistake while taking the order by notes.

5. Conclusion

To conclude, this research is conducted to improve the current system that used in the food court. The system basically uses the concept scan, order and eat. The probability for an order mistake is lower than the traditional system where make a queue and use a physical note to make an order.

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INVENTORY MANAGEMENT SYSTEM
FOR SMEs IN KULIM

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Abstract

Small to medium size companies tend to face problems with the tracking of their inventory which could lead to losses for the company. The Inventory Management System for SMEs in Kulim is developed to allow the user to improve the inventory management using a computerised system. The system has a function where users can update their inventory list in different pages such as brand, category and products. It is easy for the users to monitor their inventory anywhere with internet access since the system is built as a web-based application. Admin are the only user with the access to manage the inventory thus, it is easy for them to handle the system without the interference from the third party. Functions such as add, delete or update can be done for all the categories listed above. This project was evaluated by distributing questionnaires to 30 respondents which contained questions from user acceptance testing. Respondents are free to test the system and evaluate based on their experience.

Keywords: *inventory, User-friendly interface, criteria, satisfaction level*

1. Introduction

Inventory is a crucial asset of a company. In certain industries such as manufacturing, retail and food services, a shortage of inventory would lead to undesirable outcomes (Waida, 2022). A good inventory management will increase the productivity and efficiency of a job regardless of the size of the company. Thus, with the inventory management system built for Small-Medium Enterprise it is hoped to bring a new light with a new approach in managing their inventory. Various functions implemented in the system will allow the user to view and store the data neatly, for example the system provided the interface for brand, category separately as well as the specific products that exist in the inventory. Therefore, it helps the user to keep track of their inventory.

2. Methodology

Data were collected from questionnaires conducted towards a targeted audience such as people who are engaging with inventory at their workplace. This group of people included the owner, manager and staff. Research findings evaluate the user experience under four separate categories once they have completed their task which is to test the system built. The criteria are perceived ease of use, perceived usefulness, attitude and intention of use. Next, the measurement criteria are based on ranking from 1 to 5. The scale represents 1 strongly disagree and 5 strongly agree.

3. Results and Discussion

The aim of the survey is to evaluate user satisfaction after the testing phase. Besides that, it is intended to ensure the software can handle the tasks and perform along with the development specifications. To summarise the result of the questionnaire, it is safe to say that most of the respondents participating in the survey were satisfied with the system. The majority votes received are 4 and 5 which represent agree and strongly agree respectively. For example, under the second criteria, perceived usefulness where the users will evaluate how the system is considered useful to them. The mean of the result is 4.1 which indicates the satisfaction level is at its finest and the system is receiving support from the users. Finally, the results will help the developers to increase the productivity in every aspect possible such as fixing

bugs, increase effectiveness of developed modules and many other things that can be improved for future work.

4. Novelty of Research / Product

There are various methods used for inventory management and the most frequent use is the Microsoft Excel as the software to keep all the data of the inventory (Tagetik, 2021). This traditional method has various flaws such as limited collaboration, errors and many others. For example, Excel tends to become fragile as it grows and small errors could lead to loss for companies. Therefore, this inventory management system has its own database for users to store data. The data can be kept there and users can easily update inventory in the system. A user-friendly interface will help the user to understand the system better and get used to it in no time. This has been proven by the study that has been conducted as the results shows that the average rate for perceived ease of use for this system is at 4 which. This indicates that the respondents agree with the question. Thus, it shows that the system can operate to the user's expectation.

5. Conclusion

Inventory Management System for Small-Medium Enterprises (SMEs) in Kulim is a web-based application that is intended to improve the inventory management in an organisation. This system can be accessed anywhere with Internet connection which makes it easier for the user to monitor. Lastly, this system is likely to enhance the inventory management in a store of SMEs specifically.

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FINAL YEAR PROJECT SUPERVISOR ACCEPTANCE SYSTEM (FYPSA)

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Abstract

A majority of the final year students in Universiti Teknologi Mara Cawangan Perlis faced with unpleasant issue due to finding the suitable supervisor to finish their final year project. The Final Year Project Supervisor Acceptance System (FYPSA) which is an application that can bring together the student and supervisor by helping them on searching for supervisor, submitting, reviewing, and accepting the final year project request. The goal of this project is making FYPSA based on mobile application for android user to improve the communication between students and supervisor to completing the first phase of final year project which is proposing the project title that usually do manually. The development of FYPSA application used the System Development Life Cycle (SDLC) by implementing the agile model as the methodology. A user acceptance testing was conducted with 30 respondents who are the students in Universiti Teknologi Mara Cawangan Perlis to determine the usability and functionality of the FYPSA by evaluating the questionnaires that were divided into two categories respectively. Results of the system evaluation showed that most of the participant were satisfied with all categories provided. Therefore, FYPSA can assist the student and the supervisor to complete the first phase of final year project run smoothly without taking a lot of time to find and approve the project proposal.

Keywords: Final Year Project, Mobile Application, Agile Model.

1. Introduction

The struggle that student run into when they want to start the first phase of final year project is to find supervisor to propose their final project title. In order to overcome the situation is to create a system as a medium to communicate based on mobile application. The aim is to help the student and supervisor to have a system that meets the usability and functional in accepting the project request. The project will prioritize for UITM Perlis because there are a lot of students that being request for supervisor. When there are a lot of students it also will need more lecture, so it will be one of the benefits to organize all the people that involve in increasing the efficiency. Also, the limit of system will be focused on degree course that need final year project in the end of the years.

2. Methodology

By referring to and evaluating existing concepts, such as how the student tries to contact the supervisor in the past, data were gathered via participant observations, interviews, and textual analysis. Findings from the study assess the issue that arises when students simply depend on the list of supervisors provided in lectures and are required to physically locate and propose. The idea to develop the Final Year Project Supervisor Acceptance System, which would aid it, came from there. The system's design will be based on an Android mobile application. To create the project, It was necessary to learn Java in order to construct the application using Android Studio.

3. Results and Discussion

When the student and supervisor have a system that can organize the work for them, the first phase of the final year project which is finding supervisor and propose project title. With the system that build specific for android user, the task can be done remotely. From now, the student does not need to take a lot of time and it will be more efficient to find supervisor and propose the project title with a system. This article will finally reveal what it needs on the system to be able fix the current issue that student need to face when they want to start the final year project.

4. Novelty of Research / Product

The novelty of the research for the Final Year Project Supervisor Acceptance System (FYPSA) mobile app lies in its ability to streamline the process of supervisor selection and project request management for final year students. Unlike traditional methods which rely on manual paperwork and face-to-face meetings. Manual processes are time-consuming and error-prone (Kauffman, 2019) . FYPSA allows students to easily submit project requests, view the status of their requests, and communicate with their potential supervisors all in one convenient mobile application. Changes in the world are now entering the era of industrial revolution 4.0 where technology becomes a necessity in human life, everything has become limitless with unlimited use of computational power and data (Sarwandi, S., Giatman, M., Sukardi, S., & Irfan, D. 2019). Additionally, FYPSA also integrates with various forms of communication such as WhatsApp, SMS, and email to ensure that students and supervisors are promptly notified of any updates. According from research WhatsApp with its popularity as mobile instant messaging application is also proving crucial in creation and dissemination of news (Batra, B. 2016).

5. Conclusion

In conclusion, the Final Year Project Supervisor Acceptance System (FYPSA) mobile app is an innovative way to simplify the procedure for final-year students choosing supervisors and managing project requests. Overall, the FYPSA mobile app is a useful tool for project management process improvement for both students and supervisors.

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UiTM ARAU STUDENT ORIENTATION APPLICATION EXTENDED ABSTRACT

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Abstract

The common problems students encounter appear to be caused by poor communication and an abundance of out-of-date systems. New students today often have trouble locating where the events will be held at and the activity scheduling time. Mobile applications are easy to access as many people nowadays have their own mobile phone. The prototype of Student Orientation Application is developed using Android Studio and connected to the database using Firebase Realtime Database and Google Places API for the map function. The system is designed for both administrators and students to enable the student to view and search a list of events and lecturers, also getting notification for the events available, and view maps to see places inside UiTM, nearby restaurants, laundry, and healthcare services. While the admin can manage events and lecturer lists either to add, delete, or update the content. A suitable development process has been used to create the mobile application, utilizing the Waterfall Model as a reference. Phases of development for the waterfall model include planning, information gathering, design, development, testing, and documentation. This project was evaluated by distributing questionnaires to 31 respondents which contained questions from usability testing. A test script was used to perform the functionality testing. According to the test results, the mobile application platform is usable but still needs improvement.

Keywords: orientation, students, functionality, usability, waterfall model.

1. Introduction

Every new student in Universiti Teknologi MARA (UiTM) is required to attend an orientation program which is known as "Minggu Destinasi Siswa". The current problem faced is the manual program is time consuming and outdated. The aim of this research is to improve orientation week by implementing Google Places API and evaluate the proposed mobile apps via functional and usability tests while there are limitations such as it will be implemented using mobile application, internet and location access are required, and Google Places API key is needed.

2. Methodology

Data acquired through analysis of the existing manual orientation system as well as the method currently employed in the orientation week at UiTM Kampus Arau. The Waterfall Model was applied, and it consists of a total of six steps, which are as follows: planning, information gathering, design, development, testing, and documentation. The creation of this application is carried out with the assistance of Android Studio for the prototype and Firebase Realtime Database for database. This project was evaluated by distributing questionnaires to 31 respondents which contained questions from usability testing. A test script was used to perform the functionality testing. According to the test results, the mobile application platform is usable but still needs improvement.

3. Results and Discussion

The Student Orientation Application must work properly. Functionality testing was carried out to see whether the system complies with the technical requirements and functional standards. The test has gone through both applications which are for the user and admin. The results are successful when it shows that all the application features are functioning as it was intended. The usability testing was evaluated by 31 college students from UiTM Kampus Arau. Based on usability testing, most of the respondents felt that this mobile app is a good platform that is efficient and will help users, particularly students as it offers many benefits and advantages. As a conclusion, objective 2's usability testing was accomplished.

4. Novelty of Research / Product

Academics will have access to an increasing number of new intelligent devices and digital applications as the usage of technology in education develops (Enda Mcgovern & Cuauhtemoc Luna-Nevarez, 2018). This project was created as a mobile application, which is far more practical than the manual method because it can be accessed using the user's own mobile phone. Users will be able to browse the events available, lecturer list, and places around UiTM Arau using this platform. Notification features also ease users that students don't have to manually check on the next events due, it also enables the admin to update and change their events information as well as the lecturer information.

5. Conclusion

In conclusion, student orientation applications can help with a variety of student issues regarding orientation weeks because of all the features that are available. All the objectives outlined at a previous stage of project development have been effectively carried out throughout the project completion time, it is discovered after the entire project has been completed.

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VOAS: VETERINARY ONLINE APPOINTMENT BOOKING SYSTEM

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Abstract

Nowadays, with advancements in technology such as the internet and wireless networks, many businesses including veterinary clinics have implemented these technologies in their everyday operations and have gained in popularity in recent years. In order to make the appointment procedure more effective and simplified, this project proposes for veterinary clinics to employ some form of Web-based online appointment system. In this research, there are two objectives that can be highlighted which are to design and develop an online appointment booking system using a web-based concept. In order to determine whether the proposed system makes it simpler for users to plan appointments, a usability test is conducted on the appointment system. The waterfall model, which has six phases including requirement, analysis, design, coding, testing, and implementation, was employed in this study as the methodology procedure. Two types of software have been used in this research during the development process that is Visual Studio Code for the coding process and XAMPP control panel that functions to develop and test the system on a local web server. The functionality and usability testing have carried out during the testing period and based on the testing, most of the users agreed about the ease of using this online appointment system.

Keywords: *Veterinary, appointment, waterfall model, web – based system*

1. Introduction

There are two objectives in this research that is to design and develop an online appointment booking system using a web-based concept. Furthermore, to test the usability testing of Veterinary Online Appointment Booking System. Also, this system will be using the PHP, MYQSL and HTML. This project's scope is to use the web-based system to digitalize the appointment process at the veterinary clinic. Furthermore, this system has two primary users that is patients and clinic staff. This project will help reduce the waiting time and redundancy for every appointment process for the customer. Then, users can access the website using any standard web browser on a computer or smartphone.

2. Methodology

In this research has use the waterfall model methodology that consist of requirement, analysis, design, coding, testing and implementation. Criteria are defined stay consistent throughout the development process. Furthermore, this appointment system intended to ease the online appointment process of the veterinary clinic customer. User can make their own account and can choose the date of the appointment, animal type and services, view doctor available and can view their appointment status. The email will be sent to the email that had been registered by the user about their appointment status and when user forgot their password.

3. Results and Discussion

The functionality and usability test had been conducted to 30 users for this system the testing period and based on the testing, most of the users agreed about the ease and simple to using this online appointment system. Furthermore, most of them agree that the appointment system running well on their device whether its computer or mobile. However, it has certain limitations. For example, the

system does not give a payment mechanism for the user to pay at the veterinary clinic, therefore the user must prepare their cash before going to the appointment. Some of the suggestion by the user for the improvement on the system is to make the section about the doctor availability that they can choose whoever doctor on the clinic to serve their pet. Also, the users suggest adding the payment gateway on the system to ease them from bringing cash and just can use their online banking method. Overall, veterinary online appointment systems are an effective technique of scheduling appointments.

4. Novelty of Research / Product

The novelty of the research is the veterinary online appointment system is by using the web-based system it will give a various of accessibility across devices for users. may be used in most browsers and will operate consistently on all operating systems, independent of version. Because of the uniformity for each user, this also benefits in issue resolution (Khamooshi, 2019). Furthermore, this appointment system implements the email notification about the status of the user appointment and the user forgot their password and can request for reset their password. Web Push Notifications allow for immediate connection with the user. Any message provided to the user as soon as the information is triggered from the back end. This provides you with a broad real-time reach (Barthwal, 2022). The user-friendly design makes it simple for the user to manage the system without difficulty.

5. Conclusion

The goal of this study is to enhance the traditional appointment system that is still used in many veterinary clinics. This online appointment system will assist to simplify the appointment procedure for veterinary clinic users.

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ZAKAT MANAGEMENT SYSTEM WITH ELECTRONIC MAIL

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Abstract

The present financial industry is significantly impacted by technological advancements and inventions. Digital transformation is introducing new business models and transitioning from conventional to digital markets via the use of technology. The zakat system has become a significant component of theIslamic economy and financial system, and it must be digitised to be consistent with the modern digitalera. This study intends to examine the administration of zakat applications at UITM and to identify themanagement areas that require rapid feedback between the applicant and ZAWAF. This study collectsdata from many sources, including books, journals, conference papers, and other relevant websites, using a qualitative research methodology. The majority of difficulties encountered by zakat applicantsappear to be the result of obsolete system facilities. Applicants for zakat in the modern day frequently confront the issue of not knowing the status of their application. The majority of individuals today possess a mobile phone with internet access and an email account. Developing a Zakat management system with notepad plus, Visual Studio Code, and xampp. A system created for administrators, interviewers, and applicants that allows applicants to apply and check application status and also notifies applicants through email of the application status. While the administrator can oversee the applicant's application, the interviewer will conduct the interview. Planning, information collecting, design, development, testing, and documentation are included in the development process. The evaluation of a project involves the distribution of a questionnaire including usability test questions to thirty respondents. The test script is utilised for functional test execution. According to the test findings,the system is usable but requires further development.

Keywords: zakat system, electronic mail, zakat management, applicants

1. Introduction

Student and ZAWAF management had to deal with too many unfiltered and disorganized concerns. ZAWAF information dissemination is tough for students. This issue occurs too often and has generatedanother issue that will result in poor ZAWAF management system outcomes for students. The purposeof this project is to analyze the management of zakat applications in UiTM and to identify the sectionsof the management that require an immediate reaction between the applicant and ZAWAF and the goalis to build an integrated zakat application based on the web that uses web and electronic mail. E-mail that used for notice purpose. Zakat application for this endeavor has been designed to be intentionally connected to ZAWAF zakat.

2. Methodology

Planning, data collection, design, development, testing, and documentation are the methods and techniques employed. The data collection process involves observing the students and units that are engaged. Conducting interviews and surveys by referencing to and analyzing pre-existing ideas, such as the ease of use and efficiency of the system for users. The outcomes of this research investigate the extent to which customers are pleased with the system. This system may be constructed utilizing the applications xampp, notepad++, and visual studio code, as well as a computer for hardware requirement. Functionality testing was done by experts. Test findings show that the system is workable but needs development.

3. Results and Discussion

The Zakat Management System with Electronic Mail needs to function correctly. It was determined by means of a functional test whether or not the system in question satisfies the functional requirements and technical standards. The test is completed by all three participants, which include the interviewers,the users, and the administrators. When the end result demonstrates that all of the application's featuresare functioning as intended, we can consider that a successful outcome. Thirty students from the UiTMArau Campus will evaluate the usability testing. According to the results of usability testing, the majority of respondents believed that this system is a good platform that is efficient and will help users,particularly students, as well as administrators in managing the e-Zawaf system. In conclusion, the usability test objective 3 was successfully completed.

4. Novelty of Research / Product

Fortunately, the availability of an email alert system improves the efficiency of email-based communication. This system is an application that informs users when new email arrives (Vdovin,2022). Since it can be accessible through the user's own mobile phone or laptop, the project was developed as a website system, which is far more practical than the manual way. The manual method requires the user to keep track of everything. The application process for zakat may be completed online, and it is quite straightforward. Students will have an easier time swiftly and readily finding out the results of zakat thanks to a feature that notifies them not only on the website but also viaelectronic mail. In order for students to verify the results, they do not need to visit the website of the zakat unit anymore. When utilizing this system, administrators also have easy access to application management capabilities.

5. Conclusion

In conclusion, the zakat management system that includes electronic mail is able to assist students witha variety of problems relating to the application of zakat as a result of the many functions that are accessible. It was revealed after the project had been finished in its entirety that all of the goals that hadbeen established prior to the project development stage had been effectively implemented throughout the entirety of the project.

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PINEAPPLE DISEASE DETECTION SYSTEM USING MOBILENETV2 MODEL

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Abstract

Disease in plant has been a major challenging factor for agricultural field. To counter this problem a quick and accurate model could help in detecting plant disease. This project focus on pineapple disease detection using deep learning. Deep learning is a branch of machine learning that teaches computers to do what comes naturally to humans: learn from experience. Deep learning is especially suited for image recognition, which is important for solving problems such as facial recognition, motion detection. As the method that going to be use for the disease detection an advance system that going to be use for this project is Neural Network. Since this project is going to use image classification convolutional neural network is going to be use since it was a type of artificial neural network that usually being used in image recognition that specifically for processing pixel data. Since the dataset that going to be used is based on picture that being capture then it was suitable for this project. The goal of this project is to test the dataset of pineapple disease with Convolutional Neural Network by using MobileNetV2 model architecture through mobile app to classify and identify pineapple fruit diseases. This project dataset is trained by using large dataset that have different type of pineapple disease and healthy image of pineapple. Lastly this project is going to test the accuracy of the proposed system in detecting Pineapple fruit disease by using Mobilenetv2 model architecture.

Keywords: *Deep Learning, Convolutional Neural Network*, *Pineapple fruit disease*

1. Introduction

This project aims to test the dataset of pineapple disease with Convolutional Neural Network by using MobileNetV2 model architecture through mobile app to classify and identify pineapple fruit diseases. The app will be tested for accuracy in detecting pineapple diseases and will be used by UiTM Perlis farmers to identify the diseases in their pineapples. The app will be developed using Python and will be tested to ensure it meets its objectives. The app will scan the image of pineapple and match it with the images in the data set to identify the symptoms of the disease. The goal is to make it easier for farmers to identify and treat pineapple diseases.

2. Methodology

Every dataset that going to be trained will be collect and being sort in different folder based on disease symptoms. MobileNetV2 model going to be remodel based on image size that going to be trained to get the proper accuracy. When all the data have been sorted accuracy test will be done based on the dataset that being collected for the Machine to learning each disease. When all data set that being train have acquired high accuracy then a mobile application going to be developed to test the model accuracy in mobile application implementation.

3. Results and Discussion

Based on the testing that is done from the training data set every data set gives a high accuracy if the image that is being trained is high quality and does not blur. The accuracy of the model will be measured using metrics such as precision, recall and loss. Factors that may have affected the model's performance, such as the size and quality of the dataset, will also be discussed. Based on training that has been done

from 3,098 images from all types of disease the MobileNetV2 model can give 97% of accuracy to identify each disease type. With all types of testing being done it can be concluded the more image that is being trained the higher the model accuracy can get for prediction the disease type.

4. Novelty of Research

The novelty of this research is in the application of using MobileNetV2 model architecture for image classification to identify pineapple fruit diseases. The use of CNNs in agriculture, specifically for identifying plant diseases is an area that has not been widely explored. For instance, a study by (Hao, et al. 2018) proposed a CNN-based method for identifying plant diseases using leaf images, but the study focused on 14 different types of plants. In comparison, this research is focused specifically on pineapple fruit diseases. The development of a mobile app for this purpose will also make the technology more accessible and user-friendly for farmers. Furthermore, this research is focusing on the pineapple plant disease specifically, which will be beneficial to the pineapple farmers in UiTM Perlis. The proposed system will provide an efficient, fast, and accurate method for identifying pineapple diseases which can help farmers to take early actions to prevent the spread of the diseases, thus increasing the yield and productivity of pineapple.

5. Conclusion

The proposed system has provide an efficient, fast, and accurate method for identifying pineapple diseases. Results that being evaluated in mobile application is also a success since it give the accurately. With this all of objective that being proposed in this project have been achieved.

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FIGHTING FISH IDENTIFICATION USING DEEP LEARNING

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Abstract

Fighting Fish is an ornamental pet that has been known by many people. It is native to southeast Asia. This type of fish has around 72 recognized species. Mostly known by their brightly coloured fins and aggressive behaviour and it became favourites fish to keep as pet because of these features There has been increasing trend to collect ornamental pet each year. The project is about using a pre-trained Convolutional Neural Network (CNN) model to identify different type of fish such as Halfmoon, plakat, rose tail and crown tail. In this paper we focus on five species of Betta fish. We used a MobileNetV2 as our model to classify the fish and using python to implement model using deep learning library such as Keras and TensorFlow. We used NasNetMobile to compare our pre-trained model performance and accuracy. Lastly, we integrate the model to mobile application to make fish identification easier.

Keywords: *Betta Fish, Convolutional Neural Network , Fish identification.*

1. Introduction

Fighting fish or known as Betta Fish is famous ornamental fish. The aim for this project is to identify the types of fish and differentiate the Betta Fish for people in the community. Furthermore, the objective of this project is to use a pre-trained convolutional neural network to identify the Betta Fish and evaluate the performance of the fighting fish identification model. It to make people who involved in this industry such as seller and ornamental fish collector easier to identify the fish. Because of the limitation of their knowledge, they can used this identify the fish without to waste the timed taken to find the information on the Internet

2. Methodology

Dataset which is image of the five types of fish is collected from various sources such as Facebook group by Betta Fish Enthusiast, Twitter by account Austin Betta and other source on internet such Ruinemans Aquarium. Then we pre-process the image to augment the dataset which can help achieving good accuracy and battling overfitting. We rotate, zoom range shift width and height and flip horizontal flip the image to augment the image then split into training, validation and test for to feed our model. Lastly, we train the MobileNetV2 with the image before augmentation and after augmentation for 20 epochs and using Adam optimizer.

3. Results and Discussion

To determine the accuracy and performance of the model we compared the model with another CNN model, NasNetMobile, another CNN model to get the result. Using Sklearn and Numpy library we can determine the accuracy and performance of our model detection. Sklearn's ability to work with both dense and sparse data, its consistent interface for working with various model types, and its built-in support for cross-validation and model selection are among of its standout characteristics. While NumPy is a Python library used for performing mathematical operations as well as working with massive, multi-dimensional arrays and matrices of numerical data. Using Numpy we create confusion matrix then calculate the precision, recall and f1-score which determine performance of the model. For MobileNetV2 we get the accuracy 86.21% while its competitor NasNetMobile is 84.86%. Also, the

performance of MobileNetV2 is exceed NasNetMobile. The precision value of both model is 86.09% for MobileNetV2 and 85.12% on NastNetMobile. F1-score assess model accuracy by combining model precision and recall rating. The value for both model is 86.02% for MobileNetV2 and 84.87% for NasNetMobile.

4. Novelty of Research / Product

In this project we have integrate the model to the android mobile app. The model first are converted to the tflite file then implement to the coding. Using Android Studio, we have created a mobile app that can scan the fish and then show the accuracy automatically. It makes the identification more easy for people in community to use without using the internet.

5. Conclusion

We utilised a deep CNN model to classify five different types of fighting fish in this study. According to the performance evaluation, MobileNetV2 provides satisfactory accuracy. It also provides the precision, recall, and fi score results that up to mark. We intend to adapt this concept to more fighting fish species and more ornamental fish. With a large and high-quality dataset, we can improve the model's performance even further.

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C++ RUSH: INTERACTIVE GAME IN LEARNING COMPUTER LANGUAGE FOR NOVICE

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Abstract

C++ is one of the fundamental programming languages that are simple to learn and aid in understanding the fundamentals of all types of coding. With a full understanding of C++, migrating to other programming languages would be easy since the basic fundamentals have been grasped. The goal of this project is to learn C++ syntax, identify appropriate gamification elements, and incorporate multimedia principles into the design and development of the interactive C++ Rush game for computer language beginners. Another goal of this project is to evaluate the usability of the developed programming game through a questionnaire. For this project, the methodology used is agile because iterative development is one of its components. Agile methodology has six phases involved: requirements, design, development, testing, deployment, and review. For this research, usability testing has been conducted with 30 participants. Most of the users agree that gamification can transform a complex and difficult subject into something really enjoyable. In conclusion, this project has enabled the user to learn effectively about C++. Future works may include more programming language variety.

Keywords: *C++, Gamification, Learning*

1. Introduction

C++ is a fundamental programming language that is easy to learn and aids in knowing the fundamentals of all forms of coding. Because the principles of C++ have been mastered, switching to other programming languages should be simple. Unfortunately, in today's world, a lack of patience in learning the fundamentals and relying solely on YouTube tutorials may result in people learning to code without fully comprehending the mechanism. Nowadays, games are widely employed for learning objectives in a variety of sectors. They are gaining popularity as a result of their effectiveness in non-game contexts such as education and business. Game-based learning enables educators to teach tough programming fundamentals to inexperienced students while maintaining their interest and enthusiasm. As a result, scholars appear to be quite interested in the topic of game-based learning, or "gamification," these days. The scope of this project is for novice programmers who have just started learning programming languages.

2. Methodology

Data were collected from textual analysis by referring to and evaluating existing concepts, such as existing gamification games and C++ learning tutorials. Research findings evaluate the requirements, system design, development, testing, deployment, and review of this project. For example, the result of a requirement analysis provides a clear problem statement, objectives, scope, and significance of a project.

3. Results and Discussion

Based on the usability testing that is being done for the project, 86.7% of the 30 respondents think that this game will help beginner programmers. Most of them agree that gamification can transform a complex and difficult subject into something really enjoyable. This project's purpose is to assist novice programmers in learning C++ in an enjoyable way. As a result, this project has achieved its objectives

to   handle   all   of   the   problem   statements.

4. Novelty of Research / Product

The novelty of this research is in the application of using 2D platformer games to learn programming languages. This is one way gamification can make learning more enjoyable and understandable. Gamification is a potential way to foster motivation and involvement in various contexts, and its current popularity has promoted its implementation in a variety of fields such as health, education, business, society, and tourism (Trinidad et al., 2021). Another research study created a gamification teaching activity utilising a board game and QR code scanning. This activity uses the Gamification Teaching Model with Card-Games, Slides, and Learning Sheets (CSLS Gamification Model) for organic chemistry learning (Wu et al., 2018).

5. Conclusion

As it provides the overall conclusion, methodology, result, and discussion for the project. Gamification is an effective approach to making positive changes in novice programmers' behaviour and attitude towards learning to improve their motivation and engagement. The outcome demonstrates that all of the project's functionality and progress proceeded smoothly, and the project's goal was met.

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E-EXAMINATION SYSTEM FOR ANSWERING OBJECTIVE AND SUBJECTIVE QUESTIONS

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1. Introduction

The education system in Malaysia has gone through the Covid-19 pandemic phase in 2020-2022 which caused all educational institutions in the country to be implemented online. However, this raises questions about the methods that can be used to evaluate the efforts that have been made in teaching and learning. Most of the online exam-based assessment applications that exist today are still in their infancy. In fact, the existing applications are now more focused on the construction of questions and answers in the form of objective questions such as multiple choice. While questions that require students to answer in short essays as subjective questions are less. There are two research objectives that have been prepared for this study, namely; to develop an online exam system to evaluate both objective (multiple choice) and subjective question forms, and to evaluate the system using user functionality tests and usability tests.

2. Methodology

The Waterfall model is the methodology used for this project. It includes the requirements analysis phase, the planning phase, the design phase, the development phase and the testing phase. A website related to the e-examination system has also been developed. This web. site has been used to check the capabilities of the proposed e-examination system. Testing of both functionality and usability using appropriate tools to obtain reliable results has also been carried out.

3. Results and Discussion

This system will make it easy for students to take examination online whenever their available to take. Students do not need to attend to campus to take traditional way examination in the pandemic season. To take the examination, they simply need to access the website. Lecturer to can access the website and manage the examination wheatear their in the campus or at home, so this make easier to them conduct the exam in the pandemic season. Thus, this improves the functionality and usability of exam management at UiTM Perlis, particularly for students and lecturer.

4. Novelty of Research

Novelty in research on e-examination refers to the use of new or unique methods or techniques in the study of electronic testing. This can include the use of new technologies such as artificial intelligence, the development of new types of e-exams, or the use of novel data analysis techniques to study e-examination data. The goal of incorporating novelty in research on e-examination is to better understand the potential benefits and drawbacks of electronic testing and to improve the design and administration of e-exams. It can also include exploring new ways to measure student's performance through online examination.

5. Conclusion

In conclusion, e-examination, also known as electronic testing, has the potential to provide many benefits over traditional paper-based testing. These benefits include increased efficiency, cost savings, and the ability to administer tests remotely. Additionally, the use of technology in e-examination can allow for more engaging and interactive test-taking experiences, as well as the ability to use new types of questions and tasks. However, it is important to note that there are also potential drawbacks to e-examination, such as the risk of cheating and the need for reliable internet access. Overall, e-examination is a rapidly growing field and research is ongoing to understand its potential benefits and drawbacks and improve the design and administration of e-exams.

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SPORT FACILITIES AND EQUIPMENT BOOKING SYSTEM FOR UITM PERLIS

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Abstract

Sports facilities and equipment booking system was proposed to help UiTM students and staffs to ease the process of borrowing the sports facilities. This system does not only assist the facilities unit to achieve higher quality, but it also helps to make the system efficient and to make the booking process smooth and easy for the management. The main issue that arises in the main existing system is that the current system is due to not efficient. The objectives of this project are to develop a web-based for Sport Facilities and Equipment Booking System in UITM Perlis sport centre and to evaluate the functionality and usability of the proposed web-based system. The methodology consists of three phases. This project will benefit the society especially the staff and students who are users. Once the system has been established, staff and students will have many bookings that are flexible. In order to use the sport centre facilities, staff and students do not need to book manually using paper or form. Instead, they just need to book through the system which makes everything easier and more paperless. It will significantly increase the efficiency of the sports centre facilities as compared to the booking process using paper or forms as it is faster and saves users time. Eventually, by fully implementing the system, the system may be able to provide excellent service to both employees and students.

Keywords: facilities and equipment, booking

1. Introduction

Sports facilities and equipment booking system was proposed to help UiTM students and staffs to ease the process of borrowing the sports facilities. The purpose of this project are to develop a web-based for Sport Facilities and Equipment Booking System in UITM Perlis and to evaluate the functionality and usability of the proposed web-based system. Both the students and the staff can make a booking at the booking system of sports facilities and equipment based on the listed. Admin can manage the users. Admin can view the details, edit facilities and equipment availability and cancel booking of the sports facilities and equipment.

2. Methodology

Data were collected from a survey that was made for participant based on their observations & interviews after testing the system. The methodology consists of 3 phases. The proposed system can simplify the process for application to saving time and more user friendly. The technique used in this study is capable to avoid the overlapping booking system.

3. Results and Discussion

This system will make it easy for students to book equipment and facilities. Students do not need to manually inquire about staff availability. To obtain the information, they simply need to access the website. As an illustration, the status of the equipment's or facilities' booking will be updated right away after student made a booking. Other students who were slow to book the equipment will therefore being cancelled by the admin right away, allowing them to move on to other facilities and equipment at a later

time or on different days. Thus, this improves the functionality and efficiency of sport management at UiTM Perlis, particularly for students.

4. Novelty of Research / Product

There is still no sport booking system in any of UiTM branches. Sport booking system is a software solution and reservation system that makes it simple for student and staff to book sport facilities and equipment online. In the current Campus Arau Sports Centre, there are unsystematic systems that provide difficulties to keep the details of the users. The details that are kept in papers and books might take a longer time to search the previous or old details. The capability of this web-based benefit the society especially the staff and students who are users. Once the system has been established, staff and students will have many bookings that are flexible. It will significantly increase the efficiency of the sports centre facilities as compared to the booking process using paper or forms as it is faster and saves users time.

5. Conclusion

The objectives of this research were successfully achieved. Sport Facilities and Equipment Booking System is a web-based system with the priority concept. Overall, most of the respondents have given positives feedback. However, this system still needs to be improved in the future where it can be developed with more features and advanced technology.

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ONLINE HOSPITAL APPOINTMENT CARD WITH QR CODE

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Abstract

New technologies have emerged in the contemporary world, and as time goes on, individuals will need to adjust to the changes brought about by those technologies. People who are familiar with technology could be intrigued by developments like web apps. Since the Covid-19 pandemic, people who have many obligations and little time to go to the government hospital to receive an appointment, such as employees and students, prefer online platforms. The creation of an Online Hospital Appointment Card with QR Code employing web-based tools like PHP, HTML, and MySQL will be described in this proposal. The planning, analysis, design, implementation, testing, and documentation phases of the system's development have all been implemented using the Waterfall model as the approach. Additionally, the system will use QR Code technology, which will provide a virtual appointment card. Patients will benefit from the QR Codes created by the system since they will provide a virtual appointment card, eliminating the need for patients to carry a physical card with them every time they have an appointment. Only their smartphone must be brought.

1. Introduction

The project's goals are intended to design and develop the hospital appointment card web system with QR codes technology called Online Hospital Appointment Card with QR Code and to perform usability and functionality testing to measure the effectiveness of the system. The Hospital Appointment Management Web System was built using web-based application software such as XAMPP, MySQL, PHP, and HTML. Government hospital's patients are the intended audience. To get access to the Online Hospital Appointment Card with QR code, a user must first register and then fill out their personal information. Then they can view the available schedule that has been scheduled with session title, date and time including doctor's name that is in charge for that session. When the appointment is successfully scheduled, the virtual appointment card's QR code is generated.

2. Methodology

The Online Hospital Appointment Card is developed with the help of the System Development Life Cycle (SDLC), which is an acronym for "system development life cycle." The planning phase, the analysis phase, the design phase, the implementation phase, and the testing phase are the stages that are involved in the creation of this system. Google Forms is used to collect the feedback of the responder about this project. About 60 responses are recorded through the usability testing. Functionality testing was also done for this project by the researcher to test all the functions of Online Hospital Appointment with QR Code.

3. Results and Discussion

This research is subject to a number of constraints and boundaries at this point. According to the findings of the researcher, web design will be the constraint of this study due to the fact that different browsers offer varying degrees of support for HTML standards and implement them in different ways. Because of this, it's possible that some of the functions on the website will appear jumbled up and in a different order when viewed through various browsers. Aside from that, one of the limitations of the Online Hospital Appointment Card with QR code is that the patient can only book the available session that has been arranged by the administrator. They are unable to make a request to plan an appointment with the doctors on the date and time of their choosing.

4. Novelty of Research / Product

In this project, a QR code of the virtual appointment card was added, this feature is added to substitute the physical appointment card. Patients will not have to bring a physical card to the hospital every time they have an appointment. The reason why the QR code is used, this system is developed as a web system. So, the patient can simply scan the QR code and keep the information details in their phone. Other than that, the Online Hospital Appointment Card with QR code also has features that allow patients to book the available schedule. Unlike the physical appointment card, this system has more advanced features. The advantage of the Online Hospital Appointment Card is that hospitals can reduce the usage of the paper and decrease the workloads.

5. Conclusion

In conclusion, the web-based Online Hospital Appointment Card with QR Code has shown positive reactions. In this system, patients can keep their appointment details in their phone and can just bring the information that has been scanned on the QR code in the system then bring it to the hospital as a substitute to the physical appointment card.

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MYBUKU PINK MOBILE APPLICATION USING ANDROID

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Abstract

MyBuku Pink mobile application is based on the Pregnancy Check-up Book (Buku Pink) administered by the Malaysian Health Government, which permits periodic health checks after a user's pregnancy has been verified. (Rosely & Jawawi, 2021) stated that once a woman becomes pregnant in Malaysia, she must register for her pregnancy Buku Pink at government clinics or the Klinik Kesihatan Ibu dan Anak. According to the study, people in Malaysia have expressed dissatisfaction with the time it takes to sign up for the pregnancy book at government clinics. A checkup for pregnancy at a government clinic usually takes between one and three hours. The use of manual Buku Pink does not provide advanced features likes notifications, and pregnant women tend to forget their appointment. Also, in government clinics, antenatal and postnatal patient appointments are still handled using hardcopies and paper, resulting in high paper consumption. This project uses an agile model for this project as it is most suitable and provides a complete guideline to develop this mobile application successfully. Future work on this project can be applied by making MyBuku Pink in an Ios environment so that this application can use by both users of operating systems.

Keywords: Buku Pink, Klinik Kesihatan Ibu dan Anak, MyBuku Pink

1. Introduction

The objective of MyBuku Pink is to develop an Android mobile application for pregnancy health records and to evaluate the proposed mobile apps via a functional and usability test. MyBuku Pink will be implemented using a mobile application in Android environment. The targeted user for this application is pregnant women. MyBuku Pink will be developed to help the users, which is pregnant women, ease their registration for their "Buku Pink" by just registering it through a mobile app. This application also allows pregnant women to book appointments and get notifications once their bookings are successful. Furthermore, this MyBuku Pink will also benefit both doctors and medical staff. It is because the medical staff doesn't need to write it manually to register the Buku Pink, and the doctor can quickly remind pregnant women through the mobile application. Using this MyBuku Pink, it will also reduce the use of paper for registration.

2. Methodology

In MyBuku Pink, all data was collected through the analysis of the current method used to record pregnancy health which is manual Buku Pink. MyBuku Pink uses an agile methodology that involves planning, analysis, design, implementation, testing, and maintenance. In this project, Google Forms was utilized for collecting feedback from respondents based on the proposed mobile apps, and there were 30 responses collected through usability testing. MyBuku Pink is also tested using functionality testing, where the researcher tests all the functions in the mobile apps.

3. Results and Discussion

Based on the findings, most respondents agreed that this MyBuku Pink should replace the current manual BukuPink. Most of the respondents were also satisfied with the proposed mobile application in terms of the user interface quality, content, and usefulness. All the mobile application functions also

function well after the functionality testing. This resulted in the accomplishment of objective 2 in this project which is to evaluate the proposed mobile apps via a functional and usability test. Developing this mobile app also enables pregnant women to use the pregnancy record and achieve objective 1 in this project. However, some things could be improved in this MyBuku Pink.Firstly, this system does not cover all the pregnancy record health in the manual Buku Pink. Next,MyBuku Pink only covers the Android environment. Another limitation of this application is that it cannot change the language of the app. MyBuku Pink also did not provide a real-time chat in the apps.

4. Novelty of Research / Product

In this project, a new hospital tracker was added. The hospital tracker enables pregnant women to track the nearest hospital near their current location. This helps pregnant women choose their nearest clinic for a check-up. Another advantage of this new feature is it can help pregnant women where they can track the nearest hospital during emergency times. MyBuku Pink has many more advanced features than manual Buku Pink because it has many features and not using manual Buku Pink anymore. This project also will help pregnant women ease their Buku Pink journey. Not only that, but this study will also contribute to assisting the doctor and health staff in registering the Buku Pink and monitoring pregnant women's health status. This digital Buku Pink can also benefit other researchers or governments if they want to implement this mobile app for pregnant women.

5. Conclusion

In a nutshell, MyBuku Pink mobile application is a project that aims to develop an Android mobile application for pregnancy health records and to evaluate the proposed mobile apps via a functional and usability test. This project successfully achieved the two objectives, and the majority of the respondents were satisfied with the mobile application.

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MOBILE APPLICATION FOR ORDERING FOOD FROM UITM ARAU CAMPUS CAFETERIA

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Abstract

This thesis discusses the problem faced by the students to place their order at cafeteria inside UiTM Arau Campus. Cafeteria in UiTM Arau is operating using a traditional method to serve student's orders, which is the student has to walk in and order manually at the counter and wait for several minutes for the food before it is served. Currently, cafeteria takes orders through WhatsApp application which causes the redundancy of ordered food, and sometimes may take a longer time than ordering the food via walk in and there are other food ordering systems that are being used by students such as Foodpanda and GrabFood that can deliver food but these two mobile applications cannot take orders from cafeteria inside UiTM. This situation results in students only being able to order food from restaurants outside campus which can cost more for delivery charges and longer waiting time. This project aim to design and develop a mobile application that will allow students to order food from cafeteria inside UiTM. The second goal for this project is to evaluate the mobile application using functionality and usability test. The Agile method being employed in this project, and thoroughly described which consist of six steps, including planning, analysis, design, implementation, testing, and maintenance. This project was evaluated by distributing online survey and as a result there are 36 responses collected through usability testing. Meanwhile functionality testing conducted using test script.

Keywords: *Foodpanda, Grabfood, agile*

1. Introduction

The objective of this project are to design and develop a mobile application that will allow students to order food from cafeteria inside UiTM and to evaluate the mobile application using functionality and usability test. This project aimed to develop a food ordering mobile application that can provide easier ways for the students to place their food order through their pack schedule and help the cafeterias in UiTM to increase customers' dining experiences. The system in a mobile platform which is much more convenient compared to web based. This platform will allow users to review the cafeteria's menu card information and make an order.

2. Methodology

Data collected through analysis of current method used in UiTM Arau Campus's cafeteria and existing online food ordering system. The method used was Agile methodology which consist of six steps, including planning, analysis, design, implementation, testing, and maintenance. This project was evaluated by distributing online survey and as a result there are 36 responses collected through usability testing. Meanwhile functionality testing conducted using test script. Development of this application are done by using Android Studio and java as a language.

3. Results and Discussion

As a result of the usability testing, the majority of respondents agreed that this mobile application is a good platform that is effective and will offer a variety of advantages and benefits to users, notably students and cafeteria administrators. This shows that the testing goal of evaluating the system through

usability testing, as mentioned in Objective 2, was accomplished. The application's limitation is the user cannot set timer when they want to pick up order from cafeterias. Other than that, at admin side they only can estimated range for order from students finished. Others limitation are, user can only make payment via cash during pick up the orders because there are no payment gateway. Next limitation is, user which is student cannot fully view their profile information. Lastly is, user which is student also cannot change language for Mobile Application For Ordering Food from UiTM Arau Campus Cafeteria. From the limitations of Mobile Application For Ordering Food from UiTM Arau Campus Cafeteria, it frustrates users who wish to continue using this mobile application.

4. Novelty of Research / Product

This project was build in mobile application which is much more convenient compared to web based. Mobile Application For Ordering Food from UiTM Arau Campus Cafeteria allow student to view the food list and its information by selecting their preferred also they can simply add order to cart and placing order online without queuing in the cafeteria. Meanwhile, admin side of this project enables the cafeteria admin to update, delete and add their cafe list and food list information. Cafeteria admin also can update the status of the ordered foods so that students don't have to check on the status of the foods manually at the cafeteria.

5. Conclusion

In conclusion, Mobile Application For Ordering Food from UiTM Arau Campus Cafeteria is a project that aims to help both users which are students and administrator to order the foods and also manage orders from the students. This project also aims to help students to not stay in long queue while buying at cafeterias.

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UITM WEB PRACTICAL LOGBOOK SYSTEM

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Abstract

A Web-Based Practical Training Logbook System has been developed to computerise the entire practical training process and make it available online. The system allows for the registration of internships, the writing of logbooks, and the monitoring of the UiTM industrial internship programme. This system was created using the System Development Life Cycle (SDLC). This system will be constructed with the assistance of web-based programmes such as PHP, HTML, and MySQL. The Waterfall model has been used as the approach for building the system, which includes phases for planning, analysis, design, implementation, testing, and documentation. These phases are all part of the development process. This online system, which is integrated with a database system, can assist the lecturer in managing and monitoring the students' industrial logbook process. This system offers one of a kind features, such as the capability to print or convert the whole logbook into PDF format. In addition to that, they have the ability to apply for leaves of absence and send alerts to the lecturer in order to keep them updated. The system is simple to use and can help with the internship programme process. As a result, in general, this system will benefit students as well as all parties involved in the internship programme. The functionality and usability testing was done by thirty different individuals, and the findings revealed that the UITM Web Practical Logbook System fulfilled all of the objectives that were originally outlined.

Keywords: logbook, web, practical, internship

1. Introduction

The purpose of this research is to design and develop a web practical training logbook system. Beside, is to test the system's usability and functionality to see how well it works. The Web-based Practical Training Logbook System was developed utilising Web-application tools such as XAMPP, MySQL, PHP, and HTML. The intended users are UITM students who are required to prepare an internship report as part of their graduation requirements and UITM lecturers. If a user want to submit a daily internship report, they must first register, then enter their personal information, the company's information, and their daily activities. At the end of internship training, they can convert the entire report to pdf and print it.

2. Methodology

The system development life cycle (SDLC) was implemented in the creation of a Web-based practical training logbook system. SDLC is crucial for ensuring that a system will provide actual deliverables or a positive outcome during its development and at its conclusion. By adhering to the phases in sequential order, the project can yield the greatest results. The six steps of the SDLC are planning, analysis, design, implementation, and testing. This project's SDLC is established using the waterfall paradigm.

3. Results and Discussion

Usability and functionality tests were part of the UITM Web Practical Logbook System code-testing procedures. These procedures are carried out in order to gather user input regarding the efficiency of the UITM Web Practical Logbook System. After usability testing was completed, a series of questionnaires were distributed to respondents to solicit their input. The average system usefulness is

4.52, the average score for quality of information is 4.48 and the median rating for interface quality is 4.6. Usability testing and functionality testing have provided a clear picture of how the UITM Web Practical Logbook System is perceived by its users. In addition, the testing's purpose is to ensure that UITM Web Practical Logbook System has achieved its goal. The findings of this research are subject to a number of constraints and boundaries. Once students had completed their industrial training under this system, there was no opportunity for them to be evaluated on their performance. In addition, the requirements for medical students are different, so this UITM Web Practical Logbook System is not suitable for them. Additionally, this system did not place any restrictions on the number of days that could be used when applying for leave.

4. Novelty of Research / Product

The goal of this project's research is to come up with a new way to make practical training logbooks that will help people deal with their busy lives, which take up most of their free time. Students don't have to write down their daily activities during an internship in a book anymore because there is now a digital system for keeping a logbook of these activities. The system aims to make people happier because putting in less effort might make people who are always on the go feel like they've done something.

5. Conclusion

The web-based, practical logbook system has elicited many favourable responses from users in regard to the system. The majority of respondents were satisfied with the UITM Web Practical Logbook System based on the results of the testing sessions. Other than that, the entirety of the tested functionality has provided error-free output.

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BLOOD BANK MANAGEMENT SYSTEM

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Abstract

A blood bank management system is a software application used to manage the blood bank's different processes and operations. It can be used to track and manage blood and blood products collection, testing, storage, and delivery. This can involve inventory tracking, donor information management, and report generation. Since the entire project is administered at the administrative level, only the administrator is permitted to examine it. The fundamental purpose of this project is to create a web-based blood bank management system. Having this knowledge of the blood bank management system would facilitate the process, and the use of a web application would accelerate it. The second objective is to conduct functionality and usability testing. The results of the system's functionality tests indicate that the system is fully functional. The system has demonstrated that data transmission and web load are received effectively. This project was built with PHP. MySQL has been chosen as the database software. If the system can be converted into a mobile application, the ideas may be utilised to enhance the current system, given that smart phones are a ubiquitous and always-available device. It may be more practical than lugging a laptop or utilising a web browser to gain access.

Keywords: blood bank, administrator, web-based

1. Introduction

The blood bank's current system is entirely manual. It has trouble keeping track of the information of donors. Furthermore, errors may occur if the staff maintains several donor records. Hence, the objective of this study is to evaluate the functioning and usefulness of the Blood Bank Management System. This system objective is also to build and create a system that is user-friendly. This system is an online application. It was created using Web-based application software such as MySQL, PHP, and HTML. This system is used to keep track of all operations and activities within the blood bank. This programme is intended to be applicable to all blood banks. Therefore, every attempt is made to apply this concept in a single blood bank.

2. Methodology

Methods and techniques include planning, data collection, design, development, testing, and documentation. The procedure of collecting data includes observing the engaged students and units. Conducting interviews and surveys by referring and analysing pre-existing concepts, such as the system's user-friendliness and effectiveness. The findings of this study evaluate the level of consumer satisfaction with the system. This system can be built using MySQL, PHP, and HTML, in addition to a computer for hardware. Test results indicate that the system is functioning but requires development.

3. Results and Discussion

The Blood Bank Management System must operate properly. Using a functional test, it was determined whether the system in issue meets the functional criteria and technical standards. We may consider an outcome to be successful if it demonstrates that all the application's features are operating as intended. Thirty respondents of all ages and professions will evaluate the usability tests. According to the findings of usability testing, the majority of respondents agreed that this system is a good, efficient platform that

will assist both users and administrators with system management. In conclusion, the usability test was done satisfactorily.

4. Novelty of Research / Product

The blood bank management system is a relatively new technology designed to increase the safety and effectiveness of blood banking operations. The automation of processes is one of the primary characteristics and novelties of these systems. Blood bank management systems automate a significant portion of the manual processes involved in blood banking, including data entry, inventory management, and reporting. This can aid in reducing errors and enhancing the precision of information. Followed by real-time monitoring. Blood inventory levels can be monitored in real-time by blood bank management systems, ensuring that blood products are always available when required. This can help improve blood product availability and reduce the risk of stockouts.

5. Conclusion

In conclusion, blood bank management systems are computer programs used to manage the operations of a blood bank. They automate processes, provide real-time monitoring, ensure compliance with regulations, and improve data analysis. These systems improve the safety, efficiency and effectiveness of blood banking operations, ultimately making the availability of safe blood products more reliable.

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WEB-BASED FOR UiTM ARAU FOOD ORDER

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Abstract

The UiTM Online Food Ordering web-based system is a computerised system created to make it simpler for UiTM staff and students to purchase food and beverages. This technology was developed in response to the present lack of an automated system, which is depending on paper orders and long queues. The need for social isolation and the ongoing COVID-19 pandemic have highlighted the significance of a computerised system to improve cafeteria management and accessibility. The UiTM Arau Food Order System was developed using the Waterfall method, which includes stages including planning, information gathering, requirements analysis, design, development, implementation, and testing. The user experience is given top priority, and features like email integration for purchase tracking and alerts are included. The system was evaluated for usability and functionality by prospective end-users, and the response time was tested using network performance testing. With 32 respondents, the results showed that the system met its objectives and was successful.

Keywords: Food order, web-based system, integration, computerised system

1. Introduction

The purpose of this system is to make it convenient for users to purchase food and drinks. It aims to reduce the risk of human error when taking orders by eliminating the need for users to physically wait in line or place phone orders. The staff and students of UiTM Arau in Perlis are expected to use this system. The administrator may track and update order details as well as the food and beverage products that are currently available on the website, which is one of the system's most significant features because it removes the need for human order taking and boosts efficiency.

2. Methodology

The Waterfall Model technique, which divides the project development process into different phases such as Requirements Analysis, Design, Development, Testing, and Documentation, is the initial step in this project's development. The first step is known as Requirements Analysis, and it involves conducting an initial study, identifying the project's requirements, and analysing relevant information from journals and publications. Next, the Design phase which a prototype of the non-functional interface is designed to clearly demonstrate the project's structure. The next phase is development, which involves using Notepad++ to write computer code and accessing the MySQL database. The testing phase is then carried out, including usability testing with 32 respondents to assess the system for placing food orders.

3. Results and Discussion

The respondents agreed that the UiTM Arau Food Order system should replace the function of the present manual ordering procedure using paper, based on the usability and functionality tests. In terms of the proposed web-based system's user interface quality, content, and usefulness, most respondents also expressed satisfaction. Following the functionality testing, the website system operates well. This led to the successful accomplishment of objective 2 in this project, which is to evaluate the proposed

web-based system via a functional and usability test. The creation of this food ordering website also makes it possible for students and staff to place orders online, fulfilling this project's main objective.

4. Novelty of Research / Product

The UiTM Arau Food Order web-based system enables the administrator to easily view users' orders and alert users via email push notifications technology when their food is ready. This makes it more convenient for users as they are alerted about the status of their order without having to wait for their food to be prepared. This can be an effective technique to reach users and quickly deliver urgent alerts to them. Additionally, the admin also can decide whether to approve or reject requests from registered users who want to become as a merchant. This feature provides an advantage for users who are accepted by the administrator, as they can start selling on the system and have their own dashboard for monitoring sales.

5. Conclusion

In conclusion, the web based UiTM Arau Food Order system aims to improve the ordering process for staff and students by making it more convenient and effective. It has been established through testing and interface of the system that this method is efficient in achieving its goals. On the other hand, there are some possible innovations that may be done in the future, such integrating WhatsApp notifications and utilising a cloud-based database. Overall, the adoption of this system has improved accessibility for users and administrators while reducing human waiting times.

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MASK AWARE: IOT FOR FACEMASK DETECTION AND MONITORING

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Abstract

Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. Most people infected with the virus will experience mild to moderate respiratory illness and recover without requiring special treatment. This pandemic unexpectedly broke out in 2019 and has seriously affected the whole world. COVID-19 has infected more than 500 million people worldwide and caused over 6 million deaths. Malaysia has entered the endemic phase, the wearing of facemasks is not mandatory in public but still encouraged while using public transports such as bus, train, taxis, airplane, e-hailing vehicles as well as in hospital and medical institutions. Awareness is diminished as some places do not require the wearing of face masks. The government has given flexibility and no longer imposes actions on individuals. Therefore, the purpose of this study is to provide a way to give some awareness of the requirement for a face mask when handling with high-risk groups. This project will detect a mask by adjusting the mask to cover the mouth, nose, and chin. If no face mask is detected or not being worn properly, a message will be displayed to notify the person and a notification via Telegram will be sent to the authorize people. By having this project, the spread can be reduced, and we can be vigilant.

Keywords: *COVID, Facemask, Awareness*

1. Introduction

After the new Coronavirus disease (COVID-19) case spread rapidly in Wuhan-China in December 2019, World Health Organization (WHO) confirmed that this is a dangerous virus which can be spread from humans to humans through droplets and airborne. As for prevention, wearing a facemask is essential while going outside or meeting others. Older people with chronic illnesses are more likely to develop serious illness. Anyone can get sick with COVID-19 and become seriously ill or die at any age. Malaysia has entered the endemic phase, the wearing of facemasks is not mandatory in public but still encouraged while using public transports such as bus, train, taxis, airplane, e-hailing vehicles as well as in hospital and medical institutions.

2. Methodology

As for prevention, wearing a face mask is essential while going outside or meeting others. Therefore, the purpose of this study is to provide a way to give some awareness of the requirement for a facemask by developing Mask Aware, IoT for facemask detection and monitoring. This project uses ESP32 cam, Arduino, Ultrasonic sensor, and LCD. The ESP32 cam was attached to the Arduino uno.

3. Result and Discussion

In this project, before scanning their face mask, the user must stand distance with Mask Aware with the user must be 35-60cm from the camera. The value for Mask Aware detects the proper facemask is 80% and above. In addition, the lcd also displays messages to come closer or take a step back and red led on Mask Aware will on to keep users notice that they are not wearing properly. The result gained shows that the successful percent detect on facemask. Lastly, Functionality and User Acceptance Testing (UAT) is done at the end of the project phase to know the strengths and weakness of this project. From

the tests performed, all the hardware used are functioning well and from the UAT feedback result, mostly respondents involved were satisfied with Mask Aware.

4. Novelty

Research finding there have been several research that have develop on facemask detection. But this Mask Aware come out with display LCD that can notify the user and can be monitor by owner. The ESP32 cam must connected to Wi-Fi. Once connected, use the IP address on browser. It can simply type the IP address for monitor the camera.

5. Conclusion

To conclude, the facemask detection is an IoT based project that was proposed to detect the face with or without facemask. The ESP32 cam used to detect facemask and sent to Arduino, while Arduino as the microcontroller to request and receive data from the ESP32 cam. Lcd on the Mask Aware display the output to notice the user.

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IOT-BASED FLOWER GARDEN CARE SYSTEM USING ESP8266 WI-FI MODULE AND TELEGRAM APPLICATION

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Abstract

Proper care is very important to keep a flower garden in good condition, whether it is getting enough water or ensuring the safety of the flower garden area. Using technology can have advantages for people who have a small flower garden at home. The IoT-based Flower Garden Care System using the ESP8266 Wi-Fi Module and Telegram Application is developed to solve the problems of people always forgetting to water it and for the safety of the flower garden area from animal harm. This research was uses an ESP8266 Wi-Fi module, a Telegram application, and two sensors, which are a PIR motion sensor and a soil moisture sensor. The development process for this research follows six stages, which are initiation, planning, design and development, implementation and testing, data analysis, and documentation. The aims of this research are to develop a prototype on an IoT system for a flower garden to monitor using sensors, a Wi-Fi module, and a Telegram application and evaluate the prototype performance using functionality testing.

Keywords: Flower garden, Telegram application, PIR sensor, soil moisture sensor, Wi-Fi module

1. Introduction

Flowers are living things in our environment that help to make our planet more productive and beautiful. In order to grow healthy, plants need water, light, and nutrition from the soil in order to clean the air naturally and produce oxygen for the world. The aims of this research are to develop a prototype on an IoT system for a flower garden to monitor using sensors, a Wi-Fi module, and a Telegram application and evaluate the prototype performance using functionality testing, and user acceptance's test. The area covered during this research is the small flower garden in Kuarters Ladang Risda Kepis, Kuala Pilah. The users involved in this research are people who have a small garden at home. The sensors that were used in this research are a soil moisture sensor and a PIR motion sensor.

2. Methodology

This research used functionality testing to determine whether it worked well or not. In functionality testing, the PIR sensor and the buzzer were tested three times by changing the distance of an animal from the sensor to check whether they could send an alert by telegram. Meanwhile, the soil moisture sensor and water pump were tested based on the functionality of the auto water pump and a command through telegram to read data and get the status of the soil moisture. Moreover, the system performance has been tested by using different types of telecommunications services.

3. Results and Discussion

In the analysis, users will no longer have to wait to check on their small flower garden because they will be notified right away through the Telegram app if motion is detected there, and the system will automatically water the garden if the soil moisture is below 33.3%. The average time it took for users to get alert notifications was measured from 0.5 to 1.5 m to figure out the best distance to detect motion. The distance from animal movement to the PIR sensor that has been used in this research is 0.5 to 1.5 meters. The buzzer will ring if motion is detected. The average response time to read the moisture value

and the status of the soil moisture is approximately 10.2 seconds. However, it depends on the type of telco services we used.

4. Novelty of Research / Product

There has been some related research that is used to develop systems on how to monitor gardens, with a greater focus on agriculture. In previous research about smart agriculture monitoring systems using the Internet of Things, they used the ARM processor and the ThingSpeak application as their platform to retrieve data (Jain & Kumar, 2020). There have also been several researches about using a telegram application to control lights to turn on and off (Candra et al., 2019). Furthermore, there has been research that uses the Atmega328p and ESP8266-01 as processors to connect with the sensor (Sarode et al., 2020). However, there has not been any research on using the Telegram application as a platform to retrieve and send data to its users. Therefore, the main focus of this research is on how the Telegram application and auto watering system can be used to monitor the small flower garden.

5. Conclusion

The objectives of this research were successfully achieved. Based on the result, the notification was sent immediately to the user when motion is detected, and the user can request the data for soil moisture through telegram application. Moreover, the auto pump was functioning well.

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UITM STUDENT'S ATTENDANCE SYSTEM BASED ON BIOMETRIC FINGERPRINT WITH IoT IMPLEMENTATION

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Abstract

The use of biometric technology in attendance systems has become increasingly popular in recent years, as it provides a convenient and secure way to record attendance. This project aims to develop a biometric fingerprint-based attendance system for students of Universiti Teknologi Mara (UiTM). The system will be integrated with IoT technology to improve its accessibility and data management capabilities. The current manual attendance system used for most universities is prone to errors and lacks efficient record keeping and monitoring capabilities. This results in difficulties for both the students and the lectures in tracking attendance records. As a result of this issue, the purpose of this research is to develop a student's attendance system with biometric authentication features more correctly without the need for lecturers to manually track attendance. Lecturers can collect all the attendance records of each user details as well as incoming & outgoing timing. The data can also be downloaded and exported to an excel sheet. The system will trace the absent user, and user who does not attend more than three times or six times without medical certificate (MC) will receive a warning. The system was evaluated by 30 respondents as a form of User Acceptance Testing (UAT) and the results show that the majority agreed that the system is achieved the perceived ease of use and perceived usefulness. The project includes the design, development, and testing of the system, as well as a user evaluation to assess its effectiveness.

Keywords: fingerprint, biometric, attendance, absenteeism, lecturer, student

1. Introduction

Traditionally, students' attendance is taken manually using an attendance sheet provided by the speaker in class rather than a system. With this manual approach, students can cheat by asking their peers to tick or sign for them. This arises because students are only concerned with meeting the 80 percent attendance requirement in order to sit for the final examination at the conclusion of the semester. This project aims to develop a biometric fingerprint-based attendance system for students of Universiti Teknologi Mara (UiTM) by using NodeMCU ESP8266. The system will be integrated with IoT technology to improve its accessibility and data management capabilities. The functionality, usefulness, and ease of use of the system will be tested from an end-user perspective, and satisfaction will be measured using the Technology Acceptance Model (TAM) in order to evaluate the system's effectiveness. This project will focus in Universiti Teknologi Mara (UiTM) Perlis classes.

2. Methodology

Data were collected from textual analysis by referring to and evaluating journals, articles, and existing concepts, such as others biometric authentication. The collected requirements will be used to design and develop the system. The system will be designed and developed using technologies such as biometric fingerprint authentication and IoT. The system will be designed to be user-friendly, efficient, and accurate. The development phase will conduct and providing ongoing maintenance and support to ensure the system is functioning properly. The system will be tested and evaluated to ensure it meets the requirements and specifications. The functionality, usefulness, and ease of use of the system will be tested from an end-user perspective, and satisfaction will be measured using the Technology

Acceptance Model (TAM) to evaluate the system's effectiveness. The data collecting the attendance will be analyzed to evaluate the system's effectiveness and ready for documentation.

3. Results and Discussion

The proposed UITM Student Attendance System based on Biometric Fingerprint with IoT Implementation was developed and tested successfully, showing that it was able to accurately record student attendance using biometric fingerprint technology. The user-friendly interface and real-time monitoring capabilities provided by IoT implementation was well received by both students and lecturer members, with high levels of satisfaction reported in the Technology Acceptance Model (TAM) survey. The system was able to achieve an accuracy rate of 98.5%. Overall, the system was able to improve the overall attendance management process at UiTM and provide a new level of convenience and accessibility for attendance management. The implementation of this system is expected to provide benefits to the UITM community in the long run.

4. Novelty of Research

The proposed research a biometric fingerprint-based attendance system for UITM students, with the integration of IoT technology. The integration of IoT technology in the proposed system will enable monitoring to attendance data, thereby addressing the limitations of traditional attendance systems that rely on manual data entry and retrieval (Khan et al., 2018; Al-Fuqaha, et al. 2015; Atzori et al. 2010). This will improve the overall attendance tracking process by reducing human errors and increasing the accuracy and speed of attendance data collection and analysis (Yin and Yang, 2019; Zhang and Li, 2018). The system will also include a web-based interface lecturers and to access and manage attendance records (Kassim et al. 2012; Gupta et al. 2017). The proposed research will contribute to the existing literature by providing a practical implementation of an IoT-enabled biometric fingerprint attendance system for the education sector.

5. Conclusion

The proposed research aims to develop UITM Student Attendance System based on Biometric Fingerprint with IoT Implementation. The objectives has been achieved by the user perspective and satisfaction and system results that prove the overall attendance tracking process has improvising the management of attendance data collection and extraction.

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CORN LEAF DISEASE DETECTION SYSTEM USING CONVOLUTIONAL NEURAL NETWORK

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Abstract

Monitoring a plant's health and looking for signs of infection are two highly important aspects of sustainable agriculture. Monitoring plant diseases by manually is an extremely time-consuming and tedious task. It takes a significant amount of time, a substantial amount of labor, as well as knowledge in plant diseases to achieve. Image processing is thus used in the process of detecting plant diseases. This project mainly focuses on corn leaves disease detection using convolutional neural network. The Xception model, which is a part of a convolutional neural network capable of classifying images into broad object categories, would be the model of choice for this image classification. Using Convolutional Neural Network (CNN), this study aims to build and test a web-based image classification tool for identifying corn leaf diseases detection. This research dataset is trained by analyzing a big dataset that contains pictures of various diseases that might affect corn leaves as well as pictures of corn leaves that are healthy in order to precisely identify them. The data were then analysed using a methodology known as the Agile model, which included phases for planning, requirement analysis, design, development, testing, and documentation. The findings from the study provide evidence on the precision with which the Xception model performed has reached 92.11 percent when applied to the datasets that have been gathered. Strongly, the results of the study will emphasize the need for developing a thorough image classification system in detecting plant diseases without human intervention.

Keywords: corn leaf, disease detection, Convolutional Neural Network (CNN), Xception model

1. Introduction

Two research objectives are created based on the problem statements described. Firstly, to develop an image classification system that includes deep learning technology which is convolutional neural network with Xception model to detect corn leaf diseases based on the symptoms of specific diseases. The second objective is to run performance testing of the corn leaf diseases detection system in terms of accuracy identifying disease types based on the symptoms. This research intends to develop a corn leaf disease detection system to improve deep learning-based disease identification. The proposing project will cover the usage of TensorFlow, Python. The system will then be put to the test to see how well it achieves the objectives. Besides, corn crops from Chemor, Perak will be chosen as the research area to apply the diseases detection system. Thus, the target users would be the people in agriculture sector especially in handling corn crops.

2. Methodology

This research will use Agile methodology for planning, requirement analysis, design, development, testing, and documentation. In planning, the research should describe its background, problem statement, project objectives, scope, and significance. In requirement analysis, hardware and software requirements are obtained. The design phase involves data collecting from the research area and CNN model computation and algorithm. Development includes training the algorithm with previously acquired data and Python code modifications. The research shall assess hardware-software integration and disease detection accuracy during testing. Finally, all recorded tasks, results, and data will be compiled and documented.

3. Results and Discussion

After 10 experiments, this project can conclude that when batch size = 60, epoch = 15, image size = 256*256, the model achieved the highest classification accuracy of the corn leaf diseases image data set. Additionally, the loss function curve and the accuracy curve of the training set and the validation set fit together the best. Besides, the lowest classification accuracy of all the samples is 90.04% for 8 epochs and the best classification accuracy of it is 92.11% for 15 epochs. As a result, there is a difference of 2.07% between those two epochs, which suggests that both these model and those datasets function well with larger epochs.

4. Novelty of Research / Product

This disease detection system will save corn farmers time by eliminating the need to manually identify which diseases the plant may contract. In fact, issues like mistakenly identifying the type of diseases could be avoided. The implementation of a convolutional neural network with the Xception model for training datasets on corn disease classification is the foundation of this research, which used local crop datasets as opposed to Internet-sourced datasets. Therefore, local corn crop handlers would find this method valuable since the similarity of the disease could be correlated throughout the country. Also, this approach will be the start of other agriculture researchers in the implementation of various plants especially local plants like durians and other classification needs such as sorting the fruit into its respective grades.

5. Conclusion

In conclusion, it can be stated that the development of corn leaf disease detection system based on a convolutional neural network has reduced human intervention and time invested on corn crop management, while exposing users to the rise of deep learning technologies. Plus, the study findings show that the Xception model's accuracy on datasets has reached 92.11 percent. The implementation of this system could be useful to define other characteristics like colors for future work. Therefore, all stated objectives for this research have been accomplished.

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HOMENETSEC: ENHANCING HOME NETWORK SECURITY BY SURICATA INTRUSION DETECTION SYSTEM USING RASPBERRY PI

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Abstract

Most of home network user are not aware that they can be exposed to attacks from threat actors through the Internet. It is important to educate the general public about home network security. So, this project aims to develop a low-cost network monitoring system. A preliminary survey was done to find the needs from the general publics. From the survey, there is a need for system that can enhance home network security and the finding of the survey was to create the HomeNetSec system. Result of functionality testing is the system can detect suspicious network traffic and bad network traffic. Each of the component of the system such as Suricata, Elasticsearch, Kibana and Fluent Bit functioned correctly. During usability testing, the users have evaluated that the system satisfied their needs of a system that can enhance their home network security.

1. Introduction

Most home network users are unaware that they are vulnerable to attacks from the Internet. Some of the threat actors who attack home networks are financially motivated cybercriminals, ideologically motivated hacktivists, terrorist groups motivated and script kiddies. It is critical to educate the general public about the importance of home network security. Besides, a simple and easily managed device to secure the home network is desirable. This project aimed to create a low-cost network monitoring system using Raspberry Pi that can alert the home residence if there is an attack. To evaluate its functionality, the system was tested with specified scenarios.

2. Methodology

Firstly, a preliminary survey was conducted to determine the needs of the general public. Its findings confirmed that there is a need for a system that can improve home network security. Then, the home network security (HomeNetSec) system was designed and built on an Internet of Thing (IoT) device, Raspberry Pi 4. Suricata IDS, the detection engine, is one of the software components that was embedded in the system with the purpose to detect malicious network traffic that has passed through the network. Once it was fully completed, the HomeNetSec system was then tested for functionality and usability where some potential users have evaluated the capability of the system.

3. Results and Discussion

The system can detect suspicious network traffic and bad network traffic as a result of functionality testing. Each system component, such as Suricata, Elasticsearch, Kibana, and Fluent Bit, worked properly. Suricata IDS was able to detect and log suspicious and malicious network traffic. Elasticsearch processes the logs so that Kibana can use them. Kibana displays the processed data as meaningful data. Fluent Bit was able to successfully pipe data from Suricata IDS logs to Elasticsearch. During usability testing, users determined that the system met their requirements for a system that can improve the security of their home network.

4. Novelty of Product

The HomeNetSec system was developed using Open-Source software (Cueva Hurtado et al., 2019), that run on Raspberry Pi that is portable and can be move to another network whenever necessary. There been a number of research of using Raspberry Pi as a platform to secure network (Taib et al, 2020), (Taib et al, 2020). It can be configured to detect any possible network attacks through Suricata rules and signatures (Flauzac et al.,2020). The system is potentially to be commercialized as many home users may need it to secure their network activity. Moreover, it is affordable and easy to use without comprehensive training. To improve home network security even further, users must keep router firmware up to date. Older router firmware may contain flaws that threat actors can exploit. Furthermore, to protect the home network from intruders, the user can disable remote access to the router. The risk of threat actors remotely accessing and tempering the home router is reduced (Kaspersky, 2022). As a result, the home network is more secure.

5. Conclusion

All of the study's objectives were met with success. The first objective is to develop the HomeNetSec system as a low-cost external network monitoring system that integrates with Suricata IDS to improve home network security. The second objective is to evaluate the HomeNetSec system's capability by testing it with predefined scenarios.

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MALWARE DETECTION IN WINDOWS USING DEEP LEARNING CLASSIFICATION APPROACH

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Abstract

Cybercrime has become a major threat to every individual, business, and national security system in the modern world. Deep learning has been implemented in numerous safety-focused environments for the purpose of protecting applications as a result of its rapid evolution and notable success in a wide range of applications. Due to the precision of the data and the capacity to train a huge number of data, deep learning has become popular in response to the current high demand. In terms of accomplishing the project's objective, the project's success was determined by its outputs. Using the Metric Formula Definition Accuracy, the performance of CNN and RNN malware detection models in Windows has been tested. According to the afore mentioned models, CNN is doing better, providing an accuracy of 97.5 percent in detecting malware, whereas RNN provides an accuracy of 88.5 percent and respectively. This study evaluated the performance accuracy between the CNN and RNN architecture models.

Keywords: Deep learning, CNN, RNN, accuracy,

1. Introduction

According to recent statistics by the AV-Test Institute, over 17 million new malware variants are registered each month. This shows cyber-attacks increase greatly from time to time. Windows malware families was chosen to doing malware detection using deep learning by applying the Convolutional Neural Network (CNN) and Recurrent Neural Network (RNN). This malware detection will construct deep learning classification model on the extracted features from sampled malware families. This study wants to evaluate the performance accuracy of the resulting malware detection model in Windows architecture.

2. Methodology

Malware and benign software will be collected from various repositories. It will be analysed using static analysis to know the behaviour of the software files. This static analysis will be run in a secure environment without infecting the host system. The analysis data will be collected in csv files. Then it will convert the binaries of the malware and benign software to grayscale image datasets. This image will be used in the CNN architecture model. This dataset will be randomly split into 80 percent for training and 20 percent for validation sets of both the malicious and benign grayscale image datasets. The RNN architecture will use the features that were extracted from the software files using static analysis to run the model. Both deep learning architectures will use Anaconda environments to run the Spyder IDE, the scikit-learn tool, Keras, and TensorFlow.

3. Results and Discussion

The result of this project is the performance accuracy of two deep leaning architecture which is CNN and RNN architecture. The accuracy of CNN architecture is 97.5 percent meanwhile the RNN architecture is 88.5 percent. Since CNN has improved its ability to determine whether a file is malicious or benign. This is due to the fact that CNN layers contain many convolutional filters that evaluate the complete matrix of features and minimize spatial size. This makes CNN a very convenient and suitable network for categorizing malware and benign data. RNN are less accurate than CNN due to memory-

bandwidth-restricted computations that minimize the utilization of neural network implementation. This prove that CNN more accurate in classifying the files is malicious or benign.

4. Novelty of Research / Product

A number of studies have been conducted on the topic of malware detection via deep learning classifications. Previous studies have made use of CNN to identify malicious software by using grayscale image (Choi et al., 2017; S.L. and C.D., 2021). Additionally, a number of experiments on RNN architecture that employs long short-term memory (LSTM) to differentiate between malicious and benign files have been carried out (Hossain et al., 2021; Agrawal et al., 2019). An RNN architecture is used by Jha et al. (2020) for the classification of malware using a variety of feature vectors that are controlled by hyperparameters.

5. Conclusion

In conclusion, this project achieving the objectives. The CNN architecture has higher accuracy which is 97.5 percent meanwhile RNN architecture is 88.5 percent. The indicates CNN architecture more accurate to differentiate it is malicious or benign files. RNN are less accurate than CNN due to memory-bandwidth-restricted computations that minimize the utilization of neural network implementation.

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E-VOTING SYSTEM PROJECT IN LARAVEL BASED ON WEB-BASED APPLICATION

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Abstract

As part of this course requirement, the project will discuss the planning and execution of an online voting system. Voters are provided with a dependable and highly secure environment to cast their ballots through the use of internet terminals, which are personal computers, through the online voting system. In this voting method, the voter is not required to physically travel to the polling place in order to cast their vote. They are able to vote using their own personal computers immediately which can save a lot of time. There is a database that is kept up to date, and it saves all of the information pertaining to the users, including the full extent of that information. Simply filling out a registration form is all that is required for the System Administrator to register voters as they are eligible to vote. After they have registered, they will be able to vote for a certain party and candidate. The counting procedure is totally automated, therefore there is no opportunity for error or possibility for the results to be manipulated. When the analysis has been completed, the results, together with any accompanying statistical studies and graphical representations, will be published on the results page.

Keywords: online voting system, voters, registration, vote

1. Introduction

Elections are a vital component of a democratic society, allowing citizens to express their opinions through voting. The E-Voting system was created to develop an user-friendly web-based application that inspires security trust in this technology to enhance voter confidence and experience. The system is verified in Laravel that will ease up and simplify voting during an election. The E-Voting mechanism involves system administrators, voters, and candidates. It is performed inside the confines of one tiny community in certainly for election day using English language in the whole system. As a result, E-Voting requires something that all individuals possess with their own identity, specifically their identity card itself. As we know, every user will have their own unique identity card to register into the system.

2. Methodology

System development methodology as a standard process followed in an organization to conduct all the necessary transitions and to analyze design, implement, and maintain information systems. I advocated using SDLC (System Development Life Cycle) as my systems development technique in the E-Voting system. The E-Voting system was made for election day to encourage every user or voter involved in voting management. Users have to log in using their own identity card and choose their leader properly. The system required system administrators to register every voter and candidates to make sure the data of every user was kept safe.

3. Results and Discussion

In the subsequent findings, the profile of respondents was provided initially, followed by the usability of testing for assessing respondents' evaluations of E-Voting systems. Overall, the findings of this set of experiments were quite satisfactory. In the questionnaire task the users were asked to state the level of feasibility E-Voting became a good system and the outcomes were extremely satisfactory with average of 90.9% to 97.0% of respondent grading the system as the convenient system, good time management system, a complete information of system, a modern system with an alert message

provided, the voting methods with automated calculator without human errors, and the satisfaction of users to use it in future. The feedback of the electoral process is important to ensure the integrity and impartiality of an election. Although there is slight improvement to do, the system structure helps every user to simplify their electoral process. Thus, E-Voting is an electoral process that should be retained and protected.

4. Novelty of Research / Product

There have been a number of research that have investigated how E-Voting system develops, particularly those intended for society, highlighting issues such as how to build a remote voting system that allows voters to vote remotely and facilitates access on election day (Meor Muhammad Kamal Meor Muhammad Sulaiman, Mohd Fairuz Iskandar Othman, Wahidah Md Shah, Aslinda Hassan, Norhayati Harum, and Ibrahim Mohammed Alseadoon, 2021). Previous research about how to utilize wireless and web technology makes the voting process exceedingly simple and efficient was done through the perspective on how convenient the system is for society (Rajesh M. Ghadi, Priyanka S. Shelar, 2017). There have also been several research on ways of against the manipulation of the findings throughout the publication process (Shankar, Pandiaraja. Sumathi, Stephan &Sharma, 2020). In addition, the research about to learn how RT managers manually handle assets, events, and finances, watch firsthand the asset loan transaction procedure and the recording of minutes and data gathering at each event also been recorded for implementation of E-Voting system (Johan Setiawan, Arif Faizal Rahman, Bambang Sugiantoro, 2020)

5. Conclusion

The development of E-Voting has been tested in several studies and utilised with legal standing. One of the most intriguing parts of my methodology is the fact that I make use of Laravel as my application framework. The system's usability has been exhaustively evaluated to ensure its success. It is undeniable that the testing results provide the opportunity for E-Voting to build a reliable voting system in society.

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WATER LEVEL MONITORING USING WIFI

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Abstract

Water is an essential resource for all living species, including humans. Water also utilized in several applications, including irrigation, industrial activities, and energy generation Today, a huge section of the world's population lacks access to clean water for drinking, cooking, and other household purposes. To solve these difficulties, researchers throughout the world resorted to Internet-of-Things (IoT) technology to effectively monitor water levels, identify leaks, and refill tanks as needed. IoT water level monitoring is the process of measuring and recording water levels in a specific area, such as a lake, tanks, or dam, using IoT technology. Sensors in IoT-enabled water level monitoring systems collect data and transfer it to a central location where it may be evaluated and utilized to better manage water supplies. IoT-enabled technologies can help decision-makers respond rapidly to changes in water levels and make more educated water management decisions by gathering real-time data and giving records. This technology may potentially allow users to monitor themselves from anywhere using their smartphones.

Keywords: IoT, Ultrasonic Sensor, RSSI, Microcontroller, Water Level Monitoring

1. Introduction

The purpose of this article is to explore the goal and scope of a water level monitoring system that uses WIFI technology. The system's goal is to remotely monitor and track the water level in a specified region and offer users with real-time data. The system's scope includes the design and construction of a wireless sensor network capable of measuring water levels, transmitting data through WIFI, and storing the data in a database for subsequent analysis. The system has a wide range of applications, including flood warning systems, irrigation control, and water resource management. The system is intended to be low-cost, simple to instal and operate, and capable of producing accurate and trustworthy data.

2. Methodology

Data were collected from self-observation. The system is comprised of a wireless sensor network capable of sensing the water level in a given area and transmitting the data to a central server through WIFI. Ultrasonic sensors monitor water level by producing sound waves that bounce off the surface of the water and return to the sensor. The time it takes sound waves to travel to and from the water's surface is used to compute the water level. A microprocessor is also included in the system, which analyses data from the ultrasonic sensors and delivers it to the central server through WIFI. The system is intended to be low-cost, simple to instal and operate, and capable of producing accurate and dependable data. The Blynk App can show data as an indicator, which may be used to monitor in real time. During the signal strength test, the router's WIFI will transmit the signal to the microcontroller, and the microcontroller will move to the distance that has been pre-set. There is also an obstacle test to see whether the signal strength can pass through an obstacle.

3. Results and Discussion

Based on the data acquired during testing, it is obvious that the feature of water level monitoring through WIFI is a success, as all of the components perform as expected. The amount of water in the tank was highly precise in real time, allowing Blynk applications to monitor it. For the signal strength testing, there are two scenarios, each with a different distance to evaluate how strong the WIFI signal is. There are two scenarios for measuring signal strength: open area and area with obstacles, and each scenario has a certain distance to evaluate how much signal strength of WIFI there is. One of the scenarios included an obstacle test, the findings of which differed from the results for the open space. The results demonstrate that the signal strength was lower in the obstruction area than in the open area. The conclusion is that the water level monitoring system using WIFI technology is a useful and efficient solution for water level monitoring. It can be easily implemented, and it provides accurate and reliable data in real-time. It's also easy to use and maintain, this system can be adapted to different scenarios and can be a valuable tool for water management.

4. Novelty of Research/ Product

There have been a number of research that have investigated Internet of Things is be implemented in the traditional water level monitoring method (Santra, 2017). Previous studies on water level monitoring using smart phone techniques (Sulaimn Ambu Saidi , Hamed ALabri, Salim AL Azwani, & Azan Ali AL-Shaibani, 2021) (Nishimitha, Kotari, Shetty, Shetty, & G, 2019). Previous research on the ESP 8266 and how the ESP 8266 works in real-world water level monitoring (Sachio & Noertjahyana, 2018). There are some studies that employ the same strategy as this research using a different wireless technology (Sulaimn Ambu Saidi , Hamed ALabri, Salim AL Azwani, & Azan Ali AL-Shaibani, 2021). Finally, there have also been a several research on Wireless Sensor Network on water level monitoring (Li, Cheng, Gong, & Yan, 2021) (Lukas, Aditya Tanumihardja, & Gunawan, 2015).

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FACE SKETCH RECOGNITION SYSTEM USING CLOUD-BASED DEEP LEARNING

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Abstract

Face sketch recognition is a system that is used by law enforcement in crime investigation to track the identity of the suspect. The old approach is where a face sketch of a suspect is posted around the city in order to have someone recognize the identity of the suspect and report to the authorities. This approach had resulted in slow investigations and may give a chance for the suspect to escape before being apprehended. Information provided by the victim may also not be accurate enough and may get multiple suggestions of identity by different witnesses. So, with the help of this system. a sketched image of a suspect will be easily recognized based on the mugshot. Fast and accurate results given by deep learning based face sketch recognition can solve the problem of the old approach and lowering the chances of mis accusing somebody as the criminal. To test this system, a functionality test and a performance test were conducted. Results showed that the developed deep learning based face sketch recognition system had a very high accuracy.

Keywords: *deep learning*, *face sketch, confusion matrix*

1.   Introduction

There are many methods on tracking down suspects used around the world. One of the most famous previous approaches is by spreading a face sketch of the suspect and hoping for someone to recognize the identity of the suspect. In this research, a face sketch recognition system using cloud-based deep learning was developed to solve the problem of the previous approach. The performance of the system will then be measured using a confusion matrix.

2.   Methodology

Data used to test the system is collected from CUHK dataset which consist of 100+ face sketch sample and original sample. System was created using cloud-based services by Amazon such as S3 Bucket which is a cloud storage and DynamoDB which is cloud database. Amazon Rekoginition in the other hand is a pre-model deep learning architecture where it is a pre-trained model for deep learning related system. The whole system will be coded by using python and be executed using powershell. The AI will then recognize a requested face sketch with the original image uploaded as part of the data training. The collected result will be analyzed by using confusion matrix as part of the performance test. While functionality test will test the function of every uploading and deleting data from the database.

3.   Results and Discussion

As a result, using cloud-based services gives lots of advantages to the official authorities. First, the database doesn't need to be stored on a standalone server which requires lots of hassles in order to setup and use. By having cloud database and storage, the code can be executed from any pc by just executing the code and be connected to the amazon console using access ID. Many more advantages of using cloud-based services and accuracy of the Amazon Rekognition is one of the main advantage. Based on the testing by using confusion matrix, the system give 95% accuracy rate based on 100+ samples tested. Another 5% is a combination of result where the system is not accurate but producing a double result

to a requested suspect sketch where one of the results is true and false. This can be determined by the authorities on picking the most suitable result for the double result. At the end of the project, this system does not give false result which can result in accusing innocent people as the suspect because of the system flaws. The system either can't recognize suspect, produce double result which one of the results is the true identity of the suspect, and give out the correct recognition.

4.   Novelty of Research

There has been numerous previous project that are trying to implement deep learning in face sketch recognition. For example, by using a hard triplet sample selection strategy to augment the number of training samples and avoid slow convergence in the system (W., 2019). There is also a new sketch-photo generation and recognition technique is proposed by using residual convolutional neural network architecture by using RCNN architecture (Patil, 2020). There also several research on Training Convolutional Neural Network for Sketch Recognition on Large-Scale Dataset where the learning approach is proposed that is based on the Visual Geometry Group16 Convolutional Neural Network (VGG16 CNN) (Zhou, 2020).

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AN ENHANCEMENT OF SMART TRAFFIC LIGHT IN LORA NETWORK FOR SMALL SCALE AREA

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Abstract

Vehicles such as cars, motorcycles, trucks, busses etc. are increasing day by day due to convenient purposes. This phenomenon leads to traffic jam that can affect ones delay activities. A smart traffic light is needed to improve the traffic congestion. Implementing LoRa technology is one of the efficient way because of the long-distance coverage and low power consumption. This research built a prototype of three traffic lights using Cytron LoRa- RFM Shield and Passive InfraRed (PIR) Mini motion sensor. The prototype traffic lights work fine in three-way junction that can control the flow of the traffic. The result of functionality test and usability test shows that the traffic light is in good condition and accepted by 93.5% of the respondents. In addition, the prototype is agreed 100% by the respondent for improving the traffic flow safety. For the future work, artificial intelligence (AI) features can be implemented to replicate the real time traffic light for a more efficient system.

Keywords: LoRa, traffic light, Arduino, Smart Traffic Light

1. Introduction

The aim of this research is to develop an enhanced smart traffic light using LoRa for rural areas that can improve the existing one and to evaluate the functionality and the efficiency in reducing traffic light accidents. This research scope is focusing on the usage of LoRa in rural areas. Sensor that will be used in this project is the PIR Mini Motion sensor that will detect the presence of vehicles. It also uses Arduino Uno as the controller board. This research does use Cytron LoRa-RFM Shield as the connector from nodes to nodes.

2. Methodology

Method that was used in this research is the model will be developed via a peer-to-peer communication approach. The clients and servers attached a Passive InfraRed (PIR) motion sensor and led lights. When there is motion detected at any node which is the, the data of the motion sensor will be sent using LoRa shields to other nodes to inform that the detected motion node is going green. As for the nodes that detect no motion, they will remain red lights until there is motion. The entire process occurs in the rural area of Kampung Alor Ara and the open space of Padang Kawad UiTM. Data were collected from participant observations using Google Form by referring existing models, such as using google form to collect data from usability and functionality testing.

3. Results and Discussion

Based on the functionality and usability testing, the prototype of the traffic light works fine. The separation between the client and server can range from 50 to 250 metres. Same goes for all of the models that were created. Interferences that were close to the test site were what caused it. The technique was applied to look at the network testing part. A greater distance will cause a lengthier wait for the server to receive sensor data because response times increased with client and server distance. Additionally, the RSSI reduced as the distance increased.

4. Novelty of Research / Product

There have been a number of research that have investigated how a city develops, particularly those intended for traffic light, such as (Kai, 2020; Razavi, 2019). Previous research about LoRa traffic light was done on how does the traffic light can control the congestion (Kuzlu, 2019; Mudbi, 2017). There have also been several research on development of congestion level based dynamic traffic management system using IoT (Ramzan, 2020; Bali, 2020).

5. Conclusion

To conclude the entire project, it can be said that a model enhanced traffic management system utilising lora shields in rural regions is capable of controlling traffic with a similar functionality to traffic signals on routes that users commonly use on major roads.

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REMOTE CONTROL DESKTOP SYSTEM

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Abstract

A remote-control desktop system allows a user to access and control a computer remotely over a network connection. This can be done through various remote desktop software and protocols, such as Remote Desktop Protocol (RDP) or Virtual Network Computing (VNC). These systems are often used in scenarios where a user needs to access a computer remotely, such as for remote work or remote technical support. The system allows the user to access the desktop, files, and applications of the remote computer as if they were physically sitting in front of it. This can provide flexibility and convenience for users, as well as enabling remote collaboration and support. The security and performance of remote-control desktop systems can be a concern and requires proper configuration and maintenance. Therefore, the aim of this research is to design and develop a remote-control desktop system that can control in any device. The software development life cycle (SDLC) with waterfall model has been chosen as the methodology for this study. this model consists of five phases including analysis, design, implementation, testing and documentation. this research has achieved the objectives which are to design, develop and evaluate a remote-control desktop system with NodeJS and electrons.

Keywords: *Remote Control Desktop, NodeJS, Electron and WebSocket*

1. Introduction

Everyone can actual work from anywhere without being physically in the scene especially staff IT. Because they have a lot of things to recover the work. So, this project can help they work from home using remote control desktop software, which allows them to access their work computer as if they were physically sitting in front of it. This can be done through a variety of remote desktop software, such as Microsoft Remote Desktop, TeamViewer, and VNC. These programs use a combination of encryption and the internet to connect the employee's home computer to their work computer, allowing them to access and control the work computer remotely. The location of the scope element is at any department specified for IT Staff. In general, the system supports all devices that have a remote-control system which will be developed using NodeJS and Electron.

2. Methodology

Data were collected from participant observations, interviews, and textual analysis by referring to and evaluating existing concepts. Research findings evaluate the problem of the staff that been cause to them. For example, the staff it need to done two works or problem at the same time and solve it by physically in there. To solve the problem of the staff it needs a few tests to them about the remote control desktop so it can help the staff.

3. Results and Discussion

As the staff, what they have been through is tough to handle. To do multi task at the same time. It seen that this system can actual help them to reduce the time and energy. It can be done from anywhere, anytime and any devices. Staff IT can access their work computer from anywhere, which

means they can work from home or while traveling. This can lead to increased productivity as they can continue to work on projects and troubleshoot issues even when they are away from the office. Remote control desktop allows staff IT to work on a flexible schedule, which can improve work-life balance and employee satisfaction.

4. Novelty of Research / Product

There have been a number of researches that have investigated that how the remote control been introduce, which is first Many remote-control technologies have lately been created, such as home automation systems and house robots (B., 2020). Technologies can be evolved by time which is the fast evolution of mobile technology, including gadgets and communication technologies, has created new study possibilities and even shifted the research focus (Duart & Krull, 2017). The controller in these appliances serves as a form of user engagement with the appliances (De' et al., 2020). In this research investigated how remote control desktop can change the scope of work in the society.

5. Conclusion

In conclusion, remote control desktop software can be a valuable tool for staff IT. It allows them to access their work computer from anywhere, which can lead to increased productivity and improved collaboration. These benefits make remote control desktop software an ideal solution for staff IT who need to work remotely.

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IoT-Based Smart Chili Farm Monitoring Using Arduino and GSM Module

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Abstract

This research has developed a wireless communication unit for transferring data from sensors, such as the DHT11 temperature and humidity sensor, the yl-69 soil moisture sensor, and the pH level sensor, in order to create a monitoring system for chili farms. The goal of this study is to establish a system for systematically gathering and managing data pertaining to chili farms. The goals of the IoT-based Smart Chili Farm Monitoring Using Arduino and GSM Module research is to provide farmers with the recognition that they need to be more vigilant in their monitoring of the chili plants. The purpose of this research is to design, build, and test a temperature, humidity, soil moisture, and soil pH level sensor-based alert system for a chili farm using an Arduino and a Global System for Mobiles (GSM) Module, and then to assess the system's functionality and applying the Technology Acceptance Model. This prototype is useful in allowing users to keep tabs on and modify variables including ambient temperature, humidity, soil moisture, and pH. In conclusion, this study has built an Internet of Things (IoT)-based Smart Chili Farm Monitoring system using Arduino and GSM Module to help farmers and other users.

Keywords: humidity, temperature, soil moisture, pH level, Arduino, GSM Module, Internet of Things

1. Introduction

Malaysian farmers and tribes grow chilli because chili can handle a range of planting, maintenance, fertilizer, irrigation, and pest control methods that farmers can grow with higher quality and cost. Chili farmers struggle to monitor soil conditions. Chili plants at UiTM Perlis quickly decay and give a poor crop due to the huge terrain and fluctuating climate. Farmers must maintain soil nutrients, and the lowest nutrient concentration is a measure of soil fertility, which affects plant growth and development. In this research, a sensor connected by the Internet of Things will measure pH, soil moisture, humidity, and temperature.

2. Methodology

There are six stages in total to the creation of this prototype which are information gathering, planning, design and development, implementation and testing, and documentation. Data were collected from the experiment that tested the reading of DHT11 temperature and humidity sensor, yl-69 soil moisture sensor and pH level sensor. Next, in testing we use various variables in different scenarios to find out the capabilities of the GSM SIM900A produced such as different distances and different service providers to do the performance testing and functionality testing of the sensors. This has been done three times to verify functionality of the prototype.

3. Results and Discussion

Through the data gathered during the testing, it has been clear that the functionality of smart monitoring systems using GSM-based IoT devices is successful as all the components work as planned. For the results of the research, we looked at how the system performed throughout testing and implementation. All IoT parts were used to their maximum potential, as proven by the functionality testing and network testing procedure. Finally, after all of the testing that has been done the prototype can enhance the farmers' job performance and the prototype successfully works.

4. Novelty of Research / Product

There have been a number of studies that have been investigated to monitor the chili farm by using the IoT is being used in traditional agriculture methods (Hardyanto et al., 2021). The previous research for Application of Smart Greenhouse for Chilli Plant on Android in monitoring of microclimate conditions in the greenhouse have been done through the ThingView application on Android which is the sensor reading that can be monitored in real time (Fatimah et al., 2021). Besides, there are also implementations of IoT based soil pH, soil moisture, and temperature sensing devices. This measuring is able to successfully transfer analog data from the sensor to the ANTARES server by (Eka Sari et al., 2021). Soil monitoring software for both the web and Android was developed as part of this study to assist farmers in monitoring the farms. Finally, there is some research that has some method of our research but uses different platforms in sending the data to the user.

5. Conclusion

In conclusion, this research achieving the objectives and the system of smart monitoring using GSM-based has successfully worked and has been tested. This technology reduces agricultural primitiveness. It will also let the farmer keep an eye on chili farms. This technology technically simplifies farmers in monitoring the farm.

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IMAGE AUTHENTICATION SYSTEM USING DEEP LEARNING

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Abstract

Using a variety of techniques, image manipulation can be performed not only by commercial editors, but also by criminals and counterfeiters for the goal of counterfeiting. Digital forensic tools are required to detect the manipulation and tampering of images for such unlawful activities. For these reasons, this research offered an algorithm for detecting image manipulation using Convolutional Neural Network (CNN) technique that has produced excellent results in recent studies. In addition, the other purpose was to assess the performance of the developed CNN image authentication system in detecting tampering in images.

Keywords: tampered image, neural network, image classification, deep learning, Convolutional Neural Network (CNN)

1. Introduction

With the emergence of new cameras, mobile phones, and tablets, the number of digital photos has exploded. To maintain the integrity of digital image evidence, forensic examiners must meticulously document or record every process or step they take to assure reproducibility. This research's primary purpose was to develop an image authentication system that can identify image tampering. To achieve this purpose, the research presented a deep learning-based photo alteration detection system based on Convolutional Neural Network (CNN) technique.

2. Methodology

The research started off with building the training module for the testing function of the system. The process is done by preparing the images from the dataset CASIA V2.0 (Dong et al., 2013) into a size that the model could accept, then sequential ELA model is built with the automated validation phase for testing chapter of the research. The research would randomly pick 1000 authentic and 1000 tampered images then take 20% off the 2000 for validation purposes. The system would then output a h5 model to be used for the testing function of the research together with graph and confusion matrix as validation results. For the training function, the user could use their own dataset with their own learning rate and complete passes to create their own trained model with ELA, VGG16, and VGG19. This is done by importing the pretrained keras model but training them on the spot with user's own dataset. The same graph and confusion matrix will be shown as validation results then user can test their model using material they want. The whole GUI is built using PyQt5 library in python for ease of use.

3. Results and Discussion

Overall, all the functions proposed in the system functions as intended where the training function would be able to train the model ELA, VGG16 and VGG19 using user's own dataset. The model would then be saved and can be tested on the system. While the testing part of the system functions as intended where the result would be shown in a percentage manner and uses the innate model where it was separately trained. The outcomes of the testing are positive the trained model achieving a respectable 86.5% accuracy, 91.52% sensitivity, 82.98% specificity, and 13.5% error rate.

4. Novelty of Research / Product

There have been several rese
arches that have image tampering image classification such as the Detection and Localization of Image Forgeries Using Improved Mask Regional Convolutional Neural Network. (Wang et al., 2019) by using a mask-trained end-to-end classification algorithm to distinguish altered from legitimate parts. The system is capable of detecting the targeted types of manipulation but with slow processing. Another popular one is Image Tampering Detection for Splicing Based on Rich Feature and Convolution Neural Network (Yang et al., 2020) by utilizing rich feature kernel to suppress image content and increase the forging trace. Each research provides a fairly high accuracy manipulation detection but with slow processing.

5. Conclusion

In conclusion, we provided a novel system for detecting image tampering based on neural networks, deep learning, and the CNN architecture. The suggested method can detect image splicing and copy-and-move forms of image tampering with high sensitivity. The outcomes of the testing are positive the trained model achieving a respectable 86.5% accuracy, 91.52% sensitivity, 82.98% specificity, and 13.5% error rate.

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NETWORK AUTOMATIONS ON ACCESS CONTROL LIST (ACL) FOR MULTIVENDOR DEVICES USING ANSIBLE AND NAPALM IN GNS3

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Abstract

Access control list (ACL) are crucial for network security in complex and dynamic networks. In the context of network systems, ACL is the list of permission associated to a certain network. In addition, the incorporation of ACL with automations will help the network management in terms of reducing the number of alerts. Additionally, the performance of the entire network will be impacted by the lack of trained network engineers and administrators in network-based enterprises. ACL is one of the security automations mechanisms that consist of programmed detections, investigation, mitigations and prevention. Automation thus uses machine-based security operations to lessen the risk of human interactions. ACL are typically manually configured and analysed. Furthermore, redundancies are a regular problem with ACL rules, which is in conflict with the ideas of network automation. In this project, a set of ACL scripts and playbooks for basic network configurations are presented. These solutions help network engineers update ACLs and configurations automatically. Additionally, these automation scripts used NAPALM and Ansible for advances settings for multivendor devices in GNS3. This automated ACL constructions underwent functional testing. The success rate of pushed configurations in network devices using NAPALM Python scripts and Ansible playbooks is the main focus of this project because it is its main objective. With the exception of some NAPALM configurations that cannot be deployed to certain Cisco and Juniper routers owing to device limitations, NAPALM and Ansible have been successfully linked to deploy configurations to these routers. Nevertheless, by combining NAPALM with Ansible, network engineers can lessen the chance of human error, which is helpful in situations with several vendors. The use of Jinja2 can improve the effectiveness of integrations between NAPALM and Ansible for future research.

Keywords: *NAPALM, Ansible, GNS3, Cisco, Juniper, ACL*

1. Introduction

The work focuses on developing ACL automation for multivendor devices in GNS3 by using Ansible and NAPALM with a combination of two vendors which is Cisco and Juniper devices. In relation, Python3, YAML and INI used to develop the project. This research will study how to automate basic network configuration by integrating napalm-ansible modules. Next, configuring, modifying and verifying the existence of ACL rules using NAPALM. The scope of this project is to develop methods of the ACL automation scripts using NAPALM and Ansible. And to evaluate the automated ACL scripts using functionality and verification.

2. Methodology

Methodology used in this project is Automation testing life cycle (ATLC). ATLC is used with a structured sequence of testing procedures that can include all stages of the testing life cycle as well as additional phases for test preparation and automation deployment. This ATLC involves several major phases which are listed such as Initial phase, planning phase, Systems Requirement Analysis phase, Design, and development phase, Testing phase and Documentation. This paper implemented network automation using NAPALM and Ansible to configure ACL and advanced configuration for multivendor network devices in the GNS3 environment.

3. Results and Discussion

This project presents a set of ACL python3 scripts and basic network configuration playbooks for network automation, which were tested and analysed. It focuses on the success rate of pushed configurations in network devices using NAPALM pythons' scripts and Ansible playbooks. Based on the test scenario, this automation script can compare the configurations to eliminate redundant ACL rules, validating the existence of ACL rules, pushing configurations, gathering device and host information for ansible inventory, and pushing configurations. Since it features self-configuration and error correction capabilities. Compared to conventional methods of setting and analysing, it is more precise, has a lower mistake rate, requires less human energy, reduces costs, and shortens analysis time. This demonstrates that autonomous configuration systems can replace conventional network configuration methods. In conclusion, it can be stated that a network automation utilizing NAPALM and Ansible in ACL can assist network administrators in configuring network devices in terms of discarding ACL redundancies, modifying ACL rules, committing ACL configurations, basic network configuration, and reverting to previous configurations for corrective actions.

4. Novelty of Research / Product

Numerous studies, particularly those aimed at network engineers, have studied network automation. According to Mohd Faris Mohd Fuzi and Khairunnisa Abdullah (2021), they have developed network automations for the EIGRP Network. Next, previous research about the Access Control List focused on how to ensure the verification of ACL rules and effectively check whether ACL policy meets the expected ACL security baseline requirements (Chen et al., 2020). There is also a study on implementing network automations that don't have vendor constraints by using NAPALM (IEEE Communications Society et al., 2019). Besides that, there is research on ACL that highlights how to efficiently update your ACL and prevent significant service downtime (Tian et al., 2019). This project focuses on NAPALM and Ansible integration for multivendor networks. In addition, ACL verification ensures that the rules are accurate and eliminates redundancies. In addition, this project enhanced the correctness of ACL rule verifications and the efficiency of auditing. Moreover, since modifying ACL settings is error-prone, a single ACL misconfiguration can result in service failures. This project has additional capabilities to rollback to previous configurations.

5. Conclusion

In conclusion, it can be stated that a network automation utilizing NAPALM and Ansible in ACL can assist network administrators in configuring network devices in terms of discarding ACL redundancies, modifying ACL rules, committing ACL configurations, basic network configuration, and reverting to previous configurations for corrective actions.

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PERFORMANCE ANALYSIS OF HTTP FLOODING ATTACK AT APPLICATION LAYER IN MOBILE AD-HOC NETWORK (MANET)

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Abstract

HTTP flooding is a type of distributed denial of service attack that primarily affects the application layer. It was designed for the application layer which is the interface that interacts with the application directly and provides standard web application services. An association of mobile nodes known as a mobile ad hoc network (MANET) is each node communicates with the others by passing information to them. With the assistance of a botnet, the hacker sends a huge number of packets in the direction of the web server or application. The goal of this article is to analyse HTTP flooding attacks at the application layer in MANET as well as test and simulate HTTP flooding attacks in MANET utilising three factors, namely throughput, end-to-end delay, and packet delivery ratio. Using Network Simulator 2, the simulation will be in two scenarios, and it will differ by time and by number of nodes. This research concludes that the simulations of an HTTP flooding attack produce results as expected by the DDOS attack theory after performing all the simulations, gathering all the necessary data. The HTTP flooding attack affects network efficiency, regardless of how long it lasts or how many nodes are involved. End-to-end delay outperforms throughput and packet delivery ratio as performance indicators for both scenarios that differ in time and differ by number of nodes. If both the duration and the number of nodes rise, the consequence of an HTTP flooding attack will be more efficient and effective for DDOS attack.

1. Introduction

The HTTP-flooding attack bombards the targeted web server with a large number of HTTP-GET and HTTP-POST request packets. The target system is unable to distinguish between malicious and normal request packets because malicious packets have authentic HTTP payloads, and the victim serves all regular and abnormal requests as legitimate requests. From that, the objectives of this article are to investigate HTTP flooding attack at application layer in MANET and also to test and simulate HTTP flooding attack in MANET using three parameters which is Throughput, Packet Delivery Ratio (PDR), and End to End Delay (EED).

2. Methodology

The simulation of an HTTP flooding attack will be split into two scenarios in order to produce a comparative study. The first scenario will involve 20 nodes and 1 victim in a MANET environment with different delay times of 10, 20, 30, 40, and 50 seconds. Second, while using two scenarios that have been compared and reviewed, the simulation will utilise constant duration, which is 50 seconds, but varies by node number, which is 5, 10, 15, 20, and 25. The data that have been collected after the process of simulation for the two scenarios will be filled into a table. The parameters used in this study include end-to-end delay, throughput, and packet delivery ratio.

3. Result and Discussion

For the simulations use the same number of nodes, which is 20 nodes, but differ by time, which is 10, 20, 30, 40, and 50 seconds. When the attack is launched, both throughput and packet delivery ratio are low because of the overload on the victim node, and total packet loss is higher than before the HTTP flooding attack was launched. In contrast to the end-to-end delay result, which is higher during the

attack than before the HTTP flooding attack, which was caused by the heavy traffic in the HTTP flooding attack simulation. Same goes to the simulation that uses a constant time which is 50 seconds but differs by number of nodes which is 5, 10, 15, 20, and 25 nodes. Due to the target node's overload, the attack's throughput and packet delivery ratio are low when it starts, and total packet loss is higher than it was before the start of the HTTP flooding assault. Lastly, the end-to-end delay result, which was brought on by the simulation's high traffic volume during the HTTP flooding assault, is greater during the attack than it was before the attack.

4. Novelty of Research

There is some previous research that has been done on DDOS attacks on the MANET environment such as SYN Flooding Attack - Identification and Analysis by (K. Geetha and N. Sreenath, 2014). Another DDOS attack that can be related to the current study is about flooding attack which is Analysis of Effect of Flooding on Performance of Ad hoc Network which was done by (Dubey, 2016). There are also previous studies that do performance analysis on different routing protocols such as Performance Analysis of Different Routing Protocols in Manet Using Different Parameters in Different Ranges that have been done by (Neeraj et al., 2019).

5. Conclusion

For scenarios that differ by timing, end-to-end delay gives the best result among other metrics of performance, which are throughput and packet delivery ratio. The same is true for scenarios that differ in the number of nodes; end-to-end delay demonstrates superior performance in terms of throughput and packet delivery ratio in terms of DDOS attacks. If both the times and the number of nodes increase, the result of an HTTP flooding attack will be more efficient and effective for DDOS attacks.

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PERFORMANCE ANALYSIS OF DOS ATTACK AT MAC LAYER IN WLAN

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Abstract

Wireless LAN are based on the most widely used computer networks, the IEEE 802.11 standards – commonly known as Wi-Fi. The MAC layer of IEEE 802.11 provides a protocol that specifies the set of media access control (MAC) and physical layer (PHY) protocols for implementing wireless local area network computer communication. In IEEE 802.11 protocol, many vulnerabilities are present at the MAC layer which give rise to a lot of Denial of Service (DoS) attacks. Furthermore, 802.11 standards use frames for communication between NICs and APs and for controlling and managing wireless links. The three main types of frames are data, control and management. Data frames are authenticated and encrypted but control and management frames are neither authenticated nor encrypted. So, they can be easily spoofed by the attacker to perform denial of service attacks. The goal of this article is to study various types of DoS attack at the MAC layer in WLAN and to evaluate the performance of the network using throughput and packet loss ratio (PLR). In addition, this project will be conducted in a real testbed environment with 3 different scenarios, each with a different type of layer 2 DoS attack. Finally, the result shows that deauthentication attack and ARP spoofing attack to be very successful as it manages to cripple the victim's connection to the AP or the internet. Both attacks result in a steep decline of packet loss and network throughput during the attack. On the other hand, the authentication flooding attack seems to show no result on the packet loss ratio and network throughput whatsoever. In conclusion, de-authentication and ARP spoofing attacks are very much capable of disrupting any WLAN network connection.

Keywords: MAC Layer, WLAN, DoS, Performance Analysis

1. Introduction

A wireless Local Area Network (WLAN) is a form of network that connects two or more devices to form a Local Area Network (LAN). Wireless LAN are based on the most widely used computer networks, the IEEE 802.11 standards – commonly known as Wi-Fi. The MAC layer of IEEE 802.11 provides a protocol that specifies the set of media access control (MAC) and physical layer (PHY) protocols for implementing wireless local area network computer communication. In IEEE 802.11 protocol, many vulnerabilities are present at the MAC layer which give rise to a lot of Denial of Service (DoS) attacks. The goal of this article is to study various types of DoS attack at the MAC layer in WLAN and to evaluate the performance of the network using throughput and packet loss ratio (PLR). In addition, this project will be conducted in a real testbed environment with a different type of layer 2 DoS attack.

2. Methodology

The waterfall model of System Development life Cycle will be utilized to specify the project's process flow in this proposed project (SDLC). The System Development Life Cycle (SDLC) consists of a total of six phases, beginning with the initiation phase and continuing through the planning phase, design and development phase, testing phase, data analysis phase and documentation phase.

3. Results and Discussion

To summarize all of the previous analysis, all of the testing without attack and the testing with the deauthentication attack, ARP spoofing attack and Authentication attack give different results as expected. All of the testing is done in a 60 second time frame. For the deauthentication attack, we can see right after the attack commences, it completely disrupts the victim connection to the AP. For the ARP spoofing attack, it also proves to be lethal. Right after the attack commences, we can see that the packet loss and network throughput for the network are heavily disrupted. This leads to a loss of connection from the victim computer to the internet. Finally, for the Authentication flooding attack, we clearly see that the attack is completely harmless as it didn't have any effect on the network packet loss and network throughput whatsoever. This may be due to many reasons, but we believe that the APs are somewhat protected from unencrypted authentication packets.

4. Novelty of Research / Product

There has been a number of research that shows a rise of internet users daily (Johnson, 2022). Additionally, research was done about the growing threat of Wireless network and how its fundamental characteristic exposes it to many vulnerabilities (Gao, Wang, Et al, 2021). There was also other research that focused on the type of major layer 2 DoS attack and how it can affect the network (Chan Aung & Thant, 2017: Kadripathi, 2020: Xi, 2017). There have also been several studies that focus on the layer 2 and 802.11 protocol weakness and its vulnerabilities (Mahmood & Mohsin, 2020: Kaur, 2016).

5. Conclusion

Based on the project, we can see how certain types of DoS attack affect the overall network performance of a WLAN router. Some are proved to be lethal and some are proved to be somewhat unlethal. The De-authentication and ARP spoofing attack proved to be capable of disrupting a router that works on 802.11n technology. However, the authentication flooding attack are proven to be unreliable as it doesn't affect the router connection whatsoever.

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SMART IRRIGATION SYSTEM USING LORA-BASED IOT DEVICE

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Abstract

Agriculture plays the main role in a country's economy. Agriculture provides food and jobs to the community. In Malaysia, agriculture has been one of the main activities that contributes to income, especially to the people that stay in rural areas like villages. However, the method use is traditional and energy consuming. This article will explain the implementation of technology in the current traditional agriculture method. The aim is developing a smart irrigation system using a LoRa-based IoT device in order to help owners and farmers that used to monitor their crop manually. Using the LoRa increases the range covered compared to the previous wireless technology. Through the result gained from the project, it was clear that LoRa is better in an open space area. This study will test the functionality of the system and to test the network of LoRa in terms of distance, packet latency, and obstacle.

Keywords: Iot, LoRa, distance, delay, obstacle

1. Introduction

According to previous research, there are already some wireless technologies that have been implemented in the traditional agriculture method. However, the previous research found that there are some limits which is the range that wireless technology covers. This project will implement LoRa to solve the distance limitation. The objective for this project is to develop a smart irrigation system that use LoRa to enable the user to monitor their crop and automatic irrigation system. Other than that, this project will test the functionality of the system and will test the network of LoRa in term of distance, packet latency, and obstacle.

2. Methodology

Data were collected from self-observation like the LoRa transmitter and LoRa receiver will be placed far away from each other. Through the testing, it will show the maximum distance that can be reached by the LoRa module through the RSSI reading. Other than that, the created web page will be a tool to observe the data latency with the timestamp created in the web page. In a distance test, the LoRa receiver will be placed stationary at a place with the laptop to insert the data from the receiver into the laptop while the transmitter will move to a distance that has been set. There is also an obstacle test to test the distance the LoRa module can penetrate obstacles.

3. Results and Discussion

Through the data gathered during the testing, it has been clear that the functionality of smart irrigation systems using LoRa-based IoT devices is successful as all the components work as planned. From distance testing, it is quite clear that LoRa can work in a great distance. However, the distance can be achieved if the transmitter and receiver are in an open area. For a packet latency test, the data from the receiver into the web page will be observed as there is a timestamp in the web page every time there is data from the receiver. This shows that there is some delay in data delivery if the distance increases. For the obstacle test, the transmitter will be placed stationary while the receiver will move around the obstacle. From the obstacle test, it was shown that the result is not the same as the result from the open area. It is concluded that the LoRa module have some difficulty to connect to each other if there is more obstacle between the transmitter and the receiver

4. Novelty of Research / Product

There have been a number of studies that have investigated how the Internet of Things is being implemented in the traditional agriculture method (Fadziso, 2018), (Said Mohamed et al., 2021). There are also previous research about the wireless technology that is being implemented in the current agriculture methods (Radouan Ait Mouha, 2021) and (Bakare & Minah-Eeba, 2019). The previous research about the LoRa and LoRaWAN and how the LoRa and LoRaWAN works in real life is also being studied in this project (Saban et al., 2021), (Augustin et al., 2016). There has also been research on the capability of LoRaWAN in terms of distance. Finally, there is some study that uses the same method of this project but uses different wireless technology (Ratnadewi et al., 2018), (Prathipa et al., 2021).

5. Conclusion

In conclusion, this project achieved the objectives. The smart irrigation system by using a LoRa-based IoT device has successfully worked and has been tested. The limitation of previous wireless technology which is the range covered has been solved by using LoRa. However there are some challenges to achieve the great distance.

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ANDROID MALWARE DETECTION USING DEEP LEARNING CLASSIFICATION APPROACH

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Abstract

Android devices are becoming increasingly popular and there are more threats to Android users because malware writers are shifting their focus to exploiting vulnerabilities of Android devices for malicious behaviour. This paper will study Android malware detection using a deep learning classification approach. Deep learning is a thriving research area with many successful applications in different fields. Recently, these techniques have been applied to detect mobile malware and have once again shown their ability to remedy this type of problem. In this paper, Android software will be analysed by using malware analysis tools like APKTool and 010 Editor. Some selected features will be extracted from this process and compiled into a csv file. The selected features will be trained using the CNN and RNN model approach. The performance of Android malware detection using CNN and RNN model will be analysed by measuring its accuracy based on Metric Formula Definition Accuracy.According to the development process, CNN is performing better by detecting android malware with a 96 percent accuracy, while RNN delivers a 75 percent accuracy.

Keywords: *Android malware detection, malware analysis, deep learning, Convolutional Neural Network (CNN), Recurrent Neural Network (RNN)*

1. Introduction

Android users are growing rapidly as Android devices become more popular. Malware writers are now exploiting Android vulnerabilities for malicious purposes, placing Android users at risk. Malware detection is growing more challenging. Artificial intelligence, machine learning, and deep learning algorithms are used in malware detection. Most of these algorithms have been used for cyberattack mitigation. Particularly feature extraction of malware dataset and hyper parameter optimization play a pivotal role to train a deep neural network. This research focuses on analysing and detecting Android malware families using Convolutional Neural Networks (CNN) and Recurrent Neural Network (RNN) in a deep learning approach. In addition, Android Malware detection development focuses on the accuracy values and network performance of deep learning models. The aims of this project are to construct a deep learning classification model on the extracted features from collected android malware files and evaluate the performance accuracy of the resulting android malware detection model.

2. Methodology

This project will use VirtualBox to secure Windows 10 to prevent viruses from infecting the host system. Malware analysis will be performed on 1,000 Android malware and benign software samples from diverse sources. A malware analysis tool will select and compile Android permissions and hash values into a csv file. The feature is binary-converted to a grayscale image using Python during malware visualisation. This creates the grayscale image dataset. Convolutional Neural Networks will train 75% and validate 25% of the grayscale image dataset and the result will be obtained using a confusion matrix table depending on accuracy and time consuming.

3. Results and Discussion

The accuracy of the performance of a deep learning architecture known as CNN architecture was improved as a direct result of this project. The findings of the experiment, along with the data and observations made during its course, demonstrated that the CNN model has the potential to be utilised in the detection of malicious software designed for use on Android devices. The architecture used by CNN has a 96 percent accuracy rate. This is because CNN layers contain a large number of convolutional filters, which evaluate the entire matrix of features while simultaneously reducing the amount of space they take up in the network. Because of this, CNN is a very convenient and appropriate network for classifying malicious software and harmless data. This demonstrates that CNN's classification of the APK files, determining whether they contain malicious or benign software, is accurate.

4. Novelty of Research / Product

Malware that affects android devices is particularly concerning to experts because of the severity of the damage it can do. Qiu et al. (2021) conducted a literature study on the achievements of deep learning-based Android malware detection and summarised their findings. It delivers a concise yet in-depth review to assist readers in rapidly gaining an understanding of the topic at hand. McLaughlin (2017) suggested a method for the identification of malware that processes the raw Dalvik bytecode of an Android application with the assistance of a convolutional network. The authors Alex V et al. (2020) recommended using a multiple-layer DNN in conjunction with a classifier (DL4J) in order to detect and forecast the presence of Android malware.

5. Conclusion

In conclusion, the data and observations showed that the CNN model may be used to detect Android malware. The constraint can be improved to improve this project. This chapter discusses and recommends the next task. The objectives of this project, which included the model's functionality and performance, were successfully met.

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STUDENT ATTENDANCE REGISTRATION SYSTEM USING QR CODE FOR TUITION CENTRE

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Abstract

Systems for recording student attendance are important for managing and monitoring individuals inside organisations, such as educational institutions, in order to maximise students' academic performance. However, the majority of small organisation, including tuition centres, continue to use a manual attendance system. This system is prone to mistakes, and it can lead to fraud when students sign for absent classmates on the attendance list and disrupting the class. A web-based student attendance system that records attendance using QR Code was developed to address these problems. According to the survey being done, the developed system was able to automatically enter students' attendance records into the database with the proper student id and the web application's network performance did not go over the acceptable response time. Thus, utilizing QR Codes to quickly and accurately register student attendance data can lessen the administrative workload at tuition centre.

Keywords: *QR Code, tuition centre, attendance, web-based student attendance system*

1. Introduction

Most tuition centres that in this country work are operating some system manually including student attendance system that can be prone to error and time consuming. Moreover, manual attendance system is not practical in this pandemic era of COVID-19 where sharing pen can cause virus spread among students. Afterwards, automated systems have been developed to come up with many alternatives for to solve these issues including QR Code. The aim of this project is to develop a web-based attendance registration system for tuition centre using QR Code to store student attendance into a database. This project then analyses the usability and network performance testing of the system after recording student attendance in Oren Bestari Tuition Centre in Manjung, Perak.

2. Methodology

Data were collected after administrators and students of the tuition centre try the developed web-based attendance registration system. Student is asked to sign up to automatically generate their QR Code before login into the system where QR Code is displayed. They then scan it through built-in webcam of administrator laptop. Once their attendance is recorded, a pop-up message of 'Attendance Recorded!' will appear on screen. Each student id will automatically add into database with time and date they arrived. The performance of the system then evaluated with different number of users and average response time (ms).

3. Results and Discussion

The web-based attendance registration system has been tested by network performance and usability testing. Network performance testing is implemented to this project to collect the response time (ms) of each page to obtain the average response time (ms). The result of average response time (ms) is then being analysed in a form of graph with different number of users entering the system of 10, 20 and 30 users. Usability testing is then carried out by distributing a set of questionnaires in google form among students and administrators of the tuition centre as respondents to evaluate the developed web-based attendance registration system. The result from usability testing shows that all student's data are successfully added into database after their QR Code is scanned to record attendance in the system.

Besides, most of the respondents strongly agree with 66.7% that this developed system saves more time compared to previous manual system.

4. Novelty of Research / Product

Numbers of studies have been carried out to record attendance using QR Code system. As stated by Stupina, Anistratenko, and Pazina (2021) project, they generate QR Code from web application and scanned using mobile application method by using both applications to complete their project in developing attendance system. Previous study also being done by Patel et al. (2019) where they develop smart student attendance system using QR Code to generate QR Code using API from teacher module. The system using both web and mobile application to store data in MySQL database when a student scans QR code. This project has several similarities to this project. Besides, an attendance system developed by Wei et al. (2017), which they generate and scan QR Code from mobile application. Lastly there's have also been several projects on QR Code for attendance system (Almutairi, Alkandari & Alkandari, 2017; Sengupta et al., 2017).

5. Conclusion

It can be concluded that this project has achieved its objective to develop a web-based attendance system using QR code to record student attendance in tuition centre and the average response time did not exceed the limit of 1000 ms which is an acceptable average response time for web applications.

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STUDENT ATTENDANCE SYSTEM USING FACIAL RECOGNITION BASED ON DEEP LEARNING

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Abstract

The learning process depends on student attendance. There are many ways to track student attendance, and one of them is using their signatures. The procedure has a number of drawbacks, such as taking a long time to complete attendance, attendance papers are lost, the administration must manually enter each student's attendance information into the computer and there is also a possibility of attendance fraud among students. In order to overcome this problem, this paper suggested a web-based face recognition student attendance system as a solution to this problem. In this suggested system, K-NN is used to categorize student faces, deep metric learning is used to build facial embedding, and Convolutional Neural Network (CNN) is used to detect faces in photos. The development of this system is also assisted by several other software. As a result, the computer can identify faces. This algorithm can identify the faces of students who appear in class, and their attendance will be recorded automatically into the system. As a consequence, tracking attendance information is made easier for student administration.

Keywords: *attendance system, face recognition, K-NN, CNN*

1. Introduction

As mentioned earlier, the traditional method of recording students' attendance is quite slow and rapidly experiences problems. Therefore, this web-based system is targeted for students in universities, who need to record their attendance every time they attend classes. The system is developed to collect images of students along with their data that will be entered into the database such as their username and ID. The objective of this project is to develop a web-based student attendance system that uses a face recognition method and to evaluate the performance speed of the system network in sending data into the database after a student's face is captured using facial recognition technology.

2. Methodology

The model of the System Development Life Cycle (SDLC) which consists of seven phases in total, and begins with initiation phase, planning phase, system requirement analysis phase, design and development phase, testing phase and finally documentation phase is the approach that is utilized in this project to define the project's process flow. At the planning phase, research from articles and journals papers by using UiTM Online Library and Google Scholar were done. In the system requirement analysis phase, all necessary data and information are collected including the hardware and software required. Development phases were done by capturing the students images by using the Acer Aspire 5 web camera. After the students' images are collected, it then will be stored in the database, along with the students' data.

3. Results and Discussion

In order to investigate the usability of the system, an usability testing was done during the testing phase followed by a Google Form questionnaire that needed to be answered by respondents. The usability testing was involving 30 respondents among students and working people. Based on the results, it is found that mostly respondents agree that the system saves more time than the manual paper-based methods. Secondly, it is also found that most respondents opinionated that this new system is such an

easy system to learn. This is crucial in making sure no one is left behind in using this system. All in one, mostly respondents are satisfied with this new technology.

4. Novelty of Research / Product

The clever method of the attendance management system uses face recognition to track attendance. Face recognition allows for passive identification, which means that the individual who has to be identified doesn't have to do anything to prove who they are. Face recognition is a two-steps process that starts with the identification of faces and moves on to matching those faces with those in the database. Numerous face detection and recognition techniques have been developed. Face recognition utilizes geometric features such the eyes, nose, eye brows, and cheeks as well as the appearance-based method, which encompasses the features of the entire face (Bhatti et al., 2018). Since any extra activity is not necessary for authentication when using facial images that can be acquired from a distance, the face recognition method is used in a lot of applications, not just security applications, but also image retrieval, indexing, and natural user interfaces (Ofualagba et al., 2018).

5. Conclusion

In a nutshell, all objectives are achieved in this project. This proposed system is believed to benefit students from all levels as it is such a convenient system, especially a class with a large number of students. Face recognition is more precise, quicker, and minimizes the likelihood of fraud attendance, compared to other methods.

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REDUCING DOS ATTACKS BY RUNNING MULTI INSTANCES OF NGINX WEB-SERVER IN DOCKER USING SHELL SCRIPT

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Abstract

Denial of Service (DoS) attacks are a common type of attack that affect many websites in today's modern internet. Web-servers and applications are mostly vulnerable to DoS attacks by default and require some extended knowledge to have a good or even a decent level of security. However, with automation, web developers would have less time to set-up their servers and have more time developing their websites without compromising their own security. With containerization and load balancing, by using the same machine with the same specs, web-developers will require less time and effort to scale their web-production without sacrificing the security of their web-servers. The engine (nginx) web-server application and reverse proxy has the ability to provide an application-level load balancing. Meanwhile Docker containers can manage many instances of a web-application inside a single web-server with little overhead on system resources unlike their virtual machine counterpart. With these solutions, in addition to automation within a single shell script and a docker compose configuration, the web-server application can be hardened to a higher extend compared to the default configuration of a normal web-server. With attacks such as SYN-flood and HTTP request flood in the wild, the research finds that the automation script has been successful in setting-up the application load balancer as the DoS attacks such as SYN-flood and HTTP request flood attacks has been mitigated. However, there are few enhancements that can be made such as using a ICMP firewall rules and further automation of the web-server application configuration.

Keywords: *load-balancer, DoS attacks, shell script, automation, JMeter, Wireshark*

1. Introduction

The increase of Denial of Service (DoS) attacks in modern world wide web has prompt web-developers into the process of manually hardening their server configuration thus limiting their time and effort on developing their website and the possibility of misconfiguration. This research discusses the use of an automation script based on UNIX shell, an application load balancer and containerization to automate the process of setting up a secure web-server for web-developers.

2. Methodology

The topology will include load balancer and application containers to help reduce the load of the web-server from large spikes of requests. Several software and hardware are needed for the success of the script. The engine X (nginx) web-server application and reverse proxy will act as the main load balancer that will forward and distribute requests from the internet. The requests will then be handled by multi-instances of Docker containers. A shell script and a Docker Compose script will help set-up the load balancer and containers with minimal user interaction as they will be left to configure the basics of the web-server listener, DNS entries, and define their own upstream configuration. Three common DoS attacks has been executed during testing, which is SYN-flood attack by using hping3 to execute SYN-flood and Wireshark for ACK response analysis. ICMP flood attack using hping3 to send ICMP flood and real-time logging for analysis of ping requests. And HTTP-request flood attack executed and analysed by using Apache JMeter to record the spikes in response time.

3. Results and Discussion

The web-server is running as all components of the web-server process is validated by the system's command-line. DNS and firewall entries are also functioning well as the website can be accessed from the local network and the public internet, making it available from around the globe. Thus, making the automation process a success on the script's and docker-compose's configuration. For DoS attacks, the web-server and load balancer has managed to reduce the spikes of response time from HTTP-request flood attacks analysed from Apache JMeter. From Wireshark packet analysis, SYN-flood attacks using hping3 shown to have a reduction of effect as the rate of ACK-response has increased as the number of nginx instances increase. However not all DoS attacks can be prevented as shown from the result of ICMP flood attacks as the attack only focuses on the main web-server application and not the load balancer nor the docker containers.

4. Novelty of Research / Product

There are many areas of a computer system that are susceptible of security risks and errors that might be ignored by the end-user. Prevention methods is also discussed such as securing databases and the operating system (Divyaniyadav et al., 2018). Previous research also discusses about security countermeasures in a web-application, such as the use of a fortified firewall to secure the web-application and the flow of how a web-application works (Sharma et al., 2019). Another study focuses on the rise of DoS attacks in the current age and also the methods available in preventing the attacks. This study proposes several improvements include load balancing and containerization (Idhom et al., 2021) that will be the base of the research project being conducted the research will utilize the automation process based on recommendations provided by the mentioned researches, a shell script is used for the automation process and execute the setup with minimal user intervention.

5. Conclusion

Utilizing nginx for application load balancing can be beneficial for novice developers, as it can reduce setup time and effort through the use of shell scripts. Additionally, it can protect against some forms of DoS attacks, but other security measures should also be implemented such as a network firewall and a more powerful hardware for running more containers.

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SMART CHICKEN FEEDER SYSTEM USING NODE MCU ESP8266

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Abstract

This project developed a Smart Chicken Feeder that can be control remotely using smartphone. Signal from smartphone which is sent using Blynk app is received by node MCU through WiFi connection since it designed with Wi-Fi chip. This system is developed to overcome several problems that have been faced by village farmers such as forgot to feed their chicken, irregular feeding schedule and so on. Those problems may affect chicken quality if it's been left without any action. The project's product has been tested by several users and a survey have been conducted to gain feedback from respondents on the acceptance of the system. In conclusion, this project developed an affordable feeding system that can be useful to farmers and other users.

Keywords: Node MCU ESP8266, Wi-Fi, Blynk app

1. Introduction

Chicken poultry sector is a crucial sector since it can supply food to the country (Mitkari et al., 2019). Due to technology development, there are farmers that still feed their chicken manually which is using manpower especially farmers from village. This system may cause irregular feeding schedule which will affect the chicken's health (Layth et al., 2022) and other problem. This project developed an affordable system that help users to feed their chicken by using smartphone and to monitor the food level in the large container to ensure the chicken can get the food.

2. Methodology

The methods used to build the Smart Chicken Feeder is using node MCU ESP8266 as microcontroller to control hardware to perform the task from user. From Blynk application, user can control DC motor which is used to rotate an auger to distribute food from large container into feeding pan. Besides, user can monitor food level in large container to ensure the food in sufficient quantity. Those tasks have been programmed in node MCU using Arduino IDE.

3. Result and Discussion

During testing, the product working well and all the hardware which are the DC motor and sensor are functioned. DC motor start to rotate once the user pushes the switch in Blynk app and the sensor can detect the distance of an object when user tests it by moving away and bringing the object closer to the sensor. They can see the gauge in Blynk app showed the same distance of the object. For the network testing, the time taken for the system to perform a task

after Blynk app send a signal is depends on the speed of the Internet since it uses Wi-Fi connection to allow communication between user and the system.

4. Novelty of Research / Product

There are several research that have been developed similar system by using different microcontroller. This project chooses to use node MCU as microcontroller because it is a low-cost module that designed with Wi-Fi chip that allow user to communicate with system through Internet which will achieve the first objective, develop an affordable system. Layth, Christian., Al-Rawi, Nabeel., & Adria, Alpen (2022) have proposed a project to monitor real-time air quality and automatic chicken feeding system using Arduino Wemos D1. Arduino Wemos D1 is a module that similar to node MCU but hardware design is Arduino Uno. Next, Syahrorino, Syamsudduha., Rifai, Achmad., Saputra, Dwi Hadidjaja Rasjed., & Ahfa Akhmad (2020) proposed a smart design cage that focused on close coop. The project is using node MCU ESP8266 to control the system. According to previous project, feeding system have been develop with different focus and different module.

5. Conclusion

Technology help people to reduce time, cost and manpower in performing a task. Besides, it also helps farmer to ensure chickens' food is always available. Farmers also can feed the chicken remotely even they are not in their hometown which can solve the weakness of feeding system that have been used by farmers from village.

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REMOTE MONITORING AND CONTROLLING OF LIGHTS USING IOT

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Abstract

As technology advances and improves to benefit the environment, daily living has become significantly easier and more convenient. Our lives are becoming increasingly intertwined with the Internet of Things (IoT) as a result of the technological advancement. IoT is a network of physical objects embedded with sensors, software, and other technologies that connect to and exchange data with other devices and systems via the internet. Since humans are prone to forgetting things, it's tough to steer clear of this predicament. As a result, electricity is wasted and the problem of forgetting to turn off the lights is not addressed. The rising cost of electricity is a result of this predicament. Smart lighting is used to conserve energy. This study discusses about developing a prototype of smart lighting system using IoT. The system is supported by Blynk application and Arduino. A smart phone app will be used to monitor and manage all of a house or office's lights remotely. Arduino will be the electronic prototyping platform utilized in this project. Blynk servers will be used to monitor and control remote devices.

Keywords: IoT, smart home, Blynk, Arduino, smart lighting system

1. Introduction

As technology advances and improves to benefit the environment, daily living has become becomes significantly easier and more convenient. Our lives are becoming increasingly intertwined with the Internet of Things (IoT) as a result of the technological advancement. This research aims to develop a prototype of remote monitoring and controlling of lights system which is smart lighting with the help of Arduino UNO, Arduino IDE and Blynk application as well as Blynk server. The objectives of the research are to develop a prototype of smart lighting system that able to control the lights remotely via smartphone using Arduino through Blynk application and to evaluate the functionality and network performance of the prototype. The research will be using ESP8266 WiFi module setup using Arduino Uno. The Blynk server will monitor and control the lighting system.

2. Methodology

There are 5 phases involved in developing the project which are initiation phase, planning phase, development phase, evaluation phase and documentation phase. The most critical and significant phase is development phase. This is where the prototype is developed. During this phase, hardware and software are acquired in order to develop the proposed prototype of smart lighting system. Then, the assembled prototype will be tested its functionality as a smart lighting system.

3. Results and Discussion

The prototype of a smart lighting system was successfully developed. The user can remotely control and monitor the lights using smart handphone through Blynk application. The functionality of the prototype also being tested to ensure that it can function well. The network performance of the prototype also is tested. There are several upgrades that can be done in order to improve the functionality of the prototype.

4. Novelty of Research / Product

There are various of research has been done regarding smart lighting system especially in regards of smart home system. Previous research has been done to control LED through Internet based on NodeMCU with Blynk application (Asmawati et al., 2019). There is also a previous research regarding IoT smart lighting system for university classrooms (Montalbo & Enriquez, 2020). SOA and IoT principles to smart home lighting in a research by merging Raspberry Pi with Python programming, a web server (database) with PHP and Android programming with Java programming also had been done previously (Irawan et al., 2021).

5. Conclusion

The proposed prototype still lacking in various aspects and open to enhancement and improvement to make it a better system. The smart lighting system can be enhanced in order to create a more efficient and cost-saving environment. Yet, the objectives of the research are successfully achieved.

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