3rd

ISTEC

INTERNATIONAL SCIENCES, TECHNOLOGY AND ENGINEERING CONFERENCE

2018

Computer Science & Technology

ABSTRACT BOOK

Conference Date:
17- 18 April 2018

Conference Venue:
Hotel Royal, Penang

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FOREWORD

Rector Of Uitm Perlis

Universiti Teknologi MARA Perlis Branch is truly honoured to have organised the 3rd International Sciences, Technology And Engineering Conference – Computer Science and Technology (3rd ISTEC CoST 2018), in conjunction with the 4th International Innovation, Design and Articulation 2018 (4th i-IDeA 2018).

The conference offers its outstanding platforms for researchers to exchange knowledge, expertise and discussions on various fields of interest.

This conference is an excellent platform to thrash out issues concerning wide scopes of research fields in computer science & technology; theories and applications. Some of the notable areas include Internet of Things, ICT in education, multimedia applications, artificial intelligence, modeling and simulation, as well as halal technology.

It is heartening to note that the response from the distinguished academia, presenters, students and private and government agencies to this conference has been very overwhelming. With such an excellent gathering, there is no reason why we cannot put our hearts and minds together in putting forwards ingenious ideas and strategies to ensure the success of 3rd ISTEC CoST 2018.

Last but not least, a special thank you goes to everyone who has made 3rd ISTEC CoST 2018 a huge success. We are delighted that the conference has been able to establish strategic partnerships with Universiti Sains Malaysia, particularly with the Centre for Instructional Technology and Multimedia (CITM) and National Advanced Ipv6 Centre (Nav6).

It is hoped this conference serves as a beginning to everlasting friendships and never-ending success of everyone present.

Mr. Zailuddin Bin Ariffin

Rector
UiTM Perlis Branch

FOREWORD

Deputy Rector RICAEN Of Uitm Perlis

It is with great pleasure that Universiti Teknologi MARA, Perlis Branch is organising The 3rd International Sciences, Technology And Engineering Conference 2018 – Computer Science and Technology (3rd ISTEC CoST 2018).

3rd ISTEC CoST 2018 is one of the many satellite events organized under 4th i-IDeA 2018. The 4th i-IDeA 2018 is an international competition that highlights research products and promotes the culture of research and innovation among the academia and budding scholars. This program includes innovation competitions, conferences and outdoor competitions.

We have witnessed the urgent needs to continue with the effort to nurture the culture of innovation in our citizens. Among the objectives of 4th i-IDeA 2018 are to showcase innovation, invention and designs which are produced and created by local and foreign academicians and non-academicians, agencies, students from lower to higher education and to create a platform for research groups among local and foreign academician and non-academicians in commercializing their innovations and ideas.

3rd ISTEC CoST 2018 will undoubtedly help realise these objectives since the conference is an excellent platform to share and exchange ideas, issues and discoveries regarding numerous scopes of research in Computer Science and Technology.

I would also like to reiterate the significance of inculcating the culture of innovation among the people to help bring new innovations and inventions for the benefits of the common people. It is my greatest hope to see 3rd ISTEC CoST 2018 as a catalyst towards realising such vision.

I am certain that this conference will provide you the opportunity to exchange ideas, forge friendship and initiate collaborations towards a better future.

Have a great time at 3rd ISTEC CoST 2018!

Associate Professor Dr. Mohd Azlan Mohd Ishak

Deputy Rector
Research, Industry, Community, Alumni & Entrepreneurship Network
UiTM Perlis Branch

CHAIRMAN'S WELCOME

On behalf of the organizing committee, I would like to welcome all delegates and their guests to Penang Island, Malaysia for the 3rd International Sciences, Technology and Engineering Conference – Computer Science & Technology (3rd ISTEC CoST 2018).

The conference will be held from 17-18th April 2018 at the Hotel Royal in Georgetown. Bearing the theme 'Computer Science and Technology', the conference is proud to be having distinguished experts to deliver the plenary and keynote speeches. The plenary session on 18th April will look into the trends and challenges in behavioral prediction for better customization and personalization. The keynote session embraces the fast growing field, Internet of Things whereby the framework of IoT and some of the possible collaborative opportunities as well as challenges will be explored.

All accepted papers will be included in Journal of Fundamental and Applied Sciences (Indexed in the Web of Science: Emerging Sources Citation Index (ESCI)™) and Journal of Advanced Research in Computing and Applications (indexed in Google Scholar and MyCite) respectively.

My special appreciation goes to all authors for their outstanding contributions of a large number of submissions. I essentially hope this conference will offer participants a platform to exchange ideas and research findings through oral presentations. Finally, we anticipate that the meeting will be enjoyable, enlightening and fun with a high-quality program to add to what will be a memorable conference.

Finally, I would like to record sincere gratitude to the organizing committee of 3rd ISTEC CoST 2018, the 4th i-IDeA 2018 steering committee, chairman of parallel sessions, all paper presenters, our sponsors and exhibitors and Universiti Teknologi MARA.

I am looking forward to welcoming you to Penang Island, Malaysia!

Abdul Mutalib Md Jani, Ph.D

Chairman,
Organizing Committee
3rd ISTEC CoST 2018

PERFORMANCE ANALYSIS OF THREE CLASSICAL ENCRYPTION ALGORITHMS, SIMPLE SUBSTITUTION, CAESER, AND PERIODIC PERMUTATION (THE THREE SCP) IN ENCRYPTING DATABASE TRANSACTIONS

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Abstract

Encryption was introduced and implemented in many Database Management Systems (DBMSs) as one of the solutions for securing databases. However, Securing database transactions and data they hold while they are existing in memory or even during their transmission throuh computer networks media should be also given big attention. The core objective of this paper is that to measure the performance of the three classical encryption algorithms: Simple Substitution, Caesar cipher, and Periodic Permutation respectively for encrypting such database transactions and text data they hold which is sort of encrypting data-at-rest. Performances are measured herein in terms of time, memory usage and CPU efforts. The expirement was performed to many categories of transactions, those categories are categorized according to two issues: the size of data that the transactions hold, and the type of transactions itself. This experiment can be a base to enable Database Designers to design algorithms that has the ability to decide which one is the optimal according to type of database transaction waiting for processing as well as size of data that it consists of, and also other computing processing components such as CPUstate and RAM consumption ratios.

Keywords: Database Security, Database Transaction, Database Transaction Security, Classical Encryption

FLOWCHART DISCOVERY GAME FOR BASIC PROGRAMMING COURSE (FLOWGAME)

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Abstract

Flowchart is a guidance for constructing the basic programming language. Currently, programming is one of the compulsory subjects for Computer Science students. However, study shows that this subject is unable to be understood by learning in fully text. This is due to inadequate tools and learning styles in programming. This area has non-interactive way of learning where there is no any interaction method with the students. To address this issue, FlowGame is developed as an aid to learn flowchart technique in game-based environment. Design Science Research (DSR) is implemented throughout the study to create the solutions for the problem, make it applicable in computer science, engineering and in ICT disciplines. From the results, FlowGame is well-accepted from the experts and users. The results also indicate that the application is helpful for increasing students' understanding in learning and creating flowchart.

Keywords: Discovery game, flowchart, game-based learning, gamification, helpfulness.

WEB BASED: LIBRARY SEARCHING BOOK MANAGEMENT SYSTEM (L-SBMS)

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Abstract

Geographic Information systems (GIS) are computer-based tools that are capable for data input, storage, management, retrieval, update, and analyst. Basically, GIS is used to store the data and query function. The geographical concept in this research is more to library information development system which is used for inventory, managing and borrowing process. In this paper, the integration between ArcGIS (ArcMap, ArcGIS Server and ArcGIS Viewer for Flex), Adobe Dreamweaver, is used to develop the system in introducing GIS application. Furthermore, a map of booking system is developed according to existing information or database in UiTM Library System, Online Public Access Catalog (OPAC). The objective of this study is to design and develop Library Searching Book Management System (L-SBMS). L-SBMS allows the user to perform a database query or book searching automatically it will provide the direction and also book details informations.

Keywords: Geographic Information Systems, Library Searching Book Management System, Query and Book Searching.

MONITORING SHORELINE CHANGES USING SUB PIXEL MAPPING: A CASE STUDY OF SHORELINE COMPOSITION

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Abstract

Changes in physical environment of coastal areas and shorelines are subjected to several factors such as winds, wave, currents, tidal effects and construction activities at the site. One of the adverse effect is coastal or shorelines erosion. This study is performed to apply Remote Sensing approach in monitoring the impact of shoreline composition due to the construction of Penang second bridge. Remote sensing is a highly recommended tool to be utilized in this kind of study by employing soft classification technique. This study is believed to help related agencies and researchers to monitor the effect of shoreline erosion towards the environment and society. There are three (3) main objectives for this project: (i) to perform sub pixel classification (ii) to detect the changes in composition of shoreline at study area and (iii) to map the composition of the shoreline. Subpixel classifier is applied for shoreline mapping and the final result will provides number of pixel detected and shoreline composition map.

Keywords: shoreline, remote sensing, soft classification

AN OBSERVATION ON SOCIAL ACCEPTANCE OF LOCATION-BASED AUGMENTED REALITY GAMES IN OPEN SPACE

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Abstract

Collaborative application of Augmented Reality (AR) is getting more widely applied in various fields such as education, art, and entertainment. However, the development of AR is affecting social acceptance aspect. Observation is necessary to determine the rate of social acceptance in society. Beginning with article study to conclude social problems, then formulating scenario that will be used to analyse public experience with real social problems. There are two approach that have been performed, questionnaire usage with semantic differential targeted to 30 respondents and interview discussion targeted to 10 respondents. This research confers the perception of users and the perception of bystanders with quantitative and qualitative measure for each scenario. The result of this research will provide insights about social acceptance for augmented reality application amidst Indonesian society.

Keywords: Augmented Reality, Social Acceptance, Scenario, Public Experience, Application.

MOBILE LEARNING APPLICATION FOR ENHANCEMENT OF TEACHING TOOL IN JAVA PROGRAMMING

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Abstract

Programming is a basic subject to several areas of technology. However, many students frequently faced a difficulty to understand the programming characteristic and visualize problem solution using programming. It is can help students improve their performance and attitude towards Java Programming Language. This method has given hands-on experience and also learned through their experience. This paper study of mobile learning application used to help students improve their skill in Java Programming Language.

Keywords: Java Programming, mobile learning, 3D visualization.

IN SITU OBSERVATION AND ACCEPTANCE MEASUREMENT OF COLLABORATIVE AUGMENTED REALITY IN EDUCATION FIELD OF HIGH SCHOOL STUDENTS

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Abstract

The use of Augmented Reality (AR) is involving a new way of interaction. This interaction is including the devices and technology, that probably is still unacceptable by our society. Some of the previous research have discussed the importance of the technology acceptance and social acceptance of AR use. This research conducted an in situ observation at high schools that involved its students and teachers as respondent. The method of this research is a data analysis of video recorded activities and a semi-structured interview. The recorded videos contain the records of the activities of the respondent while using AR application. The result showed that each respondent from observation groups felt a new experience when they learned with AR application.

Keywords: Augmented Reality, Education, Social Acceptance

M-LEARNING OF ATOMIC ORBITAL OF ELEMENTS IN PERIODIC TABLE FOR STEM

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Abstract

Downward trend of student's enrolment in science and health studies may jeopardise the successful implementation of government's agenda in alleviating Malaysia's performance in the world stage. In this project, mobile application named SPATO, a teaching aid in the learning of atomic orbitals of elements in the Periodic Table was developed, with the aim to spur the interest of community in studying the science-related subjects in the guise as a mobile-learning tool. The Waterfall Model was used to fulfil the aims in the development of this mobile application. Students and workers in UiTM Perlis were involved in the testing of this mobile-learning tool, in which the SPATO program was used in their studies and teaching session. From these testers whom were not well-exposed to the concept of mobile learning, the feedbacks received was that SPATO seemed to be well accepted by the users. Users found that it is user-friendly, even though initially they might not familiar with the m-learning application. The use of SPATO provides a platform for community to engage themselves to the topic of atomic orbitals. These results indicate that SPATO can function as an alternative approach for community in understanding the chemical elements.

Keywords: M-learning, Applications, Atomic Orbital, Periodic Table.

BIJAK JAWI: AN INTERACTIVE MULTIMEDIA READING TOOL USING PHONIC 'MAKHRAJ' TECHNIQUE FOR PRESCHOOL CHILDREN

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Abstract

Reading 'jawi' script using spelling method is not very effective to capture children's attention as this method lacks interactivity and attractiveness. Without a proper reading tool, preschool children might face difficulties in reading 'jawi' during their primary education level. This study proposes the integration of phonics reading technique for 'jawi' with interactive approach help to attract children's interest. Known as 'Bijak Jawi', it implements phonics 'makhraj' as a 'jawi' reading technique for children aged 5 to 6 years old by manipulating multimedia elements in an interactive learning environment. The content of this application is specifically designed to visualize 'jawi' alphabets, phonics 'makhraj', syllables, sentences, and numbers. The usability test with the teachers and heuristic test with experts revealed that the content of the application is well blended with phonics reading technique, multimedia interactive and multimedia elements. It can be concluded that the application is interesting, user-friendly, enjoyable, valuable and supportive.

Keywords: Interactive multimedia; phonic 'makhraj'; jawi; preschool children.

EXPERIMENTAL ANALYSIS OF TROJAN HORSE AND WORM ATTACKS IN WINDOWS ENVIRONMENT

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Abstract

Trojan Horse is the most powerful malware that can produce an attack to penetrate into the network environment. Besides Trojan, another harmful malware known as Worm also can cause enormous damage to the computer system. Unfortunately, some users do not concern much on security because they thought there is not much valuable information can be obtained from them. The lack of awareness about computer and network security as well as misunderstanding of how malware attacks can occur, resulted in these users do not realize that their machines are at risk and they are exposed to several kind of potential cyber threats. Thus, this paper provides an insight on network vulnerability and presents some demonstrations of Remote Access Trojan (RAT) attack and worm file duplication attack via experimental tesbed. Then, Wireshark and some malware scanning tools such as Virus Total, MalwareBytes and Avast AntiVirus were also used for malware detection. The findings show that these attacks are possible and can be easily conducted to meet the purpose of the attackers. Therefore, educating the public to pay extra concern on malware vulnerabilities and to equip themselves with knowledge and skills to face the security challenges due to malware attacks is crucial.

Keywords: Remote Access Trojan (RAT), vulnerability of operating system (OS), malware activity, worm attack, cyber threat

CATEGORY AND TRAINING TEXTS SELECTION FOR SCIENTIFIC ARTICLE CATEGORIZATION IN AN EXPERT SEARCH SYSTEM

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Abstract

Standard text categorization process relies on features selected for each category. To pick the most representative features for each category, training texts are used to ease the process of feature selection. Hence, selection of relevant training texts for right category will directly influences the performance of categorization. In this paper, we propose a transfer training approach to enable training of category model from one sources and applied on another. This enables a quicker and focused training, which is useful for scientific text categorization. Performance evaluation was conducted under three settings, comprising different i. numbers of categories and ii. training texts (i.e. automated source selection from WikiCFP or manual source selection from Book TOC). The evaluation in an expert search setting showed that using more categories with manual sourcing of training texts (accuracy of 54.21%) outperforms other settings that use less categories or automated sourcing of training texts.

Keywords: training text; feature selection; scientific texts; categorization.

DESIGNING ECO-FEEDBACK TO CALCULATE CARBON FOOTPRINT OF ECOLOGICAL WASTE

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Abstract

Carbon footprint is a measure of the exclusive total amount of carbon dioxide (CO2) emissions that is direct and indirectly caused by an activity. Carbon footprint is necessary because nowadays, almost all human activities will contribute to carbon emission, especially waste disposal. This paper discusses the feedback of designing an eco-feedback intervention, which is ecoWaste, to deliver feedback on individuals' or groups' behaviors (students of hostel residents) with a goal of reducing environmental impacts as a green campus initiative. Feedback is delivered by automatically sensing activities and feeding related information back through a computerized system. The objectives of this research are to design eco feedback that displays carbon footprint and to visualize information that calculate carbon footprint and motivate people's actions which are to separate ecological waste and recycle. The eco-feedback was designed using an intervention technique that consists of information, comparison, incentive and reward or disincentive and punishment, commitment and feedback. For the evaluation, ten respondents of hostel residents were chosen to evaluate the ecoWaste web application for two weeks. Then the respondents were given questionnaires which consist of two parts which were demographic and behavior questions, and impact of design. From the findings, it is shown that ecoWaste can motivate people and create awareness on the importance of waste separation and by displaying the amount of carbon footprint in each waste, carbon footprint managed to be reduced.

Keyword – carbon footprint, eco-feedback design, carbon emission, green campus, ecological waste

MALAY CULTURE CONSERVATION OF PENCAK SILAT BASIC MOVEMENT WITH AUGMENTED REALITY

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Abstract

Pencak Silat is an original martial art from Indonesia, it is supposed to continue to be existed and preserved. One of possible ways to do so is to utilize technology as a medium to learn about Pencak Silat. This research develops Pencak Silat basic movement application with Augmented Reality (AR) as the means to convey information to society. This app uses Kudan SDK library to display 3D with markerless technique. The end result of this research is in the form of application that will run on android OS based smartphones. Based on the tests conducted it is known that the application can display animated Pencak Silat basic motions in dim light with the intensity of 28 lux light with the angle of vision 10 ° - 90 °.

Keywords: Pencak Silat, AR, Kudan SDK Library.

EVALUATION ON IBAN POLYGLOT SPEECH SYNTHESIS USING MALAY SPEECH SYNTHESISER

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Abstract

Natural language processing research always rely on real data to be useful. In order to create a speech synthesiser, the text and speech data availability is a very crucial pre-requisite for creating a speech synthesis system (TTS). Therefore, for under-resourced languages, where the resource availability is limited, it is desirable to use pre-existing data from another language. This paper described the approach undertaken to adapt Malay speech synthesiser into Iban speech synthesiser with very small Iban language resource and without Iban speech data. After phonetics and prosody study, Malay is found to be the best match language for Iban. Therefore, this paper will discuss in brief the Iban-Malay TTS adaptation, the evaluation conducted, and the conclusion drawn from the respondents' feedback. This paper pays special attention to the evaluation and the reasons why such results were obtained from the study.

Keywords: speech synthesis; under-resourced language; polyglot synthesiser; resource sharing; Iban language; Malay language.

A FRAMEWORK FOR AUTOMATED ASSESSMENT OF ANSWERS IN THE FORM OF HANDWRITTEN PROGRAMMING CODE

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Abstract

Manual assessment of handwritten programming code in quizzes, tests and the examinations is known to be time consuming, eyes straining and tedious. Despite many limitations, the use of papers in tests and exams are more practical and cost effective. Although human can easily understand a nicely written handwriting by just looking at it, the computer faces difficulty to understand and interpret the information contains in handwriting. Advances in computing technology allow answers written on papers to be scanned, before information such as sentences, words and individual characters are extracted and converted into text for automated assessment. This paper discusses image analysis techniques related to handwritings recognition and proposed a framework for an automated assessment of students' answers in the form of programming codes.

Keywords: Computer Assisted Assessment (CAA); Handwritten Character Recognition (HCR); Image analysis; Pattern recognition; Feature extraction.

SCHEDULING DIFFICULT TO SCHEDULE EXAMINATION USING MEMETIC ALGORITHM

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Abstract

The main objective in solving an examination timetable problem is to develop a conflict-free timetable where no students are sitting for more than one examination at the same time. UiTM Examination Timetabling problem is a complex problem due to its size and constraints. Part of the solution is to schedule a few selected courses that are difficult to schedule and schedule them using travelling salesman model. A travelling salesman model is implemented where vertices represent examinations while the edge between two vertices represents the number of students sitting for both examination (vertices). Memetic Algorithm was implemented to simulate the shortest path between two given vertices and try to find a reasonable solution. Experiments are performed to determine the performance of the algorithm with respect to its solution quality. The results show that it is able to produce good optimal solution.

Keywords: Examination Timetabling Problem, Memetic Algorithm, Travelling Salesman.

INDUCTION OF MEMBERSHIP FUNCTIONS AND FUZZY RULES FOR HARUMANIS CLASSIFICATION

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Abstract

In this research, fuzzy classification system was applied as a decision making technique to classify the Harumanis fruit quality based on fruit contour features. Two input features of fruit quality attributes, including size and shape, were acquired from 120 Harumanis images. Construction of membership functions and fuzzy rules from numerical data is very important in various applications of the fuzzy set theory. Therefore, this paper proposed a fuzzy learning algorithm for generating membership functions and IF-THEN fuzzy rules from learning data for fruit classification. These fruits were graded by both a human expert and a fuzzy system designed for this purpose. Classification results obtained from fuzzy system showed 95% general conformity with the results from the human expert.

Keywords: fuzzy logic; membership function; fuzzy rules; learning algorithm; fruit classification.

A SURVIVABLE INTERNET OF THINGS SCHEME

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Abstract

Availability is an essential property of information systems, especially in critical infrastructure and revenue-generating systems. Availability can be compromised when an incident or an attack causes a system to shut down. Survivable systems resist shutting down as they are built to continue operation despite being affected by incidents. Survivability depends on many factors including architecture and redundancy. Internet of Things systems are complex and often widespread, and to ensure survivability certain measures should be in place to face the challenges inherent in the nature of these systems. In this work, we preview some of the well-known IoT architectures and propose architectural schemes to ensure survivability.

Keywords: Survivability; Internet of Things; IoT; IoE; Reliability

DESIGNING A LEARNING ENGAGEMENT MODEL OF MALAYSIAN DIGITAL TRADITIONAL GAMES

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Abstract

Despite the extensive studies on gaming and the engagement on digital games, less studies have explored and focus on how engagement affects learning of digitized traditional games, particularly Malaysian digital traditional games. Previous studies mostly concentrated on contemporary games and its contributing factors. This article proposed a conceptual model of learning created by the contributing properties of the games. Combination of extensive literature review and series of interview were employed in identifying set of properties and variables. There are twelve and ten properties have been identified for external and internal properties, respectively. These properties have been thoroughly studied on how they create learning and motivation thus influence the engagement of digitized traditional games. Based on the identified properties, a conceptual model has been designed and constructed. The proposed model can be useful to serve as a foundation in measuring games learning engagement for digitized traditional games.

Keywords: learning model, games engagement, digital traditional games

AN INVESTIGATION OF STUDENTS' BEHAVIORAL INTENTION TO USE MOBILE LEARNING TOWARDS MATHEMATICS AND STATISTICS SUBJECTS

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Abstract

Universiti Teknologi MARA (UiTM), Malaysia are moving forward for e-learning and m-learning implementation in their teaching and learning process. Prior to implementing the mobile learning approach towards university students, it is a good practice to analyze the intentions and acceptance of UiTM's students to use m-learning to equip basic information for endowing m-learning support system for learners. A sample of 106 UiTM Cawangan Perlis students participated in this study. Technology Acceptance Model (TAM) was adopted and Structural Equation Model has been constructed using AMOS program. The study shows that M-learning perceived ease of use (PE) was the most important construct in explaining the causal process in the model, followed by subjective norm (SN), self-efficacy (SE) and major relevancy (R).

Keywords: m-learning; statistics; TAM; SEM; AMOS.

COMPARATIVE OF ARTIFICIAL NEURAL NETWORK AND FUZZY TIME SERIES ON CONSUMPTION OF ELECTRICITY IN PERLIS

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Abstract

Electricity is the main form of energy that we commonly use in our house. The efficient use of electricity can bring down cost and help to preserve the environment. Therefore, this study is trying to discover the best method to find the accuracy of the use of electricity. The purpose of this study is to improve forecasting accuracy in electricity consumption in Malaysia. Also, it is to compare and identify the best techniques between Artificial Neural Network (ANN) and Fuzzy Time Series in predicting electricity consumption in Perlis based on the lowest value of Mean Absolute Percentage Error (MAPE). The data used for this study is from the period of 2011 to 2016 and was obtained from Tenaga Nasional Berhad office in Kangar Perlis. The algorithm of ANN used in this study are Quasi Newton, Online Back Propagation and Conjugate Gradient Descent. These two methods will compare the error measure and identify the most efficient method to be used to find the accuracy of electricity consumption in Perlis. The results show that Fuzzy Time Series Technique has the lowest error measure of MAPE, which is 2.39 compared to Quasi Newton (4.70), Online Back Propagation (4.71) and Conjugate Gradient Descent (4.90). Therefore, Fuzzy Time Series Technique is the suitable method to be used to find the accuracy of consumption of electricity in Perlis.

Keywords: Consumption of electricity; Artificial Neural Network; Fuzzy Time Series; Alyuda NeuroIntelligence.

IMPROVE AIR POLLUTION INDEX (API) PREDICTIVE ACCURACY USING TIME SERIES CROSS-VALIDATION TECHNIQUE

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Abstract

Time Series Cross-validation is one of the methods that help to improve prediction or forecast accuracy. The main purpose of this study is to determine the best model to predict Air Pollution Index (API) in Port Klang by using Holdout cross-validation method. The study also wants to identify the best set (training and test part) that can produce accurate forecast values. A total of 16,411 API data in Port Klang were used. The data was split into nine different sets. Each set tested through four univariate model; Naïve Forecast, Single Exponential Smoothing, Brown's Method and Holt's Method, and evaluated based on three error measures; RMSE, MAE, and MAPE. The results found that Holt's Method is the best model and set that contains 80% of time series data for training part and 20% for test part produces the smallest error measures.

Keywords: Time Series Cross-validation; Holdout cross-validation; Air Pollution Index (API); R programming

A PRELIMINARY STUDY ON PRE-SERVICE TESOL TEACHERS' ATTITUDES TOWARDS THE USE OF ICT FOR TEACHING IN MALAYSIA

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Abstract

This paper presents the preliminary findings of pre-service Teaching English to speakers of other languages (TESOL) teachers' attitude towards using ICT for language teaching. Technology is ambiguous and the demand for utilizing it to support the needs of a 21st century learner is ever growing. Therefore, we aim to explore how millennials as future teachers perceive their role in catering to this requirement especially in language learning. The study was conducted in a university in Malaysia using descriptive quantitative design on 50 pre-service TESOL teachers. It was found that overall attitude is positive and device ownership has no effect on their overall attitude on using ICT for teaching. They perceived ICT as beneficial in developing interesting tools for teaching and a motivating factor. However, they negatively perceived their competency in developing and integrating such tools for teaching in the future.

Keywords: ICT, language learning, pre-service teachers, attitude.

THE RELATIONSHIP BETWEEN ACCEPTANCE AND SATISFACTION OF LEARNING MANAGEMENT SYSTEM USAGE IN A BLENDED LEARNING ENVIRONMENT

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Abstract

The objective of this study is to examine if there is a relationship between students' acceptance and satisfaction of Learning Management System (LMS) usage in a blended learning environment. A quantitative research approach was used in which a total of 174 students from a public university in Yemen were surveyed using the questionnaire. Structural equation modeling (SEM) was used for data analysis. The results indicated that both students' perceived ease of use and perceived usefulness had a significant positive relationship with student satisfaction. Therefore, higher education institutions need to consider the relationships between the factors of acceptance and satisfaction in implementing a blended learning environment. Consequently, LMS system's ease of use and usefulness make it possible for students to devote their attention to learning the course materials instead of spending additional effort in learning the instrument.

Keywords: Blended Learning; Learning Management System; Acceptance; Satisfaction; Yemen.

E-LEARNING CHALLENGES AND INSTRUCTORS' DEMOGRAPHIC PROFILES IN A PUBLIC UNIVERSITY IN YEMEN

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Abstract

E-Learning systems have become widely spread in most colleges and universities all over the world during the last ten years. The developers of e-learning environment are frequently insisted by researchers to consider demographic differences. Thus, this research aims to examine the pattern between the demographic profiles of the instructors and the challenges of implementing e-learning. The demographic variables that were selected to investigate in this study were gender, age, ICT experience, and teaching and e-learning experience. A total of 107 participants completed the survey-based questionnaire. The paper discussed the results of the pattern between the challenges of implementing e-learning with demographic variables and it was found that the demographic variables play a direct and indirect role on those challenges. The results obtained from this study can help universities and other educational institutions to understand the main obstacles that face the effective implementation of e-learning and how to overcome these barriers. Otherwise, e-learning cannot be implemented successfully.

Keywords: E-learning; Challenges; University; Yemen.

PERSUASIVE MULTIMEDIA APPLICATION ON THE TOPIC OF ISLAMIC FUNERAL: THE DEVELOPMENT AND USABILITY TEST

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Abstract

In the Muslim society, everyone should have the knowledge about Islamic funeral. However, educational application which are tailored and designed for mobile devices in the context of Islamic funeral is scarce. Therefore, this study investigates the development and usability of persuasive multimedia application on this topic. This mobile application was developed based on five phases in ADDIE instructional design model. The usability evaluation was adapted from the instrument that included 16 items related to usability and distributed to 12 students. The data of this evaluation were analyzed using the descriptive mean method. The findings of this evaluation revealed that this application fulfilled the usability aspect; for example it is easy to use as well as interesting graphics. It also would support teachers in exposing the topic of Islamic funeral to the learners.

Keywords: Islamic Funeral; persuasive multimedia application; mobile application.

A PRELIMINARY STUDY ON TECHNOLOGY USED IN READING AND WRITING SKILLS INSTRUCTION FOR YEAR ONE PRIMARY SCHOOL REMEDIAL CLASS STUDENTS

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Abstract

The investigation on the current application of technology in teaching reading and writing skills especially that involve remedial students at primary school level has not been a strong focus in previous studies. As such, this paper aims to report the findings of a preliminary study regarding the reading and writing skills current state of remedial students and also the use of technology in teaching and learning those skills among Grade One students. Interview method has been conducted to further strengthen and retain evidence regarding the problem of low performance in reading and writing skills among Year One primary school students. This is an area of concern for the lower grade level. One Malay language teacher, one remedial class teacher, and one Linus teacher involved in this interview sessions. Two Fasilinus (Linus Officer) from the district and the state department have also been interviewed. The study shows that there is a lack of technology used to help improve teaching and learning in the Malay language for remedial students.

Keywords: Remedial Class, Reading and Writing Skills, Linus, Fasilinus

EXPLORING MALAYSIA TEACHERS' ICT INTEGRATION: A PATH ANALYSIS

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Abstract

A survey involving 1,318 Malaysian teachers was conducted and data were analysed using Structural Equation Modeling (SEM) to investigate the factors leading to the adoption or integration of Information and Communications Technology (ICT) into teaching and learning. The results revealed that Basic ICT skills, Advanced ICT skills and Internet skills have significant direct and indirect effects on ICT Integration into Teaching and Learning and into Everyday Work. Also, Belief towards ICT effects on students, Belief towards the benefits of ICT and Belief towards the importance of ICT are significant mediating factors in ICT Integration into Teaching and Learning and into Everyday Work. This indicated that teachers' belief is an important mediating factor in ICT integration and should be included and stressed in teachers' ICT development and training.

Keywords: ICT in education; ICT integration; Path analysis

ANDROID-BASED LINUS NUMERACY MODULE FOR PRIMARY SCHOOL

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Abstract

LINUS is an abbreviation for Literacy and Numeracy Screening with the objective to ensure that all Year 1 students master the basic of reading, writing and calculating at the end of their Year 3 in primary school. In this study, a mobile application has been developed to serve primary school students as a place to do revision, learn strategies to answer questions, and answer sample questions for each topic in numeracy module of LINUS. The purpose of this study is to provide a better approach to learning numeracy module since it includes interactive and attractive interfaces to engage students to the module. It also evaluates the effectiveness of the application in preparing students for LINUS. The results from user acceptance testing show that this application gives a lot of benefits to students who are weak in numeracy and can increase the students' interest in learning numeracy module for LINUS.

Keywords: Android, LINUS, numeracy, primary school.

CONCEPTUAL FRAMEWORK AND THREAT MODEL FOR A SECURE IPV6 DEPLOYMENT

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Abstract

Among the IPv6 security concerns nowadays are securing the IPv6 deployment and preventing the present IPv4 network from being attacked via IPv6 traffic and vice versa. Since deploying IPv6 may involve the coexistence of both Internet Protocols, unavoidably, this coexistence scenario exposes the enterprise network to the threats and vulnerabilities of IPv4 as well as IPv6. Handling these security issues is vital to ensure a secure IPv6 deployment. Thus this paper addresses the problems by presenting a conceptual framework and IPv6 threat model to determine risk that can help network administrators to proceed with IPv6 deployment with some awareness of potential security attacks. The conceptual framework was tested via case study observation in the pilot project and some basic security measures were tested via experimentation which proved that threats are possible and can be countered by using the recommended security mechanisms.

Keywords: IPv6 deployment; secure transition; threat model; conceptual framework.

CONSTRUCTION OF TEXT AND VIDEO ELEMENTS OF AN EDUCATIONAL APP USING SEGMENTING PRINCIPLE

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ABSTRACT

The core idea of segmenting is based on empirical evidence that learners learn better when learning materials are divided into bite-size chunks that can be ingested at learner's own pace. This study focuses on integrating segmenting principle into an educational app that contains instructions in performing early literacy intervention towards learners with reading difficulties. The learning contents are delivered using textual and video representation. Video act as a modeling tool to complement the textual elements, thus enhancing visualization of an actual teaching-learning activity. Segmenting principle primarily dictates the presentation of textual descriptions in each step of the intervention technique. Its associated videos are also divided into smaller, but meaningful segments. The preliminary study results indicate encouraging effects of the learning app toward learners' knowledge and self-efficacy beliefs.

Keywords: segmenting principle, educational video, literacy intervention, pre-service teachers

JUVENILE DELIQUENCY RECOMMENDED COURT ORDER IMPROVEMENT THROUGH RBR AND CBR TECHNIQUES

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Abstract

The complexity of recommending court orders for each juvenile delinquencies case is due to the need to make decision based on past experiences, precedence cases and legal statutes. Current practice demand probation officers to look into their past experiences before they are able to search manually for similar precedence court cases. The quest for fairness in the recommendation process often leads to backlog in juvenile delinquency trials. However, this problem can be overcome through the introduction of RBR and CBR techniques. This paper aims to discuss the application of both techniques which are embedded in the Juvenile Delinquency Recommendation (JDRES) model. The similarities between the results from the model and the expert's selection indicate that JDRES model can be applied in the automation of the legal reasoning procedure.

Keywords: juvenile delinquency case; RBR and CBR techniques; precedence case; legal statues; automation of legal reasoning procedure.

TOWARDS MOBILE DESIGN GUIDELINES-BASED CULTURAL VALUES FOR ELDERLY ARABIC USERS

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Abstract

The way Elderly people interact with technology has been emphasized in previous studies to involve numerous cultural aspects related to language, religion, habits and customs. Despite the current calls for standardizing the design of user interface (UI), there appears to be a notable lack in the design of the mobile UI in order to meet the expectations of elderly users. This study was conducted as an attempt to address the key mobile UI design guidelines based on the cultural values of Arabic elderly users. An interview was carried out with 40 elderly people to gather the necessary insights for proposing workable design guidelines for mobile applications. We found that elderly users' vision, trust, boredom, physical change, stress and confusion were the main cultural elements that elderly Arabic users are concerned about when designing the mobile UI. The results of this study may offer insightful directions to the design of mobile UI, thus increase satisfaction.

Keywords: culture, elderly users, mobile user interface, mobile application

A PRELIMINARY STUDY OF 21ST CENTURY CLASSROOM GUIDELINE IN MOBILE ERA: TOWARDS INTEGRATING DIGITAL SKILLS INTO THE CURRICULUM

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Abstract

In order to prepare students for the demands of this new century, change in the way of teaching and learning ought to take place. Since the use of technology is essential for living today's world, therefore this integration will require a paradigm shift in 21st century classrooms which includes mobile technology to support student learning. Therefore, this study establishes the guideline that will be aligned to the requirement of the 21st century classroom that complements existing policy by the Ministry of Education, Malaysia in deploying mobile technology to support 21st century learning. The research design of this study is qualitative. The guideline will be established through a rigorous research process using the modified Delphi technique. As the initial stage, a preliminary study was conducted to determine the significance of establishing the guideline. Opinions from 75 teachers from all over Malaysia were gathered. It can be concluded that from the survey, there is a need for a formal guideline towards the implementation of 21st century classroom which including mobile technology. As a preliminary study, it is hoped that the finding can be regarded as an initial effort towards the future of 21st century classroom in the mobile era.

Keywords: 21st Century Classroom, Guideline, Teaching and Learning, Delphi Technique, School Teacher, Malaysia

DOMINATING TRENDS IN EDUCATIONAL MOBILE APPS: THE FUTURE OF EDUCATION

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Abstract

The purpose of this study was to investigate applications tagged as educational in the Apple App Store and Google Play Store in Malaysia between 2013 and 2017. We acknowledge the imbalance of the educational apps categories these past five years in the Malaysian apps market and hence, a content analysis was conducted to analyze the pool of apps on both stores. These educational apps were classified into three categories; skill-based apps, content-based apps, and function-based apps. App Annie which is an app analytics tool was used to collect the apps data. The emerging trend that could be seen was the apps targeting toddlers which was more than half the market in both stores. However, the classification of educational apps was mostly pooled under skill-based apps. These findings could assist the apps developer to design engaging quality apps focusing on educational content based on the current market trend.

Keywords: educational apps trend; educational apps classification.

INTRODUCING PROTOTYPE FOR CLASSIFYING AND QUANTIFYING EMOTIONS IN SOCIAL NETWORK SITES

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Abstract

Usage of social network sites for dissemination of information has become common nowadays. Easy publication of opinions has led to various kind of emotions expressed in online discussions. In this paper, we introduce a computerized prototype which is able to classify type of emotion and quantify its degree. The prototype developed using JAVA programming language, features automatic comments extraction from social network sites and produces statistical reports on the emotions expressed. It is implemented with Latent Semantic Analysis (LSA) technique which is known to have capability of extraction and comparison of underlying semantic structure between passages. This initial work shows that, the prototype can be further enhanced for better accuracy. Understanding public emotions and sentiments may alert the authority and government for ensuring safety among citizens.

Keywords: Emotion Classification; Emotion Quantification; Latent Semantic Analysis; Information Retrieval; Textual Modality.

USING THE UTAUT MODEL TO DETERMINE THE FACTORS AFFECTING THE TECHNOLOGY ACCEPTANCE IN JUDICIAL SYSTEM ENVIRONMENT

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Abstract

The implementation of e-government technology to support both user and organization enables both to perform better by facilitating and decision-making processes. This paper addresses the problem of how to determine the factors that influence employees to accept and use technology implemented in Judicial System institutions in developing countries focusing on acceptance technology theories. The research model employed in this study is based on the Unified Theory of Acceptance and Use of Technology (UTAUT). The study will be undertaken via quantitative method by distributing questionnaires to target respondents. The intended method of data analysis describes the objectives to be included later, including a variable analysis followed by the intended quantitative analysis. Finally, the expected outcome of this study is to identify the possible issues which occur when implementing e-government in a local law environment.

Keywords: E-government, government to employee, UTAUT, Developing Countries.

A SOCIAL – AND KNOWLEDGE-BASED COALITION FORMATION USING ONTOLOGY AND SOCIAL NETWORKS

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Abstract

Coalition formation is an approach driven to achieve optimal groups to perform certain specified tasks. Coalition formation is often treated as a one-off process thus the successful coalitions and its knowledge are not stored or reused. Furthermore, human-based coalition formation mainly focus on individual capability related to the task, overlooking the social aspects. The objective of this paper is to discuss the Social- and Knowledge-based Coalition Formation (SKCF) developed in social networks environment, combining selfish agent and cooperative agent approach. The social and coalition factors are adopted from existing works with a new factor introduced to fulfil the knowledge reusability. The knowledge repository is built using ontology in a social network setting to store and reuse the social and coalition factors which will be applied as multi-objective optimization in the coalition formation.

Keywords: Ontology, Knowledge Reuse, Coalition Factors, Social Factors, Social Networks.

E-HALAL RESTAURANT RECOMMENDER SYSTEM USING COLLABORATIVE FILTERING ALGORITHM

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Abstract

In this paper, a web-based recommender system is proposed for Muslim consumers to select their favourites Halal food restaurant based on user ratings. The user will rate several restaurants according to food, price, decoration and service which they have visited. The recommendation of the restaurants will be calculated using collaborative filtering technique. Collaborative filtering technique is one of many techniques used in recommendation system. İt has been applied in many applications. Collaborative filtering technique uses user's preferences and their neighbours to give recommendation. In the collaborative filtering, it uses K means clustering algorithm to calculate the similarity between users. Similar users will be clustered together and recommended the same restaurants. Finally, the application in the future could make Halal restaurants rising in demands and promote tourism in Melaka.

Keywords: Collaborative Filtering; K-means Clustering; Recommender System, Multi-criteria rating system

BABY'S HERE! : MOBILE ALERT SYSTEM USING ARDUINO AND GSM APPLICATION TO PREVENT BABY FATALITIES IN PARKED VEHICLE

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Abstract

Mobile Alert System using Arduino and GSM application is a system that helps to prevent the baby fatalities in the parked vehicle by alerting the caregivers about their oblivion child. The system is based on Arduino UNO, GSM, and sensors. The system consists of two sensors which are motion sensor and sound sensor. When the sensors detect any human movement or sound in a car, it will give an alert message and alert phone calls to caregivers. Besides, this project has also identified the best place to implement the sensors in a car. It is based on the analysis of different distances between the sensor and human movement and also the test of the different sound levels at the optimal distance.

Keywords: mobile alert system, Arduino, GSM, motion sensor, sound sensor.

CORRELATION BETWEEN MOTIVATIONAL ACHIEVEMENT AND L2 LEARNING STRATEGIES: A CASE STUDY OF GRADUATE EFL STUDENTS IN PAKISTAN

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Abstract

L2 learners use various strategies to get success through motivational achievement which is cognitive mediator variable between motivation and motivational behavior. It impacts learners' strategies use. This study reveals motivational impacts on strategy use in typical learning styles and impact of various levels of motivations on students. Findings of this study reveal that compensation and meta-cognitive strategies are used more frequently than cognitive and affective. Besides, three strategies "using multiple words", "involving in L2 speaking", and "listening native speakers are less in use. Relationship between motivation and strategy use leads to success and significantly correlated to other L2 learning strategies. Besides, motivational failure has negative impact without significantly correlated to other strategies and motivation and motive to get success have positive correlation.

Keywords: Motivation; Learning Strategies; Speakers; Achievement, Students; Graduate.

DEFFERENTIAL EVOLUTION ALGORITHM AS FEATURE SELECTION FOR BIOMARKER DISCOVERY

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Abstract

The advancement in mass spectrometry technique for proteomic studies has proliferated the discovery of biomarkers from quantitative proteomics pattern. High-throughput data for a given molecule can give rise to a series of inter-related and overlapping peaks in a mass spectrum. The spectrum suffers from high dimensionality data relative to small sample size. Feature selection techniques search parsimonious features through a learning model that exhibits the most accurate results. A computational technique that mimics survival and natural processing known as Differential Evolution (DE) integrated with linear SVM classifier was proposed for feature selection. The comparisons have been made with Particle Swarm Optimisation (PSO) and Ant Colony Optimisation (ACO) algorithms. The proposed feature selection of DE algorithm exhibited accuracy, sensitivity and specificity with 82.2, 80.0 and 84.0 percent on liver (HCC) datasets respectively and outperformed the PSO and ACO.

Keywords: Differential evolution; feature selection; biomarker discovery; classification; bio-inspired.

MOBILE CLOUD COMPUTING FOR M-LEARNING APPLICATION

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Abstract

Mobile cloud computing for M-learning application is the trend and has been introduced to overcome the crucial of mobile device storage, security and network performance issues. This paper presents the development of M-learning application integrated with cloud computing for Principles of Operating System course named OSMaster. It was developed specifically for the educational purposes and helps the learner in the learning process by using a mobile device as a teaching aid tool. The development of OSMaster application used System Development Life Cycle (SDLC) by implementing the waterfall model as the methodology. A user acceptance test and network performance test were conducted to determine the effectiveness of the features provided by OSMaster application. The results were shown that OSMaster application has a positive impact and to be well accepted by users, can assist, enhance and enrich the experience learning process of students.

Keywords: M-learning application, cloud computing, user acceptance test, network performance test.

INVESTIGATING ENGLISH LANGUAGE LEANERS' EXPERIENCE IN USING A LEARNING MANAGEMENT SYSTEM IN A BLENDED LEARNING SETTING

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Abstract

This study set out to learn more about the learners' feedback on their experience with the university's learning management system in their English Language learning. The objectives of this study were to investigate a) the learners' feedback on their blended learning experience during their language learning, b) the learners' experience in carrying out Grammar Practices and c) the learners' experience in carrying out Vocabulary Practices via an LMS. The study investigated 68 English Language learners of a public university in Malaysia attending Level 1 English proficiency course. A set of questionnaire containing 38 items using 4-points Likert-type scale was administered to measure their general blended learning experience as well as their LMS experience for their Grammar and Vocabulary learning. The study found that learners perceived their blended learning experience with LMS as well as their Grammar and Vocabulary learning experience via an LMS a positive experience. Learners also showed a favourable support for future application of LMS in the English Learning.

Keywords: Learning Management System, Blended Learning, English Language Learning

THE EFFECTS OF PERSONALIZED MULTIMEDIA APP ON KNOWLEDGE AND PERCEIVED AWARENESS OF CYBER-BULLYING AMONG ADOLESCENTS

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Abstract

The purpose of this study is to investigate the effects of a personalized multimedia app on the knowledge and perceived awareness of cyber-bullying among adolescents. A total of 240 students participated in this study and they were divided into two groups. The first group of students received Personalized Multimedia App (PMA) presentation treatment mode while the second group received Non-Personalized Multimedia App (NPMA) presentation treatment mode. The results of this study demonstrate that the performance of adolescents who used the PMA surpassed the performance of the adolescents who used NPMA significantly in knowledge and perceived awareness towards cyber-bullying. This study has shown that the adaptation of the Personalization Principle in the multimedia learning environment has yielded a positive impact in increasing the knowledge and perceived awareness towards cyber-bullying.

Keywords: Personalization Principle, Personalized Multimedia App, Cyber-bullying, Adolescents

PROPOSITION OF IM-DECRUD TOOL TO SUPPORT ENGINEERING TASKS FOR REQUIREMENTS AND DESIGN CROSSCUTTING CONCERNS

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Abstract

In order to elevate a simple but important fashion to tolerate rapid changes of crosscutting concerns at the requirements and design stages, of various sizes of software development and maintenance tasks, Identification, Modularization, Design Composition Rule and Conflict Dissolution (IM-DeCRuD) approach has been offered previously. This study offered a tailored-design, prototype and produced tool as a proof-of-concept of the proposed IM-DeCRuD approach. Main features of the identified IM-DeCRUD prototype are: requirements specification definition, requirements specification modification, requirements prioritization setting and graphics visualizing representation which were produced by using the Generic Modelling Environment (GME) case tool. Java language was applied as interpreter to incorporate the feature of the prototypes. To evaluate the pertinence of the IM-DeCRuD prototype, this study used the approach of a simple case study of a library system. As a result, during the software development and valuation activities, the prototype showed its power to simplify the tedious engineering process of requirements and design crosscutting concerns.

KEYWORDS: Identification, Modularization, Design Composition Rule and Conflict Dissolution (IM-DeCRuD); software design; Generic Modelling Environment (GME)

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