



**Sustainable
User Experience**

6th International Conference User Science and Engineering

13-15 SEPTEMBER 2021
VIRTUAL CONFERENCE

Organised by:



Co - organiser :



Collaborators :



PROGRAM BOOK

Message from the Conference General Chair i-USEr 2021



I would like to extend my warmest welcome to all authors and conference participants to the Sixth International Conference on User Science and Engineering 2021 (i-USEr 2021). Following the success of previous i-USEr conferences (i-USEr 2010, i-USEr 2011, i-USEr 2014, i-USEr 2016 and i-USEr 2018), we have embarked on an exhilarating journey to stage the Sixth i-USEr conference, together with National Taipei University of Technology (NTUT), International Islamic University Malaysia (IIUM) and Universiti Teknologi Malaysia (UTM).

This year's conference celebrates the growth of the HCI field that supports sustainable development goals (SDG). For example, digital design work and the Internet can leave a surprisingly large amount of carbon footprint, thus polluting our environment. Similarly, every site or service we produce does some level of harm to our users. Sustainability is one of the many aspects that we need to consider in order to make a successful and responsible IT product. Often enough, it is not considered at all. Just because our work is often intangible, it does not mean that it does not affect the environment, economy or society. Getting users or even the UX designers to opt in to sustainable choices can be tricky—after all, we are probably asking them to sacrifice some of their resources or convenience. In line with these global directions, i-USEr 2021 chose "Sustainable UX" as the theme for this conference, to look at user experience practice through the lens of sustainability whether it be a smart phone, mobile apps, websites, or simply everyday technology.

To address the current issues and challenges, we have brought in three renowned experts in the field; Professor Dr Janet C. Read from University of Central Lancashire, United Kingdom; Prof. Dr. Ko Chiu-Wu from National Taipei University of Technology, Taiwan and Assoc. Prof. Dr. Wan Fatimah Wan Ahmad from Universiti Teknologi Petronas, Malaysia as our keynote speakers to share their thoughts, foresight and experiences related to the conference theme, “Sustainable UX”. For the workshop sessions, we are proud to have Assoc. Prof. Dr. Harco Leslie Hendric Spits Warnars of BINUS Indonesia, Dr Eddy Chong Siong Choy of Emerald and Ts Haslinda Rasip of Dropee who will share their hands-on knowledge and experience as a means of putting “Sustainable UX” in a form of practice.

As usual, i-USer receives a good number of submissions. With a thorough double-blind review process, only 17 full-papers of high quality were selected for presentation at i-USer 2021 and invited for publication in Scopus journals. We hope that participants will greatly benefit from the knowledge sharing and form network from this conference.

We would also like to express our foremost gratitude to our partner organizer: NTUT and our collaborators: Emerald, IIUM and U T M who have helped us materialize this event as well as all individuals who not only have extended their support but also have given us their selfless and tireless effort to help make this event a success.

We look forward to meeting you again at i-USer 2023 and wish you a pleasant and enriching experience at i-USer 2021.

ASSOC. PROF. DR FARIZA HANIS ABDUL RAZAK
Conference General Chair of i-USer 2021

GENERAL SCHEDULE VIRTUAL CONFERENCE I-USER 2021 – DAY ONE



Program:	Workshop Day 1
Date:	Monday 13th September 2021
	9.00am – 11.00am – WORKSHOP 1
	Title: Towards Human-Centered AI Through Unstructured Data Text Representation Speaker: Assoc Prof Dr Harco Leslie Hendric Spits Warnars Moderator: Dr Bimlesh Wadhwa
	11.00am – 1.00pm – WORKSHOP 2
	Title: Increase your Chances of Acceptance? Understanding Peer Review for Researchers and Authors Speaker: Dr Eddy Siong Choy Chong Moderator: Dr Emma Nuraihan Mior Ibrahim
	2.00pm – 4.00pm – WORKSHOP 3
	Title: UX Design Workshop with Golden Circle and Business Model Canvas Speaker: Ts. Haslinda Rasip Moderator: Dr Nurulhuda Noordin

GENERAL SCHEDULE VIRTUAL CONFERENCE I-USER 2021 – DAY TWO & DAY THREE



Prof Dr Janet C Read



Prof Dr Ko-Chiu Wu



Assoc, Prof. Dr. Wan Fatimah Wan Ahmad

Program:	Conference Day 1
Date:	Tuesday 14th September 2021
	8.30am – 9.00am - Registration
	9.00am – 12.00pm – Parallel Sessions
	12.00pm – 2.00pm – Lunch Break
	2.00pm – 3.00pm – Virtual Exhibition

	3.00pm – 4.30pm – Opening Ceremony 3.00pm – 3.05pm: Doa Recital by Sir Ahmad Zambri 3.05pm – 3.10pm: Welcoming Speech by Dean FSKM, Prof Ts Dr Haryani Haron 3.10pm – 3.15pm: Officiating Speech by Vice Cancellor, Prof Dr Hajah Roziah Mohd Janor 3.15pm – 3.20pm: Montage Presentation 3.30pm – 4.30pm: Keynote Speech 1 Prof Dr Janet C Read, University of Central Lancashire, UK Considering Children's Technology: Lessons for Sustainable UX Moderator: Prof Dr Kevin Tseng, National Taipei University of Technology 4.30pm: i-USEr 2021 adjourns
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Program:	Conference Day 2
Date:	Wednesday 15th September 2021
	8.30am – 9.00am - Registration
	9.00am – 10.30am – Parallel Sessions
	10.45am – 11.45am – Keynote Speech 2 Prof Dr Ko-Chiu Wu, National Taipei University of Technology, Taiwan <i>Children Play in Smart UX Library</i> Moderator: Assoc. Prof. Dr. Masitah Ghazali, Universiti Teknologi Malaysia
	11.50am – 12.50pm – Keynote Speech 3 Assoc. Prof. Dr. Wan Fatimah Wan Ahmad, Universiti Teknologi Petronas, Malaysia

	<i>User Experience: What Has Been Done and What Future Holds</i> Moderator: Assoc. Prof. Dr. Murni Mahmud, International Islamic University Malaysia
	12.50pm – 2.30pm – Lunch Break
	2.30pm – 4.30pm – Doctoral Consortium Moderator : Dr Nor Hayati Abdul Hamid, Universiti Teknologi MARA Panel of evaluators: Prof Dr Janet C Read Prof Dr Ko-Chiu Wu Assoc Prof Dr Wan Fatimah Wan Ahmad
	4.30pm – 4.35pm – Closing Ceremony by i-USEr 2021 General Chair

DETAIL SCHEDULE OF PARALLEL SESSIONS @ I-USER 2021

DAY 2 Tuesday 14 th September 2021		
TIME	SESSION 1	SESSION 2
	Track: Design for Sustainability Chair: Muzaffar Hamzah	Track: Human-Centered Computing Chair: Ahmad Affandi Supli
9:15 am	Paper ID:19 A guideline for designing mobile applications for children with autism within religious boundaries <i>Ajrun Azhim Zamry and Muhammad Haziq Lim Abdullah</i>	Paper ID: 12 User Study on Undergraduate Medical Student Interacting with Mobile Augmented Reality: With/Without Virtual Tutor <i>Nur Athirah Hassan Basri, Rahmita Wirza O.K Rahmat, Hizmawati Madzin and Rafidah Hod</i>
9:45 am	Paper ID: 17 Dyslexia-friendly Design Features for Tangible User Interfaces: A Systematic Literature Review <i>Nurul Izzah Abdul Aziz, Husniza Husni and Nor Laily Hashim</i>	Paper ID: 22 MYbody: Augmented Reality Mobile App for Understanding Body Boundaries <i>Nurul Syakila Abdul Rashid, Zan Azma Nasruddin, Nor Hapiza Mohd Ariffin and Nor Hayati Abdul Hamid</i>
10:15 am	Paper ID:26 ‘Add to Cart’ Button Design Conventions on e-Commerce Websites <i>Rozianawaty Osman and Faustina Hwang</i>	Paper ID: 7 Interactive 3D Constructive Play in Ocean World Using Leap Motion Controller <i>Yichan Chen and Ahmad Affandi Supli</i>
10:45 am	Paper ID:16 Visualizing MOOC Learner Support Monitoring: A Design Study <i>Mohammad Fadhli Asli, Muzaffar Hamzah and Ag Asri Ag Ibrahim</i>	Paper ID: 6 A Systematic Literature Review on the Motivation Factors of Holographic Gesture-Based Game in Construction Play (HGBGCP) <i>Ahmad Affandi Supli, Siti Nurliana Jamali and Yu Ping Heng</i>

DETAIL SCHEDULE OF PARALLEL SESSIONS @ I-USER 2021

DAY 3 Wednesday, 15th September 2021		
TIME	SESSION 3	SESSION 4
	Track: User Experience & Usability Chair: Suzana Zambri	Track: Technology and Adoption Chair: Anitawati Mohd Lokman
9:00 am	Paper ID: 2 Identification of User Experience (UX) Dimensions on a E-procurement System <i>Norhanisha Yusof, Nor Laily Hashim, Azham Hussain and Marhaiza Ibrahim</i>	Paper ID:14 Teleworking in Public Service: A Selangor Perspective <i>Nurulhuda Ma'Arof, Kamalia Azma Kamaruddin and Nor Shahida Mohamad Yusop</i>
9:20 am	Paper ID: 5 Experiencing flow of martial arts exergame forming with calligraphy strokes <i>Kuan Chu Su, Ko Chiu Wu, Wan Siang Lim and Saiau Yu Tsau</i>	Paper ID:21 A Discussion on the Typology of Seniorpreneurs and Suggested ICTs <i>Marlina Muhamad, Fariza Hanis Abdul Razak and Haryani Haron</i>
9:40 am	Paper ID:28 Heuristic Evaluation of E-commerce Marketplace <i>Maslina Abdul Aziz, Muhammad Hafizul Hafiz Muhammad Sani, Suzana Zambri, Hanif Baharin and Nur Idran Jiman</i>	Paper ID:11 Social Media Visual Framing towards Political Participation: An Analysis on the Facebook Account of BERSIH 2.0 <i>Mohd Firdauz Mohd Fathir, Anitawati Mohd Lokman and Ismail Sualman</i>
10.00 am	Paper ID:20 STEM Mobile Learning: Exploring Usability Factors in Malaysian Universities <i>Shamsul Arrieya Ariffin, Maizatul H.M. Yatim, Abu Bakar Ibrahim, Faiz Daud, Syamsul Bahrin Zaibon and Muhamad Hariz</i>	Paper ID:25 The Gender Classification of Tilapia Fish Using Image Processing Technique– a proof of concept <i>Nor Azlan Othman, Nor Salwa Damanhuri, Muhammad Dzain Aiman Muhamad Zainudin, Ahmad Asri Abd Samat and Belinda Chiew Meng Chong</i>

PAPER ABSTRACT

PARALLEL SESSION 1

Tuesday, 14th September 2021

Paper ID:19

A guideline for designing mobile applications for children with autism within religious boundaries

Ajrun Azhim Zamry and Muhammad Haziq Lim Abdullah

Various technologies have been developed to help children with autism, especially in the field of education. Mobile application has become the main platform for children with autism to enhance their daily learning. Researchers are racing to develop their applications but not many applications are able to meet the needs and requirements of children with autism, especially in the religious context. This is due to the lack of religious mobile application guidelines which can be used as a reference for researchers. This paper will propose a guideline to design a mobile application for children with autism in religious context. The main objective of this research is to identify an existing mobile application guideline that is currently used to design mobile application for autistic children. A systematic review of previous literature on mobile application guideline for autism and religious mobile application guideline was conducted. This study resulted in two key findings: (1) elements of multimedia consist of text, images and sounds. (2) features of application consist of interface, navigation, customization and interaction. These two categories were commonly mentioned by previous authors. This paper is expected to propose a guideline that can be used by future researchers who are interested to study religious mobile application for children with autism.

Paper ID: 17

Dyslexia-friendly Design Features for Tangible User Interfaces: A Systematic Literature Review

Nurul Izzah Abdul Aziz, Husniza Husni and Nor Laily Hashim

The aim of this paper is to explore, analyze, and summarize the potential tangible user interface design features for dyslexics learning to read and spell.

This study adopts a systematic literature review method through a manual search of published papers from 2011. This systematic literature review consists of three main phases starting with planning the review, conducting the review, and studying the selection and reporting the results. As the result, ten papers were found that are considered most applicable as they met the review criteria. Based on the ten papers, eleven design features are found in the current TUIs design features implemented in the tangible system dedicated for dyslexia and reading. The eleven design features are viewed to be fundamental and useful for the groundwork towards designing and developing a comprehensive TUIs design specifically and exclusively meant for dyslexic children learning to read and spell. A critical reading of past literature relating to the tangible user interfaces concept reveals that this concept still appears to be under-explored even though it was introduced two decades ago. This systematic literature review highlights directions for future research, involving the dyslexic children early in the design process towards the evaluation of the prototype and finally examining the outcome of TUIs on children's learning.

Paper ID:26

'Add to Cart' Button Design Conventions on e-Commerce Websites

Rozianawaty Osman and Faustina Hwang

Online shopping is an important, and sometimes only, alternative to traditional in-store shopping for many people including older adults. For example, people who struggle with some of the constraints of traditional 'physical' shopping (e.g. the need to carry heavy bags) may find online shopping to be a good alternative. However, it has often been reported that older adults experience disorientation in web navigation, which can further lead to the abandonment of technology. In e-commerce, ease of navigation is crucial in supporting users to make purchases. In particular, this study focuses on the design of the 'add to cart' buttons, since their use constitutes a crucial step in e-commerce that users must complete in order to make a purchase. In this study, a review of 51 e-commerce websites was conducted to evaluate the design conventions of their 'add to cart' buttons against principles and guidelines for designing for older users. Visibility, readability, understandability and navigability were the criteria covered in the evaluation. While the websites were found to adhere generally to the principles and guidelines, areas for improvement were also identified, relating to the use of colours, focus indicators, contrast ratios and fonts. These results could inform web designers, developers and retailers in how to design websites are easier for older adults to use.

Paper ID:16

Visualizing MOOC Learner Support Monitoring: A Design Study

Mohammad Fadhli Asli, Muzaffar Hamzah and Ag Asri Ag Ibrahim

Pre-set analytics visualization usability is restricted by preconfigured analysis mode and display when involving large MOOC data and with limited facilitation for instructors. Therefore, this study aims to enable visual analysis on MOOC learner support monitoring for instructors using user-centered approach. We adopted design study methodology to develop MOOC Support, a user-centered visual analytics design that enables instructors to perform

visual analysis on MOOC learner support monitoring. We carried out domain problem characterization to identify key requirements and developed the design using systematic design consideration on visualization features. We evaluated the design in a user study that consists of think-aloud observation and domain expert interviews. Findings - The evaluation results demonstrated the usefulness and effectiveness of MOOC Support in facilitating instructor's visual analysis. Several insights on design experiences were also discovered like visualization oversimplification effect and different novice cognitive behavior. This study designed a user-driven visualization with great consideration on simplicity, usability, and learnability for novice visualization users. The design is capable in channeling temporal, categorical, and statistical information from MOOC data by maximizing leverage on the use of elementary aesthetic properties of visual objects. Visualization designer can leverage our design and reported design experiences to support MOOC instructors in learner support monitoring.

PARALLEL SESSION 2

Tuesday, 14th September 2021

Paper ID: 12

User Study on Undergraduate Medical Student Interacting with Mobile Augmented Reality: With/Without Virtual Tutor

Nur Athirah Hassan Basri, Rahmita Wirza O.K Rahmat, Hizmawati Madzin and Rafidah Hod

Mobile Augmented Reality (MAR) is another exciting educational advancement with vast capabilities that enables new educational strategies, especially in the field of medicine. The concept of MAR can benefit learning activities in various ways, including allowing faster access to information in the mobile platform, increasing student motivation, making the learning process easier and more efficient, and assisting students in better understanding concepts. However, several things need to be considered: interface design, the usefulness of the Augmented Reality (AR), technical problems with the use of AR applications, and teacher training on the use of AR applications. Without a well-designed interface and guidance for the students, AR technology can be too complicated for them to use, especially for those who are not very familiar with this kind of technology. An interface should be easy to remember and learn by the user on how to use the application. In this study, we present a virtual tutor in the tutorial section, named Otus, which assists the students on how to use a MAR application named as BARA (Brain Anatomy Revision Application). Our goal is to establish a smooth interface flow in MAR application in education with a virtual tutor. Adding a virtual tutor enables students to improve their understanding of how to use the application by themselves without any difficulties. To validate the effectiveness of the Otus, we conducted an experiment that compares two groups: one with the Otus in the tutorial and another one without

any tutorial. Through the investigation and observation, we concluded that the group which was using BARA with Otus tutorial managed to experience step by step the AR and take more time compared to another group.

Paper ID: 22

MYbody: Augmented Reality Mobile App for Understanding Body Boundaries

Nurul Syakila Abdul Rashid, Zan Azma Nasruddin, Nor Hapiza Mohd Ariffin and Nor Hayati Abdul Hamid

Child abuse is known to be one of the major epidemics in our society, this issue has driven the attention of modern society. Therefore, it is essential to educate children about the context of body boundaries at early age. This project proposed to use Augmented Reality (AR) as the advanced technology in developing an AR storybook mobile apps. The view of the physical book is enhanced using virtual objects that are projected over a display device. AR mobile app applied the Mobile App Development Lifecycle (MADLC) methodology throughout the development process. The AR technique used is marker-based where the user will track the marker provided in order to activate the AR storybook. The expected outcome from this project is to help in creating an awareness to parents and children about child sexual abuse. Teachers can use MYbody AR mobile apps during the class session to teach children about the body boundaries topic. The future work for MYbody AR mobile apps is to add more scenes as examples and do a collaboration with the ministry of woman, family and community development on producing a better content.

Paper ID: 7

Interactive 3D Constructive Play in Ocean World Using Leap Motion Controller

YICHAN CHEN AND AHMAD AFFANDI SUPLI

Constructive play is generally defined as build with play materials that children used. Constructive play in the virtual world on the computer can also fulfill the manipulation, construction, and motion of objects in space. Computer games can simulate the construction play in a vivid way and even provide more fun and innovative factors. The computer game can support the constructive play in a way of protecting the time it takes, encouraging children to design before they construct, and encouraging risk taking. However, most of the games about construction play ignored the motor skill exercise but focus on the constructed result. In this study, the authors develop an interactive 3D constructive play in ocean world game with the inclusion of engagement taxonomy. This developed game enables the player using their bare hands to do the construction play using leap motion controller. Last but not least, this study also conducted evaluation towards 12 preschool kids using survey questionnaire on their motivation. Overall, the result displays quite impressive mean, which is 3.94 out of 5 Likert scale. This indicates that kids are motivated to play interactive 3D constructive play in ocean world using leap motion.

Paper ID: 6

A Systematic Literature Review on the Motivation Factors of Holographic Gesture-Based Game in Construction Play (HGBGCP)

Ahmad Affandi Supli, Siti Nurliana Jamali and Yu Ping Heng

Some studies have discussed and reported gestures-based game fields in various applications, such as motoric learning, health therapy, music game, storytelling game, adventure game, etc. Additionally, some factors, such as effectiveness, usability, user experience, etc. have been elaborated in them across the literature study. However, based on the best of the researchers' knowledge through systematic review analysis, there is still very limited study focusing on the use of gestures-based games on construction play and its motivational factors. Meanwhile, some studies advocated that construction play has significant benefits for kids in their development of cognitive learning, creativity, motor skill, social communication, problem-solving, etc. Therefore, this study proposes the holographic gesture-based game in construction play (HGBGCP) that focuses on its motivational factor. This is due to motivation is an imperative factor to maintain the long-term period of kids to keep them motivated and engaged in the system. Therefore, the significance of this study is to provide motivational factors as design guidelines for researchers, game developers and designers who want to develop the HGBGCP system. To achieve the objective of the study, this study uses a systematic literature review (SLR) methodology to extract the appropriate motivational factors and their characteristics. There are 32 selected papers reviewed. As a result, five categories of motivational factors are identified in this study, namely interaction, game mechanics, experiences, presentation, and game genre. At last, the content analysis is also conducted to comprehensively elaborate on each motivational factor and its characteristics.

PARALLEL SESSION 3

Wednesday, 15th September 2021

Paper ID: 2

Identification of User Experience (UX) Dimensions on a E-procurement System

Norhanisha Yusof, Nor Laily Hashim, Azham Hussain and Marhaiza Ibrahim

The use of e-procurement is needed for business transactions, especially regarding procurement activities. However, system users always demand, and they expect to use the system without any problems. Existing studies on e-procurement do not focus on user experience (UX) and there are only few studies that have identified dimensions for UX evaluation, but they are for e-government online services and construction. These dimensions must be customized for e-procurement and their attention is not on the systems perspectives. Identifying the UX dimensions for e-procurement is important for measuring user experiences in order to provide better services. Therefore, this study attempted to investigate and identify the dimensions of users' experience with e-procurement. The method used for selecting articles is adopted from the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA). The study analyzed the data using thematic analysis which is based on the Systems and software Quality Requirements and Evaluation (SQuaRE) standards, such as ISO 25022:2016 and ISO 25023:2016 as guidance. The findings show the most used UX dimensions in the e-procurement literature, such as satisfaction, security, and efficiency. Other UX related dimensions identified from the review are usability, compatibility, reliability, effectiveness, performance efficiency, attractiveness, and transparency. The study is to identify the UX dimensions for e-procurement from literature studies by organizing them using ISO standards. This study could serve as a guideline to designers, developers, and researchers to develop an e-procurement system by referring to the proposed UX dimensions in order to produce a positive experience for users.

Paper ID: 5

Experiencing flow of martial arts exergame forming with calligraphy strokes

Kuan Chu Su, Ko Chiu Wu, Wan Siang Lim and Saiau Yu Tsau

Calligraphy spreads the sustainable legacy of culture in various expressions. Writing calligraphy is a practice of using the power of the body to write and achieve a sense of immersion and concentration. However, such a culture and art will face a new challenge and careful thinking. While integrating the qi with the practices of the yin-yang, the calligraphy kinesthesia can release the energy through the way that wushu or kungfu directs the qi to pass through the entire body. Focusing on the calligraphy strokes corresponding to the interactively immersive experience of the martial arts and wushu exercise of techniques, this research used the Kinect™ game development to attract all age groups' attention and stimulate their interests and willingness of wushu technique training. Two research methods for 30 people who divided into three groups of teenagers, adulthood, and midlife. After experiencing the Kinect™ wushu-technique game, the post experience questionnaire survey, and interview were adopted in this research. Results of the survey and interview indicated that the interactive process of the Kinect™ wushu-technique game stimulated the participants' willingness and motivation and further threw themselves into the kungfu. Moreover, while experiencing the wushu-technique game, the participants not just had the exercise flow experience but also made their attention more focused. Through this process of training, people do exercise and use new media to learn martial arts and calligraphy. It will be more entertaining when multiplayer mode is developed. We discuss the results and their practical implications and make suggestions for future research. In the future, this research will be capable to apply the preventive healthcare of elders, remote social events, or the subsequent development of cultural legacy.

Paper ID:28

Heuristic Evaluation of E-commerce Marketplace

Maslina Abdul Aziz, Muhammad Hafizul Hafiz Muhammad Sani, Suzana Zambri, Hanif Baharin and Nur Idlan Jiman

This paper adapts one of the most popular heuristic evaluation techniques to effectively assess the design of an e-commerce marketplace. Heuristic Evaluation for e-commerce marketplace with a detailed explanation is presented as a guideline for e-commerce marketplace. This research involved usability evaluation that analyzes e-commerce marketplace using a set of design characteristics (usability heuristics). The process of discovering usability problems is one of the three objectives of this project. The selected set of heuristics could significantly influence the results (usability findings) of performed heuristic evaluations. Based on the evaluators' evaluation, a set of heuristics were produced. This will be used as a guideline to be applied to the design on the e-commerce marketplace called University Textbook Marketplace (UniText). The result from this research presents the heuristic evaluation for e-commerce marketplace guidelines to perform a cost-effective usability evaluation of e-commerce marketplace applications. Therefore, improving website design that is both pleasurable and meets the user's and customer's needs.

Paper ID:20

STEM Mobile Learning: Exploring Usability Factors in Malaysian Universities

Shamsul Arrieya Ariffin, Maizatul H.M. Yatim, Abu Bakar Ibrahim, Faiz Daud, Syamsul Bahrin Zaibon and Muhamad Hariz

The purpose of this study is to investigate the insights of the human-computer interaction (HCI) and local cultural elements in Science, Technology, Engineering and Mathematics (STEM) in order to improve mobile education usability. This study was an explorative, largely qualitative study in which the participants were interviewed in focus group discussions from ten public universities in Malaysia. The student-participants found the usability of the mobile application design plays a significant role in learning STEM. Their insights indicate the importance of smartphones with mobile learning purposes that are generally usable and culturally relevant. The research is limited to ten universities on the west coast of Malaysia; participation of more universities may lead to different users perspectives. Understanding to what extent the effects of users experiences using mobile devices for mobile learning purposes are significant for future adoption, development and implementation in learning STEM. Implementation of mobile learning applications in STEM should consider the usability factors, including cultural elements in the design. In addition, the software developer can use these factors in developing mobile applications for STEM for the local context. This study presents students' experiences in STEM mobile learning associated subjects pertaining to usability factors from the west coast of Peninsular Malaysia. It shows the significance of the factors in order to improve learning experiences for the local context.

PARALLEL SESSION 4

Wednesday, 15th September 2021

Paper ID:14

Teleworking in Public Service: A Selangor Perspective

Nurulhuda Ma'Arof, Kamalia Azma Kamaruddin and Nor Shahida Mohamad Yusop

Telework, an arrangement of job using ICT with flexible job locations have been associated with its conflicts as an employment approach that leads to the refusal of its implementation especially in public sector. Despite increasing efficiency in individual and organizational aspect, there are still uncertainty in the public organization to accept teleworking. Hence, understanding of factors influencing perception and attitude towards teleworking among public officials that could lead or hinder the acceptance of telework approach is critical for a successful teleworking adoption by the public organization in the future. In the absence of study on telework in public sector, this study clarifies the intention of public officials particularly in Selangor to behave whether in favour of or against towards an introduction of teleworking approach by evaluating the factors associated with their intention to telework. Using the existing research model namely Decomposed Theory of Planned Behaviour (DTPB), its main elements which consists of attitude, subjective norms and perceived behavioural control was quantitatively validated through online questionnaire. This study revealed that all three (3) factors in DTPB had positive significant association on Selangor public officials' intention to telework. Other than setting the basis for public service preparedness and adaptation towards new employment approach, this study contributes to policy and research practice by providing new insights into the public officials' adoption of telework in public sector.

Paper ID:21

A Discussion on the Typology of Seniorpreneurs and Suggested ICTs

Marlina Muhamad, Fariza Hanis Abdul Razak and Haryani Haron

Senior entrepreneurship has recently gained an attention in several disciplines such as business studies, economy, sociology and another rising field of study is information and communication technology (ICT). Widely accepted termed as seniorpreneurship, is an underexplored however offers an important area of study due to the increment in ageing population worldwide. This study, first has examined the motivation to become a seniorpreneur, and later reflecting on the typology or also known as categories or types of seniorpreneurs as identified in the literature known as constrained, rational, and reluctant. The existing typology of seniorpreneurs is largely drawn from push and pull motivation to start a business after retirement age. However, the findings from the seniorpreneurs interviewed, marked that apart from push and pull motivation, spiritual motivation emerged as another important motivation in doing seniorpreneurship. Thus, the objective of this study is to discuss the additional typology of seniorpreneurs based from spiritual motivation. The findings further disclose the actual ICTs deployed by seniorpreneurs to enhance their business efficiency and sustainability.

Paper ID:11

Social Media Visual Framing towards Political Participation: An Analysis on the Facebook Account of BERSIH 2.0

Mohd Firdauz Mohd Fathir, Anitawati Mohd Lokman and Ismail Sualman

The political atmosphere in Malaysia had witnessed a growing trend of the use of social media to gain support. This is evident in the recent phenomenal record usage of social media platforms as tools to spread political ideology as well as affecting emotions to garner mass support. This article reports a research conducted to examine the visual framing using one of the largest political social movements in Malaysia, the BERSIH movement, as a case study within a social media setting. Building on the existing work on visual framing, it asks: How were issues visually portrayed on the BERSIH social media account during the peak of the movement? Adapting on the level of visual framing by past literature, a content analysis was done to a sample of 59 (N=59) top liked photos posted on the Bersih 2.0 Official Facebook account which received more than 0.5% engagement rate (ER= >0.5%). The findings showed that at the denotative level, the main forms of visuals used were photos of protesters, followed by posters and photos of important individuals. The findings also showed that at the connotative level, the main frame highlighted was 'solidarity' followed by 'call for action' in the form of direct and symbolic visual. The findings provide a new knowledge to the understanding of the use of visual framing within social media interaction. The knowledge could be used as a reference to social leaders and organizations who wishes to develop a sustainable strategy for stimulating engagement effectively through visuals.

Paper ID:25

The Gender Classification of Tilapia Fish Using Image Processing Technique– a proof of concept

Nor Azlan Othman, Nor Salwa Damanhuri, Muhammad Dzain Aiman Muhamad Zainudin, Ahmad Asri Abd Samat and Belinda Chiew Meng Chong

Malaysian aquaculture is a growing industry that contributes to a steady supply of fish and other aquatic resources. The tilapia fish is one of Malaysia's main contributors to marine resources. Black and red tilapia are the main species of tilapia for Malaysian aquaculture products. The red hybrid tilapia is the target species in this research because of its appealing appearance, good taste, and customer preference. Critically, the fish hatchery plays an important role in ensuring that the market for red tilapia seeds is adequately supplied. A mating process is one of the most important phases in the production of fish seeds. To ensure that the mating process goes smoothly, the gender of the fish must firstly be determined. Most aquaculture industries currently perform gender detection processes for tilapia through manual process. The skilled operator would keep the fish in his hands and use his eyes to decide the gender of the fish. This approach is not only time and labour intensive, but it also has the potential to harm the fish's health during the handling process. Hence, the aim of this research is to develop an automated system in determining the gender of the tilapia fish using an image processing technique. Image enhancement, thresholding, segmentation, morphological, and feature extraction will be utilized for this research. More succinctly, results show that this system can determine the gender of the fish with high accuracy. The output of these findings has shown a significant impact towards gender detection process and aquaculture industries.

COMMITTEE

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