CONFERENCE PROGRAM

2018 7th International Conference on Software and Computing Technologies

(ICSCT 2018)

2018 International Conference on Control, Robotics and Informatics

(ICCRI 2018)

April 7-9, 2018

Kuala Lumpur, Malaysia

Co-organized and Sponsored by

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Welcome Message from Organizing Committee

It is our great pleasure to invite you to join our international conferences - 2018 7th International Conference on Software and Computing Technologies (ICSCT 2018) & 2018 International Conference on Control, Robotics and Informatics 2018 International Conference on Control, Robotics and Informatics (ICCRI 2018). This event will provide a unique opportunity for editors and authors to get together and share their latest research findings and results. We look forward to welcoming you in Kuala Lumpur, Malaysia.

We're confident that over the two days you'll get the theoretical grounding, practical knowledge, and personal contacts that will help you build long-term, profitable and sustainable communication among researchers and practitioners working in a wide variety of scientific areas with a common interest in Software and Computing Technologies and Control, Robotics and Informatics.

On behalf of all the conference committees, I would like to thank all the authors as well as the technical program committee members and reviewers. Their high competence, their enthusiasm, their time and expertise knowledge, enabled us to prepare the high-quality final program and helped to make the conference become a successful event.

I truly hope you'll enjoy the conference and get what you expect from the conference.

Organizing Committee
March 22, 2018

Conference Location and Directions

Hotel Royal Kuala Lumpur

Add: Jalan Walter Grenier, 55100 Kuala Lumpur, Malaysia
Tel: (603) 2148 6888 | Fax: (603) 2142 5359
http://www.hotelroyalkl.com/index.html

Transportation Suggestion

1. Take the Airport Taxi to Hotel Royal Kuala Lumpur
2. Take the Airport Coach KLIA / KLIA 2 to KL Sentral, then you have two option:
a. Take monorail from KL Sentral Monorail Station to Bukit Bintang Monorail Station (1 minute's walk to hotel)
b. Take MRT from Museum Negara MRT Station to Bukit Bintang MRT Station (3 minutes' walk to hotel)

Instructions for Oral & Poster Presentations

Oral Presentations

- **Time:** a maximum of 15 minutes in total, including speaking time and discussion. Please make sure your presentation is well timed. Please keep in mind that the program is full and that the speaker after you would like their allocated time available to them.

- You can use CD or USB flash drive (memory stick), make sure you scanned viruses in your own computer. Each speaker is required to meet her / his session chair in the corresponding session rooms 10 minutes before the session starts and copy the slide file (PPT or PDF) to the computer.

- It is suggested that you email a copy of your presentation to your personal in box as a backup. If for some reason the files can't be accessed from your flash drive, you will be able to download them to the computer from your email.

- Please note that each session room will be equipped with a LCD projector, screen, point device, microphone, and a laptop with general presentation software such as Microsoft Power Point and Adobe Reader. Please make sure that your files are compatible and readable with our operation system by using commonly used fronts and symbols. If you plan to use your own computer, please try the connection and make sure it works before your presentation.

- Movies: If your Power Point files contain movies please make sure that they are well formatted and connected to the main files.

Poster Presentations

- Maximum poster size is 36 inches wide by 48 inches high (3ft.x4ft.)

- Posters are required to be condensed and attractive. The characters should be large enough so that they are visible from 1 meter apart.

- Please note that during your poster session, the author should stay by your poster paper to explain and discuss your paper with visiting delegates.

Dress Code

- Please wear formal clothes or national characteristics of clothing.

Program at a Glance

April 7, 2018 (10:00am-5:00pm)		
10:00am-5:00pm	**Arrival and Registration**	Lobby
April 8, 2018 (9:30am-6:00pm)		
9:30am-9:40am	**Opening Remarks:** Prof. Sim Kok Swee, The Multimedia University, Malaysia	Orchid Room
9:40am-10:20am	**Keynote Speech I:** Prof. Rajender Singh Chhillar, Maharshi Dayanand University, Rohtak, India	
10:20am-10:40am	**Coffee Break & Group Photo(Orchid Hall)**	
10:40am-11:20am	**Plenary Speech:** Assoc. Prof. Jing Xingjian, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong	
11:20am-12:00am	**Keynote Speech II:** Prof. Sim Kok Swee, The Multimedia University, Malaysia	
12:00am-1:30pm	**Lunch**	Makan Makan Restaurant
1:30pm-3:30pm	**Session One: Computer Science and Information Technology**	Orchid 1
	Session Two: Image Processing and Communication Engineering	Orchid 2
3:30pm-4:00pm	**Coffee Break**	Orchid Hall
4:00pm-6:00pm	**Session Three: Mechanical Design and System Control**	Orchid 1
	Session Four: Software Theory and Security	Orchid 2
6:00pm-8:00pm	**Dinner**	Makan Makan Restaurant
April 9, 2018 (8:30am-2:00pm)		
8:30am-2:00pm	**One-Day Tour**	

Tips: Please arrive at the conference room around 10 minutes before the session begins to copy your PPT into the conference laptop.

Keynote Speaker

Prof. Sim Kok Swee
The Multimedia University, Malaysia

Professor Sim has won several international awards from the Academic Science Malaysia (ASM) as Top Research Scientists Malaysia (TRSM); Korean innovation and special Awards in 2013, 2014, 2015; the 2005, 2006 and 2011 World Conference in Applied Computing (USA); and 2008 IEEE conference at UK. For national level achievements, he won the Gold Medal Award in the Invention, Innovative & Technology Exhibition (ITEX) 2008, 2009, 2010, 2013, 2014; Bio Malaysia Award 2009, 2010; Malaysia Technology Expo 2011, AIK2011, AIK2012; Apicta Gold medal award 2014, 2015. He also awarded as MMU best staff in year 2009, 2010 and 2015. In 2016, he was given awards for the TM Kristal Award and two International Championships of World Summit on the Information Society (WSIS) Prizes in the category ICT applications: E-science during the event held in conjunction with WSIS 2016, Geneva, Switzerland. These awards were in the areas of biomedical Engineering (breast cancer detection and brain for early infarct detection). In 2017, he again received another WSIS 2017 International Championship Award on the Automated Pneumatic Glove Sample Stamping Machine for Colorimetric Test. Over all, he has won more than 80 awards which can be found in his website. He is currently working closely with various local and overseas institutions and hospitals such as Department of Electrical and Computer Engineering from National University of Singapore, Centre for Intelligent Systems Research at Deakin University (Australia), Department of Mathematic at Chinese University Hong Kong, Hong Kong University Science and Technology (HKUST), City Hong Kong University (CityU), Perkeso Rehabilitation, Malacca General Hospital, Hospital, Pantai Ayer Keroh and Putra Specialist Hospital.

He has heavily involved in various engineering council namely Institute of Engineer Malaysia (IEM) as Melaka State committee member, secretary, vice chairman, Multimedia University student chapter advisor, Institution of Engineering and Technology (IET) MMU student chapter. He is also the senior member of IEEE, Fellow member of IEM. As professional Engineer, he also registered as Chartered Engineer from IET, Professional Engineer from IEM, International

Professional Engineering from IEM and APEC, Asia Pacific Engineer (APEC) from both IEM and APEC, and also Asean Chartered Professional Engineer.

He also serves as fellowship for Malaysia Academic Science Malaysia, senior panel for Engineering Accreditation council and Malaysian Qualifications Agency (MQA) to visit universities to assess university programs. So far, Prof. Sim has filed eight patents and more than 70 copyrights. Prof Sim has brought in National and International funding respectively to support his researches.

Speech Title: Rehabilitation Using Virtual Reality Technology

Abstract: The objective of this Virtual Reality (VR) Rehabilitation System is to develop rehabilitation system using latest VR technology to replace the traditional physical therapy; deliver human machine interface with virtual reality; reduce the number of specialist required for supervising. The impact of this system is to focus on the 4 key areas which are developed by Telekom Malaysia (TM). They are health care, effectiveness; life made easier and "cool" culture.

In the field of health care, VR technology can be an alternative approach of rehabilitation engineering. It is a new approach to break through the traditional rehabilitation. In term of effectiveness, the system can increase efficiency, obtain more reliable data, and eventually reduce the effort of the health-care specialist. For the "Life made easier", VR technology is able to allow the rehabilitation exercise to be conducted at home. Lastly, "Cool" culture is aimed to remain ahead of the health care technology.

VR is the three-dimensional environment that generated by computer software which can be explored or interacted by people. It is expressed as a creation of three-dimensional computer graphics that allows an individual to feel the interactive realistic of the VR mentally and physically. The devices involved for virtual reality is an Android-based mobile phone and a cardboard likes VR headset. The software involved in developing the applications is known as Unity Software. Besides, this system involves the fusion of sensors with virtual reality in order to detect the movement of the user. The sensors are known as Microsoft Kinect and Leap Motion sensors. By interfacing the data from these sensors, the body movement of the user can be tracked and the program eventually updates the environment shown in the VR according to the movement.

Rehabilitation applications that developed based on VR based such as with 360 degree treadmill framework; application with VR and integration of leap motion; application with VR and integration of Microsoft Kinect; clinical rehabilitation system support are able to benefit the public in terms of health care by uplifting the user-convenience and efficiency.

Prof. Rajender Singh Chhillar
Maharshi Dayanand University, Rohtak, India

Professor (Dr.) Rajender Singh Chhillar is a professor at the Department of Computer Science, Maharshi Dayanand University, Rohtak, Haryana. He has been teaching in the fields of computer science and engineering since 1987 and is one of the founder members of the Department. He obtained his master's degree from Kurukshetra University, Kurukshetra and Ph.D in computer science from Maharshi Dayanand University, Rohtak, Haryana. He received his master of business administration (MBA) degree from Sikkim Manipal University. He has visited many countries including France, Hong Kong, China, U.K, Dubai and Nepal. He also won the best paper award in International Conference ICCEE- 2013 held in Paris, France during October 12-13, 2013 and also chaired a session in this conference. He has taught a wide variety of computer courses at University Teaching Departments including software engineering, data structures, data base management system, software testing and quality assurance, software quality management, programming languages, and software design. Professor Chhillar is a director of board, CMAI Asia Association, New Delhi and senior member of IACSIT, Singapore and a member of Computer Society of India. Professor Chhillar has been serving as an editorial board member, guest editor and a reviewer of multiple international journals, and serving as a program committee chair, keynote speaker and session chair of multiple international conferences. He also performs advisory work to Government agencies and academic bodies.

His research interests include software engineering, software testing, software metrics, web metrics, bio metrics, data warehouse and data mining, computer networking, and software design. He has published more than 100 journal and 65 conference papers over the last several years and has also written two books in the fields of software engineering and information technology.

Speech Title: An Optimized Testing Technique for Reduction of Test Cases Using Fusion of UML Diagrams and Genetic Algorithm

Abstract: The growing role and importance of software testing has led to design and development of new software testing techniques for all software development paradigms. Controlling and minimizing software complexity is the most important objective of each

software development paradigm because it affects all other software quality attributes like reusability, reliability, testability, maintainability etc. For this purpose, a number of software testing techniques have been designed to report different types of faults based on complexity.

In recent years, component-based software development (CBSD) has emerged an evolving paradigm where emphasis is to maximize reuse of code of existing components and effective designing of new components. As the development of component-based software is rising, more and more testing techniques are being developed for the same.

The keynote speech focuses on an optimized testing technique which reduces test cases for a software by using UML diagrams and genetic algorithm. Test data is generated by fusion of three UML diagrams namely, Activity diagram, sequence diagram and Use-Case diagram. Genetic algorithm is used to optimize and reduce the test cases/data. In this way, this technique generates optimized and better test data/cases based on wider coverage of software. By using this, we can improve the quality of a software and can use testing resources more effectively. Therefore, this technique helps in development of good quality software and may be very useful for software industry.

Plenary Speaker

Assoc. Prof. Jing Xingjian
The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong

Dr X. J. Jing received his degree from Zhejiang University, China, in 1998, and was then with the Robotics Laboratory, Shenyang Institute of Automation, Chinese Academy of Sciences until 2005, where he undertook research into motion-planning and stability analysis of mobile robots and tele-robotic systems, and obtained MPhil and PhD in intelligent systems / robotics in 2001 and 2005, respectively. He started his PhD program studying nonlinear systems and signal processing at the University of Sheffield in Oct 2005, supported by the EPSRC-Hutchison

Whampoa Dorothy Hodgkin Postgraduate Award. Before he joined in the Department of Mechanical Engineering, The Hong Kong Polytechnic University, as an assistant professor in Nov 2009, he was a research fellow with the Institute of Sound and Vibration Research, University of Southampton since Aug 2008, where he worked on modeling and signal processing of locust neuron systems funded by a BBSRC (UK) project. He was promoted to Associate Professor in 2015.

Dr. Jing currently serves as a Technical Editor of IEEE/ASME Transactions on Mechatronics, an Associate Editor of Mechanical Systems and Signal Processing, and editorial board members of several other open-access journals.

Speech Title: Frequency Domain Analysis and Design of Nonlinear Systems – a Parametric Characteristic Approach

Abstract: For nonlinear analysis and design in the frequency domain, a systematic parametric characteristic approach is developed. The method can present an explicit analytical structure and expression of the output spectrum of nonlinear systems with respect to model parameters of interest (both linear and/or nonlinear components), frequency variable, and excitation amplitude (which are referred to as characteristic parameters). To this aim, two important operators for abstracting parametric characteristics are defined, based on which there are explicit invertible mapping relationships from parameter characteristics to frequency response functions (GFRF or OFRF). Both analytical calculation and numerical methods are therefore established named as OFRF (output frequency response function) initially or nCOS (nonlinear characteristic output spectrum) method later, based on the parametric characteristics. This talk presents the recent advance of these results with applications.

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Oral Presentation Abstracts

Session 1： Computer Science and Information Technology

Venue: Orchid 1
Chair: Prof. Sim Kok Swee
The Multimedia University, Malaysia
Time: 1:30pm-3:30pm | April 8, 2018

Note:
* Session photo will be taken at the end of the session.
* Copy PPT/PDF on conference laptop 10 minutes earlier before each session starts.
* For the best presentation of each session, it's encouraged to award it to student author prior.
* The certification of Oral/Poster presentation, listeners, will be awarded at the end of each session.
* To show respect to other authors, especially to encourage the student authors, we strongly suggest you attend the whole session, and the scheduled time for presentations might be changed due to unexpected situations, please come as early as you could.

CT047 Time: 1:30pm-1:45pm	An Android-Based Useful Text Extraction Framework Using Image and Natural Language Processing **Rafsanjany Kushol,** Imamul Ahsan, Md. Nishat Raihan *Islamic University of Technology, Bangladesh*

Abstract: With the rapid advancement of the mobile technologies, we now use mobile applications in every aspect of our life. At present when we find some useful information from business cards, newspapers, books, flyers and so on we do not usually note them rather we capture the image using mobile devices. However, the texts obtained from these images need to be processed further to make our task unequivocal. In this paper, we present an android application framework that can process the texts obtained from an image to get contact information from business cards as well as event information from magazines, posters or flyers. Google Cloud Vision API is used to retrieve the text from the captured image and OpenNLP to extract useful information from the obtained text. The experimental results show that our application is effective and efficient in terms of accuracy as well as processing time.

RI2001 Time: 1:45pm-2:00pm	Development of High Data Capacity Color Code K. S. Sim, Z. Y. Lim and **F. F. Ting** *Faculty of Engineering and Technology, Multimedia University, Malaysia*

Abstract: This paper presents the implementation of high data capacity code by embedding multiple colors into the code. The main intention of this project is to implement a code that consists at least

double the data capacity as compared to the present Quick Response (QR) code. This paper explains the elements that consist in the proposed high data capacity code layout. The high data capacity code utilizes color multiplexing technique to represent data by using 8 kinds of colors. The colors involved are three primary colors, three secondary colors, black and white. Besides, the code is embedded with same error correction algorithm as QR code namely Reed Solomon Error Correction. In this project, a decoder application is developed on personal computer to decode the information from the camera-captured code. The results show that the developed decoder software is capable to perform decoding without any error within the captured range of 7 cm to 15 cm. Since the developed second prototype consist of similar number of module with QR Version 8, the performance is assessed to compare with QR Version 8. As outcome of this project, the developed high data capacity code is to achieve more than doubles the data capacity of QR code Version 8.

CT011 Time: 2:00pm-2:15pm	Semi-automatic Classification Based on ICD Code for Thai Text-Based Chief Complaint by Machine Learning Techniques **Jarunee Duangsuwan** and Pawin Saeku *Prince of Songkla University, Thailand*

Abstract: We proposed the methods to classify the text-based chief complaint in Thai language, our native language, into the symptom code based on ICD-10. Using Thai sign and symptom descriptions from ICD-10 document is the training data to build Thai text-based corpus in domain of sign and symptom. Then the corpus has been used for tokenization of Thai text-based chief complaint (ThCC) into a particular word by using the longest matching technique and our proposed technique named two-level tokenization technique. The tokens from two techniques are evaluated by five different classifiers including decision tree classifier, K-mean neighbours classifier, radius neighbours classifier, random forest classifier, and extremely randomized tree classifier. The experimental result shows 85% accuracy for assigning ICD-10 code to Thai text-based chief complaint by using our proposed technique with decision tree classifier.

CT061 Time: 2:15pm-2:30pm	Knowledge Representation of Social and Coalition Factors in Coalition Formation Using an Ontology Framework **Azleena Mohd Kassim,** Yu-N Cheah, and Bukhary Ikhwan Ismail *Universiti Sains Malaysia, Malaysia*

Abstract: Cooperative work from the computational aspects can be addressed in the area of coalition formation where it is driven to accomplish optimal groups to perform certain given tasks. For a human-centric coalition formation, recent works usually focus on individual capability related to the task, but the social aspects are often neglected. Besides, coalition formation is often applied or used as a one-off process whereby the formed coalitions and its knowledge are not stored or reused. Thus, the objective of this paper is to present a new framework for coalition formation known as the Social- and

Knowledge-based Coalition Formation (SKCF). The sub-objectives are: 1) to define coalition and social factors for a coalition formation model, 2) to build knowledge representation scheme to store knowledge from coalitions that are successfully formed. To achieve the objective, the social and coalition factors are compiled from existing related works to suit the objective of forming groups of people in a cooperative setting. The ontology is introduced as a knowledge repository where the representation schema of the ontology is developed to manage and reuse the social and coalition factors.

CT003 Time: 2:30pm-2:45pm	The Analysis of 2D Crowd Behavior Simulation during Emergency Situation **Hamizan Sharbini**, Nur Aisyah binti Masrizal, Cheah Wai Shiang, Chiu Po Chan, Tan Ping Ping, Noor Alamshah Bolhassan, Azlina Ahmadi Julaihi *Universiti Malaysia Sarawak, Malaysia*

Abstract: This paper will discuss about general crowd behaviour modeling during evacuation in emergency situation such as during fire breakout. Several existing simulation tools and comparison among each tool will also be discussed. The aim of this project is to develop a generic crowd model, which has the ability to demonstrate individual crowd behaviours (micro level) especially in fire emergency situation with one or more exits. The program will be able to estimate the evacuation time of panic situation during fire breakout. Apart from that, this paper also will analyze and prove that the invidual agent in the simulation is able to detect and avoid collision. During panic situation, agents need to search for the exit in order to save themselves from danger. The proposed crowd simulation used agent in 2D as to simulate the crowd behaviour model while steering towards the exit.

CT053 Time: 2:45pm-3:00pm	Feature Selection using Simulated Kalman Filter (SKF) for Prediction of Body Fat Percentage **Nurhawani Bt Ahmad Zamri,** Thangavel Bhuvaneswari, Nor Azlina Abd. Aziz, Nor Hidayati Abdul Aziz *Multimedia University, Malaysia*

Abstract: Simulated Kalman Filter (SKF) algorithm is a new population-based metaheuristic optimization algorithm. SKF is driven by the estimation capability of a well-known Kalman Filter. Since it is first introduced, it has been applied to various applications. Further studies also have been made to adapt SKF towards diverse area of optimization problems. Based on previous works, SKF algorithm has shown promising results. In this paper, SKF is proposed to do a feature selection for the prediction of body fat percentage. The prevalence of overweight and obesity has increased on a global scale. Thus, various methods have been introduced to evaluate obesity. SKF provides the ability to select features that resembles the percentage of body fat in an individual. The experimental results have shown that the proposed SKF feature selector is able to find the best combination of features and performs better than Particle Swarm Optimisation (PSO) which is a state of the art metaheuristic.

CT060 Time: 3:15pm-3:30pm	Is Gravitational Search Algorithm's Initial Gravitational Constant a Function Dependent Parameter? **Nor Azlina Binti Ab. Aziz,** Nor Hidayati Abdul Aziz, Zuwairie Ibrahim *Multimedia University, Malaysia*

Abstract: Gravitational search algorithm (GSA) has several parameters to be initialized. One of the parameter is the initial gravitational constant. In the original GSA is initialized to 100. Here, the robustness of this setting is evaluated using several test functions. The value of is varied between 10 to 100000. The results from the experiment are statistically compared. It is found that is a function dependent parameter and its original value is not a robust setting.

Session 2: Image Processing and Communication Engineering

Venue: Orchid 2
Chair: Prof. Rajender Singh Chhillar
Maharshi Dayanand University, Rohtak, India
Time: 1:30pm-3:30pm | April 8, 2018

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CT043 Time: 1:30pm-1:45pm	Usage and Perceptions of Mobile Devices and Applications among HE Instructors **Ahmed Al-Hunaiyyan,** Rana Alhajri *Public Authority of Applied Education and Training, Kuwait*

Abstract: Successful implementation of Information and Communication Technologies (ICT) requires an understanding of the role of technology on Higher Education (HE) institutions and on current teaching and learning practices. Recent innovations in mobile technology and social networking applications have made mobile devices more dynamic and pervasive promising more educational potential. Educators in HE Institutions must embrace and capitalize on the use of this technology to focus on integrated student services, and to enhance knowledge sharing activities in and off campus. This study investigated instructors' usage and perceptions of mobile devices, functions, native capabilities, and applications. A sample of 48 instructors was involved in this investigation at the college of Business Studies (CBS) in Kuwait. The aim of this study is to understand instructors' usage and perceptions of mobile capabilities and functions. The finding indicated instructors' frequent use of most of mobile functions and demonstrated that instructors would like to use mobile in their teaching practices. This will guide designers to identify critical success factors and help developers to effectively utilize mobile capabilities, functions, and applications in new learning strategies.

CT001 Time: 1:45pm-2:00pm	Semi-blind Channel Estimation of MIMO-OFDM Systems Based on Improved PSO-Hopfield neural Network **Hao Jie** *Northwest Minzu University, China*

Abstract: Channel estimation is the key part of the design of any receiver, this paper proposed a

semi-blind channel estimation method of MIMO-OFDM systems based on improved Hopfield neural network. First, the proposed method improved the semi-blind cost function for neural network based on LS criterion and LMMSE criterion. Then, this paper proposed a new structure of Hopfield network to substitute the function iteration, and the improved PSO algorithm was also used to optimize the parameter of Hopfield network. Finally, The new estimation method was proposed to estimate the channel response. The comparison of channel estimation by the proposed method and RBF network were present, the results validated that the proposed method is feasible to estimate the channel response, and that the precision of estimation is improved, which will be useful for the future channel estimation of MIMO-OFDM systems.

RI0012 Time: 2:00pm-2:15pm	Feature Selection for Automated Grading of Edible Birds Nest with ANFIS Mei Yuan Koay, Selina Xin Ci Loh, Kam Meng Goh, and **Weng Kin Lai** *Tunku Abdul Rahman University College, Malaysia*

Abstract: Edible bird nest (EBN) is an expensive animal bio-product produced by swiftlets which is beneficial to humans. The conventional way of grading the EBN is carried out manually by human experts. However this approach is time consuming, cost ineffective with inconsistencies occurring due to human fatigue. This paper proposes a method of using machine vision to automatically grade EBN with a novel set of features. Classification of the EBN has been with Adaptive Neuro Fuzzy Inference (ANFIS) and the results were compared with those obtained from the very popular k-Nearest Neighbour (kNN). An accuracy of nearly 90% is achieved on the datasets used with our proposed method.

CT029 Time: 2:15pm-2:30pm	Mobile Application for Recognizing Text in Degraded Document Images Using Optical Character Recognition with Adaptive Document Image Binarization Tom Kalvin B. Archival, **Kate V. Bongo,** Angie M. Ceniza *University of San Carlos, Philippines*

Abstract: Books and documents go through degradation overtime and post threats in the readability of the printed text. Degradations like stains can overlap with the text covering it or ink fading can cause the removal of the text altogether. Converting these texts into digital format can help preserve them. Optical Character Recognition (OCR) is used to transform them into digital text. And, with the increasing computing capability and digital imaging of today's smartphones. We can use them as a convenient tool to capture images of these document and do OCR directly. In this paper, we propose a mobile application that can recognize text in degraded document images using Tesseract as the OCR engine with Adaptive Document Image Binarization to improve the performance of the OCR engine in degraded documents images. The experimental results showed an average character accuracy of

93.17% and word accuracy of 85.82% across 8 degraded document images.

CT045 Time: 2:30pm-2:45pm	The Effects of JPEG2000 on Ear Recognition Doaa Khalaf, **Ibrahim Omara,** Ahmed Hagag, Shaohui Liu *Harbin Institute of Technology, China*

Abstract: Recently, JPEG2000 standard has played a vital role on biometric applications such as face and finger-print biometrics. Ear biometric system is observed as one of the efficient biometric trait. The ear is large and passive trait, making ear image acquisition more easily from a distance and can use in surveillance applications. Therefore, we study the impact of JPEG2000 on ear recognition performance which the ear image may transfer over low quality wireless channels. Local descriptors like POEM, LPQ, LBP, and BSIF are used to represent and extract ear image features. Then, JPEG2000 is exploited to compress the image of ear. Finally, support vector machine is adopted for ear recognition at various compression rates. To evaluate our study, the experimental results are conducted on two public ear databases; USTB and IIT Delhi databases. The results show the superior of LPQ descriptors till compression rate 0.4 bpp.

CT046 Time: 2:45pm-3:00pm	Learning LogDet Divergence for Ear Recognition **Ibrahim Omara,** Ahmed Hagag, Wangmeng Zuo *Harbin Institute of Technology, China*

Abstract: Ear-print has become one of the most important types of vital biometric in recent years; ear-print is using in different applications; especially in forensic science. In this paper, we present a novel approach for ear recognition based on fusion local descriptors for feature extraction, and LogDot divergence for classification. In details, binarized statistical image feature (BSIF) and patterns of oriented edge magnitude (POEM) are used to represent ear image. Then, discriminative correlation analysis (DCA) algorithm is exploited for fusion those features and reduction dimension. Finally, LogDot divergence based metric learning is adopted to recognize the ear images by learning a Mahalanobis matrix for approximate nearest neighbor (ANN) approach. The experimental results ar performed on four available datasets; IIT Delhi I, II and USTB I, II datasets. The proposed approach superior performance over the state-of-the-art approaches and can achieve promising recognition rates around 98.4%, 98.7%, 100% and 97.4% for IIT Delhi I, II, and USTB I, II, respectively.

RI0011 Time: 3:00pm-3:15pm	A Ground Plane Hazards Detection Tool for the Visually Impaired **Aylwin Chai Bing Chun**, Lau Bee Theng, Pan Zheng, Almon Chai WeiYan, Lil Deverell, Abdullah Mahmud, Christopher McCarthy and Denny Meyer *Swinburne University of Technology, Sarawak, Malaysia*

Abstract: The World Health Organization (WHO) reported the key fact that an estimation of 36 million of blind people within 253 million people with vision impairment and this numbers are expected to be triple. One of the most important effects for vision loss is the ability to travel around safely and independently. The major problems encountered are the obstacles and ground plane conditions. The ground plane hazards include the staircases, potholes, pits, ramps, and drainage. Over the years, most of the existing smart devices focus more on the obstacle detection in the surrounding rather than the ground plane hazards, which can be one of the dangerous hazards for the visually impaired. Thus, our interest specifically focuses on the development of a smart technology for ground plane hazards detection. We presented a prototype for detection of ground plane hazards, which include staircases, ramps, drainage and potholes. A testing was conducted with blindfolded users on real time detection and the results proved that the prototype performs up to the expectation in real time

CT018 Time: 3:15pm-3:30pm	**Using Computing Methods to Secure Vehicular Ad hoc Network (VANET): A Survey** **Irshad Ahmed Sumra,** Gull BiBi *University of South Asia, Pakistan*

Abstract: VANET is next generation vehicular network and its applications will be play key to safe human life while journey on highway. Security is one of the key prominent factorsfor implement VANET in real environment. Different researchers already provides different solutions to make it secure from attacker and attacks in network. In this survey paper, discuss in detail the various computing methods and illustrate the relationship with vehicular network. Using these computing methods to secure the vehicular network from attackers and attacks. Trusted computing and Cloud computing are some of the types of computing methods which are already discussed in VANET. But still some computing method need to discuss the relationship with VANET and its security like Quantum computing and Pervasive computing.

Session 3: Mechanical Design and System Control
Venue: Orchid 1
Chair: Assoc. Prof. Jing Xingjian
The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong
Time: 4:00pm-5:30pm | April 8, 2018

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RI0002 Time: 4:00pm-4:15pm	Design and Simulation of a New Single Actuator Double Acting Electro-Mechanical Continuously Variable Transmission **Nur Rashid Mat Nuri**, Khisbullah Hudha, Saiful Amri Mazlan *(UTeM) / (MJIIT), Malaysia*

Abstract: This paper presents a new design of electro-mechanical Continuously Variable Transmission (CVT) by using dual acting pulley at driver and driver sides with single actuator to vary the belt radius. Several conceptual designs on pulley geometry and its working mechanism were proposed and evaluated. The best evaluation design was selected and prototype of the CVT system, namely single actuator double acting electro-mechanical (SADAEM) CVT system was built. All the mathematical equations will be derived in this paper and the modeling was developed using MATLAB Simulink software. The performance of the SADAEM CVT system was evaluated in term of belt radius and CVT ratio tracking position by using Proportional-Integral-Derivative (PID) controller. The results obtained by the simulation showed that the response trends were similar with an acceptable error.

RI0005 Time: 4:15pm-4:30pm	Stabilization of Ball and Beam Module Using Relatively Optimal Control **Nidya M. V.**, Jeevamma Jacob, and Mija S. J. *National Institute of Technology, Calicut, India*

Abstract: In this paper, a relatively optimal controller is designed for stabilizing the bench mark system, ball and beam. Ball and beam system is nonlinear and under actuated with two degrees of

freedom. The controller has a dynamic structure and is designed by solving a convex optimization problem. All the constraints associated with the system are incorporated for controller design. The effect of parameter variation on the performance of closed-loop system is analysed.

RI0006 Time: 4:30pm-4:45pm	Non-Linear Adaptive Sliding Mode Control of Rigid rotor via Contact less Active Bearing **Sherine Jesna V. A.**, Winston Netto, S. Ushakumari *Manipal Institute of Technology, MAHE, India*

Abstract: A three pole AMB is a cost effective method for implementing the principle of magnetic levitation in rotary devices as a bearing support. The nonlinear and unstable nature of three Pole AMB is a challenge for controller design. This study learns the nonlinear characteristics of a three pole AMB and design of sliding mode controller inorder to control the AMB dynamics. The system is standardized into extended controllable canonical form and the controller is designed. The inherent chattering of the sliding mode controller is also addressed with a solution of sliding gain adaptaion. The simulation of the controller and the AMB analyses the system performance with the proposed controller.

RI0017 Time: 4:45pm-5:00pm	Artificial Neural Network Based Path Planning of Excavator Arm Nga Thi-Thuy Vu, Do Duy Bui, **Hieu Trung Tran** *Izmir Katip Celebi University, Turkey*

Abstract: This paper presents a solution in path planning for robotic arm based on artificial neural network (ANN) architecture, specifically a Static (Feedforward) Neural Network (SNN). The inputs of the network are the sample set which are obtained from some specific requirements of desired trajectory. After training, the outputs of the network are the smooth curves which will be the references trajectory for the joints of excavator arm. The capabilities of the designed neural network in solving the path planning problems are clearly demonstrated through simulation conducted with a complex trajectory for the excavator.

RI0018 Time: 5:00pm-5:15pm	Finger-mounted Obstacle Detector for People with Visual Impairment **Derrick K. X. Ling**, Bee Theng Lau, Almon W. Y. Chai *Swinburne University of Technology, Malaysia*

Abstract: Mobility is the ability to move. People with visual impairment has limited mobility as they have limited vision to move safely without colliding against obstacles. This paper presents a wearable device using technology to help people with visual impairment to detect obstacles. The device uses an ultrasonic sensor to obtain real time information of distance between device and obstacles. This information is interpreted into an audio feedback which will alert or notify users the presence of obstacles in their path. The device is small enough to be worn on the finger and direction of detection can be changed by pointing the hand or finger elsewhere. Three experimental testing were conducted to evaluate the prototype. First experiment was to determine the detection rate on indoor and outdoor obstacles of different sizes and shapes in a controlled environment. Second experiment was to test the prototype with participants wearing blindfolds (no vision simulator) and walking in an indoor environment filled with real life obstacles. Third experiment was conducted with participants wearing low vision simulators walking in an outdoor environment. Results showed the prototype works better for people with low vision than no vision.

CT058	Coin Based Mobile Charger Using Solar Energy
Time: 5:15pm-5:30pm	**Mayuri Kohar** *Jagadambha College of Engineering & Technology, India*

Abstract: The aim of this paper is to describe the coin based mobile charger using solar energy. Which can be used in public area like bus stand, railway station, malls, hotels, colleges, hospital, roads etc. In small town or in rural area continue supply of electricity is not available, it is available only for 6 or 8 hours in a day. Today about 95% people use mobile phone and sometimes while travelling we need emergency supply to charge our cell phone or other electronic gadgets and this project can also help the traveler. Now a day's mobile plays a very important role in our life. It consists of LDR (light dependent resistor) which is used as a coin sensor and microcontroller which can controls all timing periods (on or off timing) situation after inserting a coin so that mobile user can reactivate dead battery by inserting coin.

Session 4：Software Theory and Security

Venue: Orchid 2
Chair: Prof. Rajender Singh Chhillar
Maharshi Dayanand University, Rohtak, India
Time: 4:00pm-5:45pm | April 8, 2018

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CT016 Time: 4:00pm-4:15pm	A Taxonomy on Recent Mobile Malware: Features, Analysis Methods, and Detection Techniques **Hamidreza Alimardani**, Mohammed Nazeh *Limkokwing University, Malaysia*

Abstract: Smartphones, tablets, and other mobile devices have quickly become ubiquitous due to their highly personal and powerful attributes. Android has been the most popular mobile operating system. Such popularity, however, also extends to attackers. The amount of Android malware has risen steeply during the last few years, making it the most targeted mobile operating system. Although there have been numerous studies reviewing the current analysis and detection methods, they are unable to fully cover this research domain. Therefore, in this paper, we group the current analysis and detection methods in mobile malware detection. In addition, we review the Android features available in mobile malware detection, and several trusted and widely used datasets.

CT010 Time: 4:15pm-4:30pm	Modelling Application Control Flow and Data Flow for Program Comprehension **Hayden Cheers,** Yuqing Lin *The University of Newcastle, Australia*

Abstract: UML is an important tool in program comprehension. Program comprehension is a required activity for many software development and maintenance tasks in order to understand the control flow and data flow of an application. This paper presents an extension to the UML sequence diagram titled

the enhanced sequence diagram. The enhanced sequence diagram enables the description of data flow within an application scenario in addition to the existing control flow. To support the proposed extension, a program analysis framework is presented to reverse engineer sequence diagrams from application source code. This framework identifies important data in an application scenario in order to remove irrelevant operations not needed for the understanding of an application from generated sequence diagrams. The purpose of the presented works is to aid in program comprehension activities by enabling developers to identify the logical operation of a program without interference from irrelevant or supporting operations.

CT039 Time: 4:30pm-4:45pm	Reverse Engineering Re-composable Components from Legacy Code **Rehman Arshad,** Kung-Kiu Lau *University of Manchester, United Kingdom*

Abstract: Reverse engineering is mostly used to obtain a higher abstraction notation of an implemented system in order to understand, review or analyse the system. In this paper, we use reverse engineering to extract components (from legacy code) that provide architectural re-usability across multiple systems without requiring configuration changes at code level. We present an automated static reverse engineering approach and a tool for this purpose, together with results of six case studies.

CT040 Time: 4:45pm-5:00pm	A Study on Cyber Security Threats in Core Banking System of Bangladesh **Md Sakhawat Hossain,** Shazzad Hosain, and Tanjila Farah *North South University, Bangladesh*

Abstract: Worldwide the banking and financial sector have been increasingly dependent on information and communication technology (ICT). In tune with the global trends Bangladeshi banks have been investing heavily in technology infrastructure and solutions. All banks have moved to core banking system structure. Services such as Internet banking, online banking and mobile banking has revolutionized the banking for users. At the same time the downside of ICT, cyber security threats against the banking and financial services are becoming more frequent. Though ignored for a long time cyber threats have gained attention of the authority after the reserved fund heist of Bangladesh Bank in 2016. This paper aims to analyze the core banking systems used in the banks. Also this paper presents an analysis of current threats on banking system based on the antiviruses used in the banks of Bangladesh.

CT050 Time: 5:00pm-5:15pm	Risk Identification of IT Outsourcing for Innovation **Harjo Baskoro,** Raymond Kosala *Bina Nusantara University, Indonesia*

Abstract: Outsourcing can be considered as the most important management strategy. The practice of outsourcing originated in the 1950s but became widely adopted in 1980s until now. In 2014, IT outsourcing dominates 60% of outsourcing markets. In Indonesia, IT outsourcing spending is expected to reach 1 Billion US$ in 2020. PT Telkom Indonesia use IT outsourcing to support in creating service and product innovation, this program is called Amoeba. The IT outsource value for Amoeba in 2018 is predicted about US$ 185 Thousand. In this paper we conduct risk identification for IT outsourcing for Amoeba as the first step of risk management and as the part of IT governance.

CT036 Time: 5:15pm-5:30pm	Assessing Security of Cloud Service in Malaysian Universities: A review Fatma Susilwati Mohamad, **Hajer Ahmed Albahaloul** *University Sultan Zainal Abidin, Malaysia*

Abstract: Currently, The cloud computing emerged due to developing rapidly of technology, an Internet-based development in which dynamically scalable and often virtualized resources are provided as a service over the Internet, universities are reviewing IT services and considering common service options. Studies suggest that a wide range of IT services can be shared in higher education that offer several potential features .Nowadays, the security of information becomes more substantial. The aim of this paper analyzes the security issue in cloud computing and review the effect of cloud data privacy on the transition to the cloud computing system in the Malaysian Universities.

CT1002-A Time: 5:30pm-5:45pm	Intrusions Detection by Using automated Honey-pot Machine Learning Technology in an unstructured Big-Data **Rashid Husain,** Tejeshwari Singh, Rajesh K. Tyagi *Sule Lamido University, Nigeria*

Abstract: Security of complex unstructured big data is getting weaker day by day due to increasing rate of unstructured data volume over the digital world. Unauthorized access is increases day by day as per use of digital activity. So the purpose of this research paper is to detect the unauthorized activity and provide data Confidentiality, Integrity, Authentication, QoS(Quality of Service),relevance, Privacy and Trust etc. A new method using machine learning has been devised which contributed to efficient and cost effective implementation of Automated Honey-pot. This technique is providing security to complex digital data and reducing the probability of unauthorized access from the network architecture. In this paper, unstructured data have been analyzed and make some clusters with help of K-mean algorithm and after that a Naive Bayes classification has been applied for predicting the malign nodes. Contemporary Methods suffers from high computational complexity and our aim is to propose methods for reducing it and embed the innovative machine learning tools for detecting the unknown attacks within a peer networks. Due to this system, Confidentiality, Data integrity, QoS, Authentication, relevance, Privacy and Trust etc. increases manifold of unstructured big data within the networks. In this work, firstly we captured the network traffic by using Wire-shark tool for intrusion detection. In next Step, after detecting

intrusions automated system again transfer traffic back to the load balancer and then transfer it to the processor for checking. If IDS found some traffic anomalies then transfer these anomalies to the Honey-pot server for advertising alarm among all nodes of the systems. This new proposed system is very accurate and gives promising results as compared with previous techniques.

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Half Day Kuala Lumpur City Tour

(6 hours Service)

08:30   Pick up from Hotel

09:00   Merdeka Square
Merdeka Square is undoubtedly KL's best known landmark. Also called Dataran Merdeka, it is set in front of the Sultan Abdul Samad Building (the former State Secretariat). Directly in front is the Royal Selangor Club and to the north is St. Mary's Church, one of Malaysia's oldest Anglican churches.

09:20   National Monument
The National Monument is a sculpture which was built in remembrance of the brave soldiers who died fighting for the independence of our country. This historic sculpture has also marked its place in the book of records for being the tallest freestanding group of bronze sculptures.

9:40   Istana Negara
Istana Negara in Kuala Lumpur Kuala Lumpur Attractions ADD TO TRIP!19 Istana Negara is Malaysia's National Palace. Built in 1928, it is located along Jalan Istana and the 13-acre castle used to be the official residence of the Yang di-Pertuan Agong (King) of Malaysia. In June 2011, it was replaced by a new, extravagant RM800 million palace near Jalan Duta, Kuala Lumpur.

10:10   Batu Caves
Batu Caves, one of Kuala Lumpur's most frequented tourist attractions, is a limestone hill comprising three major caves and a number of smaller ones. Located approximately 11 kilometres to the north of Kuala Lumpur, this 100-year-old temple features idols and statues erected inside the main caves and around it. Incorporated with interior limestone formations said to be around 400 million years old, the temple is considered an important religious landmark by Hindus.

11:00 Royal Selangor Visitor's Centre
An interactive exhibit of pewter manufacturing, the Royal Selangor Visitor's Centre is a 40,000sqft attraction housing a series of galleries, a factory and retail store. Recognised as one of the country's premier tourist attractions, the place receives between 800 and 1,200 guests daily. Living up to its royal title, the air-conditioned, glass-sided building is gorgeous (think water fountains, warm lighting and polished wooden floors) and well-managed, with free guided tours.

12:00 Lunch (Own Expenses)

13:00 Twin Tower (Photo Spot)
Petronas Twin Towers were once the tallest buildings in the world. Now the world's tallest twin structures, the 88-storey buildings were designed by Cesar Pelli & Associates with both towers joined at the 41st and 42nd floors (175m above street level) by a 58 metre-long, double-decker Sky Bridge.

13:15 Beryl's Chocolate
Beryl's Chocolate has now become a well-loved consumer brand throughout the country and beyond. Our products have gained the recognition of discerning customers both locally and overseas. Beryl's Chocolates can now be found in over 15 countries around the world.

14:00 Coffee Town
Coffee Town was established in Malaysia on 2008, with original, healthy white coffee in mind. We pride ourselves in making high quality coffee, from using only the highest quality coffee beans, to using top-rich skimmed milk powder. Our coffee does not contain anti caking agents, artificial emulsifiers and other chemicals, combined with out secret coffee formula, plus our new and improved packaging design makes our product the epitome of perfection

memo