COVER PAGE

The 9th International Conference on
Information Communication and Management
(ICICM2019)

The 8th International Conference on
Knowledge and Education Technology
(ICKET2019)

August 23-26, 2019 | Prague, Czech Republic

Conference Venue: The Czech Technical University in Prague
(Masarykova kolej-ČVUT)
Address: Thákurova 1, 160 41, Praha 6

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VENUE

The Czech Technical University in Prague (Masarykova kolej-ČVUT)

Address: Thákurova 1, 160 41, Praha 6

It is situated in a strategic location in Dejvice, Prague 6, just 20 minutes away from Prague Vaclav Havel international airport, with excellent public-transport access to the city centre, and with good motorway links.

ⓘ How to get to **the Czech Technical University in Prague** from **Václav Havel Airport Prague**?

- **Taxi**

Taxi------Around 30 minutes----- around 13 kilometers to 15 kilometers

- The affordable way:

Metro +Bus+ Walking ------ Around 40-50minutes

Get on the **transfer Bus** at the **Terminal 1** (9 Stations)
↓
Get off at **Nádraží Veleslavín**
↓ 4 minutes' walk
Get on the **Nádraží Veleslavín Metro Station (**2 Stations**)**
↓
Get off at **Deivická**
↓ 5 minutes' walk
The Czech Technical University in Prague

VENUE

TIPS:

Weather

High Temperature: 32℃

Low Temperature: 13℃

Time Zone: UTC +2

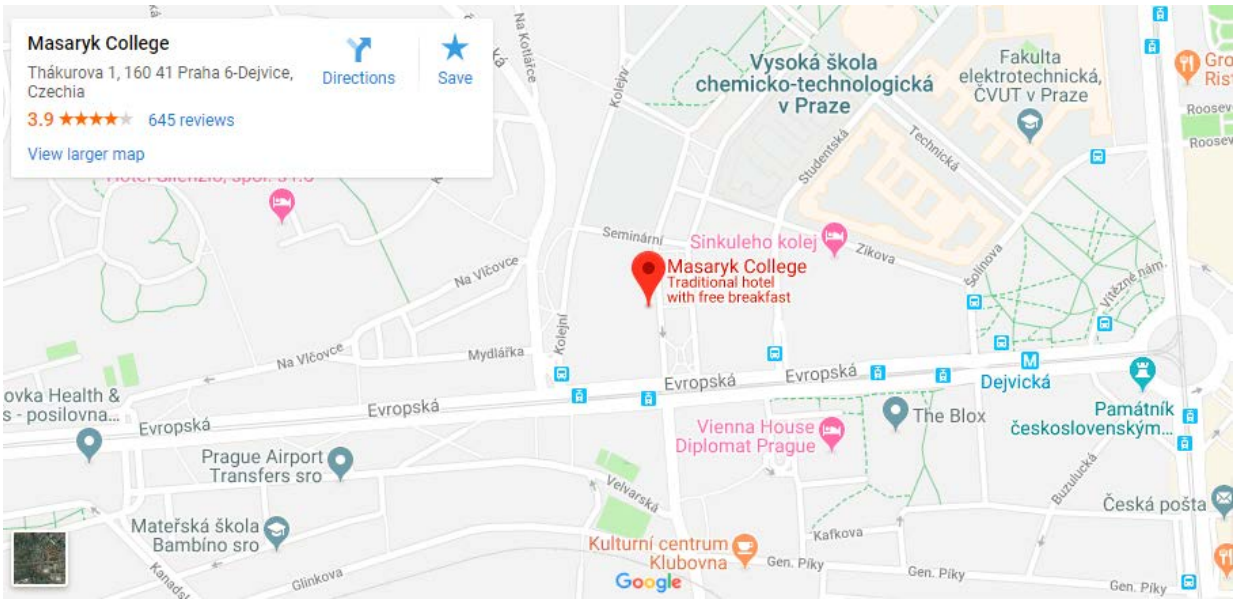
Currency: Czech koruna

Important Phone Numbers

Fire police: 150

Emergency Ambulance: 155

Police Emergency: 158



DETAILED AGENDA

[August 23, 2019 (Friday)]

10:00-17:00

Registration & Materials Collection

Lobby @Ground floor

Give your **Paper ID** to the staff.

↓

Sign your name in the attendance list and check the paper information.

↓

Check your **conference kit**, which includes conference bag, name tag, lunch & dinner coupon, conference program, the receipt of the payment, the USB of paper collection.

Tips for Participants

- ✧ Your punctual arrival and active involvement in each session will be highly appreciated.
- ✧ The listeners are welcome to register at any working time during the conference.
- ✧ Get your presentation PPT or PDF files prepared.
- ✧ Regular oral presentation: 15 minutes (including Q&A).
- ✧ Laptop (with MS-Office & Adobe Reader), projector & screen, laser pointer will be provided by the conference organizer.

DETAILED AGENDA

[August 24, 2019 (Saturday)]

Morning

Opening & Keynote Speeches+Invited Speech

Gallery @Ground floor

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09:10-09:50	**Keynote Speech I**	**Prof. Jalel Ben-Othman** University of Paris 13, France **Speech Title**: Threats and solutions for connected vehicles in Cyberspace
09:50-10:00	**Group Photo**	
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10:40-11:20	**Keynote Speech II**	**Prof. Alexander Balinsky** Cardiff University, United Kingdom **Speech Title:** Mathematics of Deep Learning
11:20-11:50	**Invited Speech I**	**Prof. Kazumasa Oida** Fukuoka Institute of Technology, Japan **Speech Title**: Information Diffusion and Community Structure in Online Social Networks

Lunch @Atrium (catering place) | <12:00-13:30>

DETAILED AGENDA

[August 24, 2019 (Saturday)]

Afternoon

Invited Speeches+Author Presentations

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14:00-16:30	**Session 1 -- Data Mining** Chaired By: Assoc. Prof. Desislava Paneva-Marinova Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences, Bulgaria
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DETAILED AGENDA

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[August 25, 2019 (Sunday)]

Morning

Author Presentations

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Lunch @Atrium (catering place) | <12:00-14:00>

DETAILED AGENDA

[August 26, 2019 (Monday)]

10:00-17:00

Social Program

❇ **Assembly Time**: 9:50 am

❇ **Assembly Point**: Vienna House Diplomat Prague
Address: Evropská 370/15, 160 41 Praha 6

❇ **Return Location:** Old Town Square

Overview

Discover Prague with a comprehensive full-day tour, including lunch and a relaxing Vltava River cruise. With a guide, enjoy a panoramic city tour around the exterior of UNESCO-listed Prague Castle. Savor a 3-course lunch and later, take a leisurely sightseeing cruise, passing the Charles Bridge. Lastly, stroll around the Jewish Quarter and Old Town to see the Astronomical Clock and other highlights.

▪ See Prague Castle and many UNESCO World Heritage sites as the Old Town, the Lesser Town and Charles Bridge.

▪ See the National Theater, the Rudofinum, the Powder gate, wenceslas square, Valdstejn Garden, the Jewish Town and many others.

Prague Castle

Jewish Quarter

Charles Bridge

Astronomical Clock

❇ Included

-Lunch

-Admission to Vltava River Cruise

❇ Not Included

-Admission to the castle

-Drinks for the Lunch

❇ Note

- This social program is optional and chargeable.
- The guide will leave on time. Please arrive the assembly point 5 minutes earlier.
- If you are interested, please give your feedback **before August 15**. If you miss this date, we can't accept your request anymore.
- Please keep your belongings with you.

WELCOME

Dear distinguished delegates,

It is our great honor and pleasure to welcome you to the 9th International Conference on Information Communication and Management (ICICM2019) and the 8th International Conference on Knowledge and Education Technology (ICKET2019) which are held in Prague, Czech Republic on August 23-26, 2019.

The evaluation of all the papers was performed based on the reports from anonymous reviewers, who are qualified in the field of Information Communication and Management as well as Knowledge and Education Technology. As a result of their hard work, we are pleased to have accepted 63 presentations (initially from 108 submissions) coming from 27 regions and countries including Brazil, Brunei, Bulgaria, China, Czech Republic, Ecuador, France, Greece, Hong Kong, India, Indonesia, Israel, Japan, Jordan, Kuwait, Morocco, Nigeria, Norway, Pakistan, Poland, Russia, South Africa, South Korea, Switzerland, Taiwan, Thailand, United Kingdom. The presentations are divided into 1 poster session and 6 parallel sessions with topics including Data Mining, Education Science, Machine Learning Applications, Software Engineering, Pattern Recognition and Classification, Electronic Technology Applications.

A word of special welcome is given to our keynote speakers and invited speakers who are pleased to make contributions to our conference and share their new research ideas with us. They are Prof. Alexander Balinsky from Cardiff University, United Kingdom; Prof. Jalel Ben-Othman from University of Paris 13, France; Prof. Kazumasa Oida from Fukuoka Institute of Technology, Japan; Prof. Atour Taghipour from University of LeHavre, France; Prof. Hiroyuki Kameda from Tokyo University of Technology (TUT), Japan. And in order to provide more opportunities for every participant to communicate with each other face to face, the conference organizing group is preparing the social program on August 26.

Prague is a city of contrasts, in that to many it is one of the most beautiful places in the world, but at the same time it is also one of the strangest. The structures that attract so many people to this city are built with both pride and a cursory glance back to the past, meaning that the city mixes a feeling of melancholy with a huge amount of beauty. For most though this isn't something that they would expect, as all that they think is that Prague is going to be beautiful, and don't worry, as it is! With castles, beautiful and imposing churches, quaint streets and myriad of art galleries, museums and restaurants, Prague manages to roll everything that you could ever possibly want.

We'd like to express our heartfelt appreciation to our chairs, sponsors, technical program committee members, organizing committee members, authors and delegates, who made a lot of efforts and contributions year by year. Thanks to your support and help, we can hold this conference successfully and always keep making progress.

Wish you will enjoy this conference, contribute effectively toward it and take back with your knowledge, experiences, contacts and happy memories of these days. Thank you for your attention!

Yours sincerely,
Conference Organizing Committee

KEYNOTE SPEAKER

Prof. Alexander Balinsky
Cardiff University, United Kingdom

Prof Alexander Balinsky received his PhD degree in Mathematical Physics from the Landau Institute of Theoretical Physics in 1990 and was Research Fellow in the Department of Mathematics at the Technion-Israel Institute of Technology from 1993 till 1997. He joined Cardiff University in 1997. He is a Professor in the Cardiff School of Mathematics and WIMCS (Wales Institute of Mathematical and Computational Sciences), Chair in Mathematical Physics. His current research interests lie in the areas of spectral theory, stability of matter, image processing and machine learning. He has participated in EU TMR network on Partial Differential Equations and Quantum Mechanics (1996-2001). He was PI on three years grant from United State-Israel Binational Science Foundation (1996-1999), on three years EPSRC Research Grant 2003-2006. He was founding member of Cardiff Communication Research Centre. He had several joint with Hewlett-Packard research projects. He also did consultancy work for Reuters, London on mathematical models for Internet Security.

His Impact Case Study "Meeting the Challenges of Data Security: Detecting Unusual Behaviour and Mining Unstructured Data" was featured in the leading article 'The impact of impact' in Times Higher. Out of almost 7,000 case studies that were submitted to REF2014 across all units of assessment from all universities, this case study was one of only 8 highlighted in the article! He was invited by Springer to prepare an article about this Impact Case Study to be publish in a special book "REF 2014 Impact Cases: UK Success Stories in Industrial Mathematics". The book was published in February 2015.

Currently he is PI on joint with Hewlett-Packard and Dyfed Powys Police on “Crime Analysis and Predictive Policing”.

Speech Title--- Mathematics of Deep Learning

Speech Abstract--- Deep Learning is another name for a set of algorithms that use a neural network as an architecture. In the past few years, Deep Learning has generated much excitement due to many breakthrough results in speech recognition, computer vision and text processing. This recent success has been due to new mathematical techniques, the availability of inexpensive, parallel hardware (GPUs, computer clusters) and massive amounts of data. This powerful way of processing data can be used to address an ever-growing number of problems, and its impact on science and society is increasing exponentially.

In this talk we present mathematical foundations of Deep Learning, relations with physics, features extraction and interpretability. We also explain mathematics behind adversarial attacks and how to protect against them. Several new mathematical problems will be presented.

KEYNOTE SPEAKER

Prof. Jalel Ben-Othman
University of Paris 13, France

Prof. Ben-Othman received his B.Sc. and M.Sc. degrees both in Computer Science from the University of Pierre et Marie Curie, (Paris 6) France in 1992, and 1994 respectively. He received his PhD degree from the University of Versailles, France, in 1998. He is currently full professor at the University of Paris 13 since 2011 and member of L2S lab at CentraleSupélec. Dr. Ben-Othman's research interests are in the area of wireless ad hoc and sensor networks, VANETs, IoT, performance evaluation and security in wireless networks in general. He was the recipient of the IEEE comsoc Communication Software technical committee Recognition Award in 2016, the IEEE computer society Meritorious Service Award in 2016, and he is a Golden Core Member of IEEE Computer Society. He is currently in steering committee of IEEE Transaction on Mobile computing (IEEE TMC), an editorial board member of several journals (IEEE Networks, IEEE COMML, JCN, IJCS, SPY, Sensors…). He has also served as TPC Co-Chair for IEEE Globecom and ICC conferences and other conferences as (IWCMC, VTC'14, ComComAp, ICNC, WCSP, Q2SWinet, P2MNET, WLN,....). He was the chair of the IEEE Ad Hoc and sensor networks technical committee January 2016-2018, he was previously the vice chair and secretary for this committee. He has been appointed as IEEE comsoc distinguished lecturer since 2015 where he did several tours all around the world. He is member of IEEE technical services board since 2016.

Speech Title--- Threats and solutions for connected vehicles in Cyberspace

Speech Abstract--- Wireless and mobile networks have many advantages as easy deployment, user mobility and provides network access to users regardless to their locations. The most critical problems that arise in these networks are on the resource allocations as the bandwidth is limited, the propagation (multi-path, fading, distortion) and security since communications are transmitted over radio waves. In parallel new architectures/technologies have been emerged as Vehicular Networks and Internet of Things. In this keynote, I will present issues about availability problem in those networks and architecture, I will focus on Vehicular Networks, and I will present some works we have done and other works to improve security in those systems.

INVITED SPEAKER

Prof. Kazumasa Oida
Fukuoka Institute of Technology, Japan

Kazumasa Oida received Bachelor of Information Science, Master of Engineering, and Doctor of Informatics degrees from the University of Tsukuba in 1983, Hokkaido University in 1985, and Kyoto University in 2002, respectively. He worked for the Nippon Telegraph and Telephone Corporation for twenty years as an engineer, where he participated in the development of private network systems. He is currently a Professor in the Department of Computer Science and Engineering, Fukuoka Institute of Technology, Japan. His main interests include traffic control, QoS, cybersecurity, information diffusion in OSNs, etc.

Speech Title--- Information Diffusion and Community Structure in Online Social Networks

Speech Abstract--- Information diffusion in online social networks has been extensively studied by many researchers because a widespread diffusion phenomenon occasionally occurred paving the way for other phenomena, such as public opinion formation or rapid growth of video viewers. This research has also been related to using social networks for viral marketing.

In this talk, I will commence by presenting our data on how product advertising campaigns structurally change Twitter communities. I will next explore the correlation between the community structure and the dynamics of information diffusion from the viewpoints of analytical models and simulation experiments.

INVITED SPEAKER

Prof. Atour Taghipour
University of LeHavre, France

Atour TAGHIPOUR is an Associate professor and the head of an international management master program at the University of Le Havre in France. He holds a PhD in Industrial Engineering from the Polytechnic School of Montreal in Canada. He received two masters' degrees, one in Management, Logistics & Strategy and other in Industrial Engineering. He has more than ten years of experiences as a manager in automobile industries. He has published two books and many research papers in international journals. His areas of research are supply chain and operations management.

Speech Title---Goal setting and planning : an action framework

Speech Abstract--- Goal setting is the first step towards success. However, goals can only be reached through a vehicle of a plan. During this speech, we explain the main steps necessary to set the goals. Then, using the result of our research, we show that motivation isn't the key to achieving the goals and what drives us to to achieve the fixed goals is planning. The presented method can be used by individuals to achieve their objectives.

INVITED SPEAKER

Prof. Hiroyuki Kameda
Tokyo University of Technology (TUT), Japan

Prof. Hiroyuki Kameda received Batchelor of Engineering in Electrical Engineering from University of Tokyo in 1982, and Master of Engineering in 1984, and Dr. of Engineering (Ph. D) in Electric Engineering in 1987 from the Graduate School of University of Tokyo. Since 1987 he has been working in Tokyo University of Technology (TUT), and now is a Prof. of School of Computer Science of TUT, and the Dean of Graduate School of Bionics, Computer and Media Sciences of TUT. Prof. Kameda has been interested in the research field of Thought and Language, e.g., natural language processing (NLP) in human mind, NLP software for AI systems, robots with ability and mind to communicate with humans, new linguistic knowledge acquisition, cognitive rehabilitation games for schizophrenia, and science of education in systems engineering to develop creativity. Recently he has been also studying an artificial intelligence system to detect iPS cancer stem cells. He also contributes various academic conferences, e.g., PACLING (International Conference of the Pacific Association for Computational Linguistics), the 21st Century Science and Human Symposium, Technical Committee Conference of Thought & Language of IEICE (Institute of Electronics, Information and Communication Engineering) as a chairperson of executive committee.

Speech Title---A Challenge for New Education in Computer Science
How to develop the ability for students to learn sustainably in a fast-changing society

Speech Abstract--- As you'd know, mankind has already experienced three Industry Revolutions which were driven by the invention of steam engines, stable supply of electric power, and the Internet (the open information high way). The first one happened around between the last half of the seventeenth century and the first half of the eighteenth century, the second one at the first half of the twentieth century, and the third one at the last half of the twentieth century. And now, just at the beginning of the 21st century, a new industrial revolution is happening just by artificial intelligence (Deep Learning), Big Data, Blockchain. These facts show the interval of industrial revolutions is becoming shorter and shorter. On the other hand, modern sciences, for example, life science, medicine and so on make our life span longer and longer than before. For example, in Japan, some researchers say the life span of Japanese, especially, of women, will reach 100 years. Whether it is true or not, young people in this century must keep leading a healthy and happy life in a changeable society for a long time. Especially for students in Computer Science, what they are just now studying hard at school might be partially useless in several years. In such a situation, education plays a very important role for young students, and should inevitably change to establish a new way of learning for young people in the next young generation.

In this presentation, the speaker, a Professor of computer science, shows some case studies of computer science education in Tokyo University of Technology, addressing both social background in Japan and problems of the school of computer science in the university. A new on-going educational trial also is presented in some details. One is a workshop course in which students create a well-selling game software from game concepts creation through game implementation to a presentation of selling campaign. The other is the software application planning of sightseeing promoting campaign for Hachioji City, where their university lies.

The conclusions are as follows; the essences of education in the 21st century are that teachers should lead students to learn in an effective, tailor-made way, and that students should learn how to learn sustainably in one's own way.

SESSION

August 24, 2019

Session 1

Data Mining

14:00-16:30

Gallery @Ground floor

Chaired by Assoc. Prof. Desislava Paneva-Marinova,

Institute of Mathematics and Informatics at

the Bulgarian Academy of Sciences, Bulgaria

10 Presentations—

CP1-061; CP1-006; CP1-011; CP1-017; CP1-063; CP1-024; CP1-010; CP1-016; CP1-022; CP2-012

***Note**:

- Please arrive 30 minutes ahead of the sessions to prepare and test your PowerPoint.
- Certificate of Presentation will be awarded to each presenter by the session chair when the session is over.
- One Best Presentation will be selected from each parallel session and the author of best presentation will be announced and awarded when the session is over.

SESSION

CP1-061 **14:00-14:15**	An Integrated Model of Technical and Non-Technical Perspective on Managing the IoT Security Muhammad Suryanegara and **Nur Hayati** Universitas Indonesia, Indonesia Abstract- Security and data privacy are two inseparable issues regarding Internet of Things (IoT) implementation. Most research discusses the method of overcoming these issues by utilizing IoT reference architectures, namely application, network, and perception layers. Studies present information about what kind of attacks appear in each IoT layer followed by how to prevent and mitigate said attacks. Moreover, some researchers conduct inquiries in regard to security issues emerging in cross layers and the integration of multi-layer architecture. In this research, we try to use different perspectives to examine the problems and solutions concerning IoT security. We involve technical and non-technical elements for managing these problems and propose an integrated model in which actors—regulators, industry, and users—actively participate in addressing security and data privacy issues that arise on every IoT architecture.
CP1-006 **14:15-14:30**	Organizational citizenship behaviors in Polish education sector **Dorota Grego-Planer** and Nicolaus Copernicus University Nicolaus Copernicus University in Toruń, Poland Abstract- Organizational citizenship behaviors (OCBs) regard voluntary behaviors that go beyond the scope of employee job responsibilities and are beneficial for organizational performance. The issue of OCB is discussed in the literature since 80s of the XX century. However the problem referring to the impact of the organization type, namely private or public, on the scope and frequency of OCB is underresearched. The paper is an attempt to respond this research gap. The purpose of the study presented in the paper is to assess the frequency of OCBs demonstration by employees of educational institutions. In our paper we hypothesize that OCBs are more frequent among employees of the public schools in comparison with employees of private schools that are profit-oriented.
CP1-011 **14:30-14:45**	Patients' Acceptance of Information Published by Physicians in Online Health Communities: An Empirical Study **Xinyi Lu** and Runtong Zhang Beijing Jiaotong University, China Abstract- By means of obtaining health-related information published by physicians in online health communities (OHCs), patients are able to diagnose some simple diseases by themselves and then save queueing time, which can help optimize the allocation of medial resources and alleviate hospitals' congestion to a certain extent, However, some patients may be hesitant to adopt this information because of its shortcomings. This study established a research model based on the unified theory of acceptance and use of technology to examine patients' acceptance of information published by physicians in OHCs. An online survey involving 453 Chinese participants was conducted to collect data, and 378 (83.4%) were valid. Structural equation modelling and partial least squares were adopted to analyze data and test hypotheses Results reveal that performance expectancy, social influence and attitude toward using technology positively influence their behavioral intention and ultimately influence usage behavior of adopting information in OHCs. Our findings suggest that OHCs should inspire the intention of users to use

	information in OHCs, enhance the management of information, strengthen OHCs' reputation to increase social influence, and improve the service level of OHCs.
CP1-017 **14:45-15:00**	Information Asymmetry in Supply Chain Coordination: State of the Art **Mohammadali Vosooghidizaji,** Atour Taghipour and Béatrice Canel-Depitre University of LeHavre, France Abstract- Supply chains consist of several actors from supplier, manufacturer, distributer, wholesaler and retailers connected to each other by financial, material and informational flows. Optimal performance of supply chains requires set of actions that coordinate the members' decisions [1, 2]. In many cases, members are trying to optimize their own objectives which can lead to asymmetric information by keeping some strategic information private. Although, this information asymmetry is a challenge affecting the coordination of supply chain, but it is achievable if proper set of coordinating mechanism executed. This paper presents a comprehensive literature review of supply chain coordination under asymmetric information and tries to analyze the trend in the context and address the evolution and gaps in existing literature.
CP1-063 **15:00-15:15**	Fault Prediction Model for Node Selection Function of Mobile Networks **Maria Mykoniati** and Konstantinos Lambrinoudakis University of Piraeus, Greece Abstract- Survivability is a critical property that any network system should emerge. A survivable system is a system that achieves its critical services to perform, over an acceptable quality level of service in a timely manner, even if the system is under attack failure or disaster. Usually, mobile networked systems (2G, 3G, 4G, 5G) contain a certain number of different nodes each of which performs certain signaling as part of a larger service, provided to, or requested from, end users. Nowadays, there is much research on how telecommunication mobile systems, should be designed to include self-organization mechanisms like self-monitoring, self-configuration, and self-healing, to automatically perform network management activities. These system capabilities should also be used for ensuring system services' survivability or reliability against any failure. The main objectives of the current paper, for providing a service fault management system, are the following two. The first one is to provide a service fault monitoring system that has the ability of self-diagnosis, and the second one is to provide a self-organization ability for the mobile network by always choosing the best alternative path for a critical service, while the system is degrading to different levels of Quality of Service, until it becomes unavailable. These two objectives constitute key survivability principles.
CP1-024 **15:15-15:30**	Just in Time/Lean Purchasing Approach: An investigation for research and applications **Atour Taghipour**, Phuong Hoang and Xue Cao University of LeHavre, France Abstract- The concept of Just in Time (JIT) has been studied for more than 20 years, so there are lots of the academic articles and case studies which give the objectives, the backgrounds, the principals, and the techniques of Just in time. The objective of this paper is to gain further knowledge into the JIT/Lean purchasing approach and to identify future research directions. We will concentrate on JIT purchasing and the Lean purchasing, since the JIT purchasing is an important concept of the lean management, therefore in the first part, we will discuss about the

	JIT purchasing, as well as the advantages and disadvantages of this technique. In the following part, we will focus on the lean purchasing concept to show how the lean purchasing played an important role in the supply chain.
CP1-010 **15:30-15:45**	A configurable approximation Min-sum decoding algorithm for Low Density Parity Check Codes **Ruizhen Wu**, Lin Wang and Mingming Wang Intel, China Abstract- A configurable approximation Min-sum decoding algorithm for LDPC is proposed in this paper. The degradation factor of BP to MS is found and optimized based on Jacobian Logarithm and hardware working mode. The decoding algorithm is configurable to satisfy different environment's need and will only need update the variable memory. The simulation is based on LDPC NR 3GPP 38.212 release and the comparison results showed the proposed configurable approximation Min-sum decoding algorithm have a better BER performance. The hardware of this proposed algorithm is based on Min-sum decoder and the extra cost is only a shifter and an adder besides the configurable memory.
CP1-016 **15:45-16:00**	From Concept To Practice: Untangling The Direct-Control Cycle **Zandile Manjezi** and Reinhardt Botha Nelson Mandela University, South Africa Abstract— Good information security governance will ensure that information is adequately protected. An organization needs a holistic policy framework that assists in providing guidance to ensure that implementations are in line with strategic goals. However, there is little guidance in practically implementing the information security framework that includes the direct-control cycle. This paper sets out to breakdown the direct-control cycle to reveal practical components in implementing strategic, tactical and operational policies in organizations through a literature survey. The output of this paper is a conceptual breakdown of the direct-control cycle that could be used in organizations.
CP1-022 **16:00-16:15**	FinMARS: A Mobile App Rating Scale for Finance Apps Johannes Huebner, **Carlo Schmid**, Mehdi Bouguerra and Alexander Ilic ETH Zurich, Switzerland Abstract-Mobile apps increasingly replace face-to-face interactions between financial service providers and their customers. Therefore, it is critical for developers of finance apps to understand users' perception thereof, and to be able to assess the quality of their own app and their competitors' apps. Star ratings as provided by mobile app stores suffer from multiple shortcomings and are not detailed enough to fulfil this purpose. In this work, we thus developed a reliable, objective, multidimensional measure of the quality of mobile finance apps, which includes both generic and domain-specific aspects. We used an iterative approach and expanded on related work in the Health domain, and validated the scale empirically. The resulting app rating scale for finance apps is a reliable, objective measure of app quality, comprised of six subscales and a total of 34 items. It exhibits excellent internal consistency (alpha=.93) and very good interrater reliability (ICC=.74).
CP2-012 **16:15-16:30**	Progress, Hotspots and Trends of International Interdisciplinary Education Research in the Past 30 Years — Visualization Analysis of Journal Papers Based on WoS

Wei Lina, Zhangwei, Yuan Xiaolu
Zhejiang University, China

Abstract—In recent years, interdisciplinary education has become the focus of world education reform because of its effective response to building a world-class university. In order to explore the research context of interdisciplinary education, this paper takes the 1988-2018 international interdisciplinary education research literature included in the Web of Science (WOS) database as the research object, combined with scientific map analysis and analysis of classical literature research for international interdisciplinary in the past 30 years. The overall situation, hotspot frontiers and evolutionary characteristics of educational research. The research indicates that the core academic journals that focus on their achievements have not yet been formed in the field of interdisciplinary education research; the core research scholars mainly come from the United States and Northern Europe, which basically form the characteristics of " big center, small diffusion " research institutions; their research focuses on interdisciplinary research. Professional degree setting, interdisciplinary medicine/engineering education, sustainable education, etc.: The research frontier focuses on STEM education, primary and secondary education, and intelligent teaching. Through the traditional literature combing and time zone co-occurrence clustering visualization, the evolutionary characteristics of interdisciplinary education research are summarized as follows: from instrumental interdisciplinary integration research to interdisciplinary thinking cognition research; from single interdisciplinary subject research to multi-subject research; Quantitative research methods are combined with quantitative and qualitative research methods.

Coffee Break | <16:30-16:45>

SESSION

August 24, 2019

Session 2

Education Science

14:00-16:15

Class Room I @Ground floor

Chaired by Prof. Luiz Ricardo Begosso,

FEMA, Brazil

9 Presentations—

CP2-010; CP2-021; CP2-016; CP2-019; CP2-027; CP2-032; CP2-2002; CP2-003; CP2-025-A

***Note**:

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SESSION

CP2-010 **14:00-14:15**	Research Topics and Future Trends on Maker Education in China Based on Bibliometric Analysis **Qianfei Tian**, Juan Zhang, Chuan Tang, Lina Wang, Junmin Fang, Zhiqiang Zhang Chengdu Library and Information Center, Chinese Academy of Sciences, China **Abstract**—Maker spaces are expanding all over the world, with the development of modern information technologies such as cloud computing, big data, open source software, 3D printing, digital sensors, distant communication, etc. Meanwhile, maker spaces and modern information technologies are transforming education to form a networked, digitalized and characterized system. This paper retrieves maker education publications from China National Knowledge Infrastructure (CNKI) Database, presents core authors and institutions of maker education research in China through bibliometric analysis and visualization methods by Citespace V, reveals three research stages, and discusses future trends of maker education research in China.
CP2-021 **14:15-14:30**	Knowledge sharing facilitators and barriers in the context of group cohesion – a literature review **Paulina M. Wojciechowska** Wrocław University of Economics, Poland **Abstract**—Knowledge is one of the key intangible assets that constitutes a powerful and significant capital in organization. The purpose of the paper is to present the literature review concerning knowledge sharing issues in a workplace. Author provides a review of current knowledge sharing aspects referring to the group cohesiveness and Not-Invented-Here syndrome (NIH). The paper discusses the possible barriers and facilitators influencing accessibility of organizational knowledge and constitutes the promising background for further research in the field of organizational behavior.
CP2-016 **14:30-14:45**	Intellectual Property: How Well Undergraduate Students Aware of? **Kelvin C. K. Wong**, Fion S. L. Lee and Martin M. T. Choy Hong Kong Baptist University, Hong Kong **Abstract**—The massive worldwide growth in knowledge economy has led to an increase in the use of intellectual property. The protection of it can help to encourage the creation of new works by giving creators the control of and the rewards from their hard work. In the commercial side, intellectual property assets become more valuable to business. There is an increasing need to protect them in order to make the business success. In order to develop Hong Kong as an intellectual property trading hub in Asia-Pacific region, the Intellectual Property Department conducted a lot of studies on IP trading and management, workforce engaged in them and the public's awareness of the intellectual protection rights. However, there is a lack of studies in Hong Kong students' awareness and knowledge of intellectual property. The purpose of this study aims to explore Hong Kong undergraduate students' existing awareness of intellectual property and knowledge of copyright.
CP2-019 **14:45-15:00**	e-Learning Management System Based on Reality Technology with AI **Kongkiat Hirankerd** and Nattapakal Kittisunthonphisarn Rajamangala University of Technology Rattanakosin, Thailand **Abstract**—In the present time, the skill training for work is important to the industry and education. Practicing various skills are necessary to use technology to apply for many reasons:

	Safety reasons for resources, locations, time and limitations. AR VR MR or XR Technologies are increasingly used worldwide, because the equipment materials are more ready but the present learning management system Different from the skill training management system. The storage and using in video format that have been used for more than a decade. Therefore, this research is developed a system that will manage learning, practice skills with AR VR MR Technologies as well as use AI to be used in the management system as well.
CP2-027 **15:00-15:15**	Research on Evaluation Methods of National Quantum Computing Scientific Research Performance **Lina Wang**, Junmin Fang, Yunwei Chen, Chuan Tang, Qianfei Tian, Juan Zhang Chengdu Library and Information Center, Chinese Academy of Sciences, China **Abstract**—Scientific research is a systematic creative work for enhancing knowledge and inventing new technology with it. Thus, it is of great significance to evaluate the performance of scientific research from the perspective of knowledge flow. This paper presents an evaluation method of scientific research performance which matches the scientific research mission of using existing knowledge to create new knowledge, and provides a new perspective for multi-angle evaluation of scientific research performance. The knowledge flow network formed by citation relationships between literatures will be constructed firstly. Based on this citation network, the process in which literature knowledge is acquired, absorbed, rational criticism and create new knowledge will be as an evaluation criterion. Then, both knowledge utilization rate indicator and knowledge net utilization rate indicator will be established.
CP2-032 **15:15-15:30**	Science students' acceptance to use LINE application in Laboratory subject **J. Chutrtong**, and W. Chutrtong Suan Sunandha Rajabhat University, Thailand **Abstract**—This phenomenological study aimed to determine if it could be used for academic purposes. In this study, we examined how undergraduate students accepted LINE for classroom-related activities and explored the factors that might affect their intention to use it. Data were collected from 47 undergraduate students of Suan Sunandha Rajabhat University. Data were collected by using a questionnaire and analyzed to see if relationships existed among factors when LINE was used to organize classroom experiences. The findings showed that students have good experience on LINE using. The study also suggested some kinds of LINE-based learning activities preferred by students.
CP2-2002 **15:30-15:45**	Use of Modern Information Technologies for Countering Corruption in the Executive Authorities **Olga A. Astafurova**, Anna S. Borisova, Eyda V. Golomanchuk, and Tatyana Y. Yagotinsteva Volgograd Institute of Management - the branch of RANEPA, Russia **Abstract**—The article describes the examples of experience of using information systems in anti-corruption activities of executive agencies in the Republic of Tatarstan, Yamal-Nenets Autonomous area, Volgograd and Tula region of Russian Federation. The points raised in the article are: tactics and methodology of countering corruption within the executive agencies of Russian Federation territorial entities. Within the framework of further development of anti-corruption system in the executive agencies of Russian Federation territorial entities, it was suggested to create a new and unique

	information analysis system. It is expected to test this system with the public authorities of Volgograd region. It was considered, that an active interregional cooperation is needed in the field of anti-corruption activities as well as the most progressive practices introduction in anti-corruption activity throughout all territorial entities of the country.
CP2-003 **15:45-16:00**	A Course Development; Instructional Media, Test and Learning Management According to Massive Open Online Course: Ethics for Using Information Technology **Bussakorn Cheawjindakarn** Ramkhamhaeng University, Thailand Abstract—This article was to present the course development, instructional media, test, and learning management according to Massive Open Online Course (ThaiMOOC) in the course "Ethics for Using Information Technology". The online course used 8 components of Thailand Cyber University Course Development Regulation; (1) course description and syllabus, (2) lesson plan, (3) instructional media, (4) learning activity, (5) evaluation, (6) test, (7) learning management, and (8) copyright. The steps of course development comprised of 5 phases; (1) planning (2) design (3) production (4) operating and (5) evaluation. The development and implementation of the course "Ethics for Using Information Technology" by ThaiMOOC in one learning cycle, it was found that 378 students who registered the online course participated and 54 students passed the course at 15.52%. The study on satisfaction of the students who studied via the online course by 99 samples found that the students satisfied the course at the level of "good"($\bar{x}$= 4.36) and satisfied the components of the course at the level of "good" ($\bar{x}$=4.19)
CP2-025-A **16:00-16:15**	The characterizations of some special curves in Minkowski 3-space Başak ÖZÜLKÜ ENGİN and **Ahmet YÜCESAN** Süleyman Demirel University, Turkey **Abstract**—We derive a general differential equation satisfied by the distance function for non-null curves in Minkowski 3-space. By using this differential equation, we easily express the well-known characterizations of non-null some special curves which are pseudo-spherical curves and rectifying curves. Then we obtain a new characterization of general helix. Lastly, we characterize non-null pseudo-spherical curves with respect to centrode and co-centrode. Similarly, we derive a general differential equation satisfied by the distance function for null curves. By means of this differential equation we see that there is not exist non-geodesic null curve lies on pseudo-sphere and we get known characteization of null rectifying curves. Also, we find a new characterization for null general helix and we characterize null general helix with respect to centrode and co-centrode.

Coffee Break | <16:30-16:45>

SESSION

August 24, 2019

Session 3

Machine Learning Applications

16:45-19:30

Gallery @Ground floor

Chaired by Asst. Prof. Nuanphan Chaiyama

Thailand National Sports University, Thailand

11 Presentations—

CP1-039; CP1-042-A; CP1-040; CP1-064; CP2-006; CP2-028;

CP2-2001;CP1-046; CP1-074; CP1-033; CP1-073

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SESSION

CP1-039 **16:45-17:00**	Success of Smart Cities Development with Community's Acceptance of New Technologies: Thailand Perspective **Wornchanok Chaiyasoonthorn**, Bilal Khalid and Singha Chaveesuk King Mongkut's Institute of Technology Ladkrabang, Thailand Abstract- Information and Communication Technology (ICT) and the Internet of Things (IOT) had been propagating in numerous aspects of our social and economic interactions and have started to transform our lifestyle with integration into the implementation in Smart Cities projects throughout the world. Smart Cities are part of the Thailand 4.0 initiatives which started in 2016. Adoption of the new Technology by citizens is essential and mandatory for such Smart City projects. We researched the Technology Acceptance Model and further extended the same with additional aspects to study the factors affecting the real adoption of new technology on the mass scale as part of the Smart Cities implementation.
CP1-042-A **17:00-17:15**	Strategic and operational level big data management capabilities and their influence on knowledge creation, leading to service innovations and better online quality ratings in hospitality sector **Saqib Shamim,** Yumei Yang, Syed Muhammad Shariq University of Kent, United Kingdom Abstract- Big data have been widely used in tourism and hospitality sector, but little is known about the influence of organizations' capability on managing big data for value creation. We divided big data management capability into operational level and strategic level. Following knowledge based dynamic capabilities (KBDCs) view, this study aims to fill the gap of the literature and find out how big data management capability can contribute to service innovation and online quality ratings through knowledge creation as a mediator. The influence of big data management capabilities at strategic and operational level, on knowledge creation leading to hotel's service innovation and online quality ratings on www.booking.com, which is one of the most commonly used infomediaries for hotel booking. Furthermore it also investigates how strategic level big data management capabilities indirectly influence knowledge creation through the mediation of operational level big data management capabilities. Primary and secondary data are collected from 185 hotels in Pakistan, and structural equation modelling through SmarPLS is employed for data analysis and hypotheses testing. This study contributes to the body of knowledge by filling number of gaps in the existing literature.
CP1-040 **17:15-17:30**	Emergence of New Business Environment with Big Data and Artificial Intelligence Singha Chaveesuk, Bilal Khalid and **Wornchanok Chaiyasoonthorn** King Mongkut's Institute of Technology Ladkrabang, Thailand Abstract-The research paper aims to study the factors related to incorporation of the artificial intelligence and big data in the business environment leading to rapid transformation leading to businesses expansion while riding the market trends, taking over of the competitions and other dynamics of the business environment. The need of conducting this research evolved from the recent events which have put many data mining companies under fire with the uncovering of the Big-Data scandals, manipulating and directing consumers' mindsets among masses to affect the favorable impressions. Furthermore, it has been also observed that business tends to seek

	assistance through its professionals, corporate and social networks to have price parity to achieve its strategic business goals and objectives.
CP1-064 **17:30-17:45**	Vehicle Counting Evaluation On Low-resolution Images using Software Tools **Benny Hardjono,** Hendra Tjahyadi, Mario Gracio Anduinta Rhizma, Madeleine Jose Josodipuro, Laurentius Dominick Logan and Andree E. Widjaya Pelita Harapan University, Indonesia Abstract-Vehicle counting is an important parameter in building highway macroscopic model. This model ultimately will help highway designers, road planners and even common commuters, since it can give short term predictions of the road's behaviour which is influenced for example by its traffic flow, number of lanes, as well as off and on ramps. This research attempts to count vehicles from existing video cameras, which gives low-resolution 3 seconds video of 1 frame per second. For low-resolution, conventional methods, such as Back-subtraction, and Viola Jones are unable to give high counting accuracy. However, with the aid of a custom-made software tool, various parameters of Deep Learning method, such as pixel-frame distance thresholds, and two different counting models can be run repetitively, to obtain better accuracy. Early results have shown that by varying pixel distance threshold, the percentage of error can go down from 40.8% to as low as 0.8%.
CP2-006 **17:45-18:00**	The Development of Blended Leaning Model by using Active Learning Activity to Develop Learning skills in 21st Century **Nuanphan Chaiyama** Thailand National Sports University, Thailand **Abstract**—This research is the development of a learning model that focuses on learners by allowing students to be practiced through thinking, analyzing, reason in solving problems and sharing knowledge themselves, Focus on professional learning activities, by using an integrated information technology network for learning management using learning processes, procedures, connectivity and continuously both in classroom and online learning to develop 21st century learning skills of learners. Those are higher order learning skills, information and digital literacy skills. The result of quality evaluation of learning model was at a very good level (= 4.51) (SD = 0.12). Students had post-test learning skills scores higher than pre-test at .01 level of significant. It shows that the learning model developed by researcher can develop learning skills in 21st century of learner's effectiveness.
CP2-028 **18:00-18:15**	Computer Human Interaction in Kid Can Write: An Application for Students with Learning Disabilities **Onintra Poobrasert** and Natcha Satsutthi NSTDA, Thailand **Abstract**—Special needs is defined as an individual with a mental, emotional, or physical disability. An individual with special needs may need help with communication, movement, self-care and decision-making. In this research, we design and develop a useful and usable technology called Kid Can Write. Kid can write aims to help students with learning disabilities in their writing. At first, the authors applied Nanci Bell's concept into the design. Nanci Bell's concept states that concept imagery is the smallest part in processing a language and there is a

	way to stimulate the building of concept imagery using picture and question to lead the students to think along similarly and endeavor to describe the picture using more words, longer sentences and describe the picture in greater details. Furthermore, the authors combine the previous concept with the design and development of the word search function and word prediction function in order to enhance the students in their essay writing. Finally, the result reveals that majority of the participants who evaluate the Kid Can Write specifies the highest level of satisfaction, which is accounted for 60 percent. This is followed by the high level of satisfaction, which is accounted for 40 percent.
CP2-2001 **18:15-18:30**	Anti-Corruption Education of Public Officers using Digital Technologies Olga A. Astafurova, **Anna S. Borisova**, Eyda V. Golomanchuk, and Tatyana A. Omelchenko Volgograd Institute of Management - the branch of RANEPA, Russia **Abstract**—The research is devoted to the development of anti-corruption education by means of developing and adopting an information analysis system "Methodology and tactics of anti-corruption management for public and municipal officers" and its implementation into the activity of executive authorities. The suggested software application performs functions of an electronic teaching complex in the sphere of public officers training and retraining, allows to provide education, assessment, and performance appraisal, to analyze results obtained, to make adjustments in the personnel retraining. The information analysis system testing has been planned in the Volgograd region executive authorities that is why in the article emphasis is given to anti-corruption activities in the above-mentioned region.
CP1-046 **18:30-18:45**	Design of the Electrical Energy Meter Leading to an Automatic Evaluation of the Preliminary Cost of Electrical Energy Consumption **Orrawan Rewthong,** Usa Boonbumroong, Thatree Mamee, Somruedee Pongsena, Kanokwan Phochaisan and Parichad Kumkrong Suan Sunandha Rajabhat University, Thailand Abstract-This research was to study the design and construction of the electrical energy meter leading to an automatic evaluation of the preliminary electrical energy expenses. The design of the electrical energy meter and the standard energy meter were used to record the data of the electrical power (W) and electrical energy consumption (kWh). The measurement of the data were done from the 5 electrical instruments. There are the refrigerator, compact fluorescent, fan, television and notebook. Then, the data were automatically calculated to the energy price (THB). It was observed that the percentage of the error data of electrical power (W) was in the range of 1.6 ± 0.7 to 4.5 ± 0.0 %. Furthermore, the data recording of the electrical energy consumption (kWh) and the error of each instrument were observed. It was found that the value of the percentage of the error was the maximum value of 5%. The energy price from the electrical energy consumption of each instruments were observed. The minimum value of the energy price was 0.05 THB from the compact fluorescent. The result of the maximum value of the energy price was 0.27 THB from the refrigerator.
CP1-074 **18:45-19:00**	The Framework of Government Cloud Computing Adoption with TAM in Thailand Warune Buavirat, Worapoj Kreesuradej and **Singha Chaveesuk** King Mongkut's Institute of Technology Ladkrabang, Thailand

	Abstract- Cloud technology/ Cloud Computing had gained significance and popularity in the recent years with the increase in the internet reliability, even increasing access speed and the need for large storage requirements by various users. The cloud technology has been widely used in the various business industries for many years such as data storage, analytics, data management, connecting network, distributed working etc. Cloud computing offer its series of benefits to many business industries, organizations including at government level. The implication of Cloud technology in the government will help to get information in real-time, improve work process with higher efficiency and effectiveness. E-government also known as G-Cloud is the kind of cloud system, which provides user interface to the Government systems for its citizens. The influx of innovation had also brought up many disruptions to many businesses in the industry. Organizations have been involved in the research to overcome such challenges and aims to extend adoption and technology fit with better clarity while overcoming the disruptions that have been faced by its citizens from the government departments and why it's necessary for adopting this technology innovation by their particular organization. This study based on technology acceptance model 3 and task-technology fit model.
CP1-033 **19:00-19:15**	Controlling Electrical Equipment Smart Home System Using Wireless Network Incorporating Internet of Things **Busarin Eamthanakul**, Orrawan Rewthong and Sansanee Sansiribhan Suan Sunandha Rajabhat University, Thailand Abstract-An objective of this research paper is to manage a use of energy in a household cleverly by a smartphone. A developed system specifies on an energy management inside an accommodation. The system uses an infrared sensor to detect a human movement. Also, it combines with a wireless network system and a smart phone to control electrical equipment in a household. As well, a system measures an energy value from that electrical equipment also evaluates a measured value to an electricity charge after that. As a result, the researchers infer that the system can reduce an electricity uses within 7 days after comparing with a regular use. An electricity unit is decreased from 3.16 down to 2.46 for 7 days. In consequence, this research can reduce electricity using efficiently.
CP1-073 **19:15-19:30**	The Acceptance Model toward Cashless Society in Thailand Singha Chaveesuk, Prachuab Vanitchatchavan, Phayat Wutthirong, Parisgawin Nakwari, Mathin Jaikua and **Wornchanok Chaiyasoonthorn** King Mongkut's Institute of Technology Ladkrabang, Thailand Abstract-The rapid growth of technology allows Thailand into a cashless society in the future. In this study, we have proposed the cashless society acceptance in Thailand, from which all electronic transactions such as purchasing, sales, and the provision of other financial services can be applied. This is the investigation of the UTAUT2 theory that can be more appropriate for the consumers. The UTAUT2 theory is integrated with the service quality (trust and application design), which can be used to examine the acceptance potential of the cashless society acceptance in Thailand. The outcomes of this study will benefit the financial industry in their effort to initiate an extensive online-transactions process in all users, especially in Thailand.

Dinner | <19:30-21:00>

SESSION

August 24, 2019

Session 4

Software Engineering

16:45-19:30

Class Room I @Ground floor

Chaired by Prof. Hiroyuki Kameda

Tokyo University of Technology (TUT), Japan

11 Presentations—

CP1-012; CP1-031-A; CP1-045-A; CP1-062; CP1-013; CP1-015; CP1-032; CP1-044; CP1-068 ;

CP1-030; CP2-013

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SESSION

CP1-012 **16:45-17:00**	Automated classification of software bug reports **Ahmed Fawzi Otoom**, Sara Al-jdaeh and Maen Hammad The Hashemite University, Jordan Abstract- We target the problem of software bug reports classification. Our main aim is to build a classifier that is capable of classifying newly incoming bug reports into two predefined classes: corrective (defect fixing) report and perfective (major maintenance) report. This helps maintainers to quickly understand these bug reports and hence, allocate resources for each category. For this purpose, we propose a distinctive feature set that is based on the occurrences of certain keywords. The proposed feature set is then fed into a number of classification algorithms for building a classification model. The results of the proposed feature set achieved high accuracy in classification with SVM classification algorithm reporting an average accuracy of (93.1%) on three different open source projects.
CP1-031-A **17:00-17:15**	Evolution of Modularity in Computer Programs **Rami Rashkovits** and Ilana Lavy Yezreel Valley College, Israel Abstract- In software engineering, one of the key indicators for the quality of code is its level of modularity. Modular programming is a design principle that divides the functionality of a program into modules each responsible to one aspect of the desired functionality. The modules are independent and can be easily replaced or extended with minimal changes in other modules. Modular code eases the development and maintenance of computer programs, by turning the code to be simple and hence clear and readable. Nevertheless, programmers sometimes tend to avoid the time required for the design phase in order to get the program work on shorter schedule, and as a result the code is less modular then desired. In this study, we aim to examine the conditions in which novice programmers choose to invest efforts in designing modular code, and explore their motivations. To address this aim, we gave a programming assignment for two information System student groups, twenty students in each. The students were asked to design and implement a computer program aimed to accept a polynomial from the input (polynomial degree and coefficients), and calculate its value at a given point. Then, the program has to derive the polynomial and calculate its value at the same point, derive it again and so forth. The students were given no further instructions regarding the desired solution. The students in the first group were given the assignment as a whole, while the students in the second group were given the assignment in three phases, each adds more requirements to the previous phases. At first, the second group students were asked to provide a solution only for the Polynomial, then, in the second phase they had to address the first derivation as well, and only at the last phase the remaining derivatives were added to the problem. All three phases require a representation of a Polynomial, as all derivatives are polynomials as well, a calculation of a polynomial at some point, and a derivation operation. Hence, modular code may significantly assist with the implementation of all solution components, if carefully designed. Good design would result in the following code units (1) construct a polynomial (2) evaluate polynomial at a given point (3) derive a polynomial (4) main program that constructs a polynomial, evaluate its value, and derive it several times until zero polynomial is reached.

	The study participants were third (and final) year Information Systems students, all graduated "Introduction to computer science with Python", and "Object oriented programming with Java" courses. In these courses, the students were exposed to the advantages of code modularity and its effects in both procedural and object oriented paradigms. The solutions were classified into three categories: 1-non-modular, 2-partial-modular, 3-full-modular. Solutions with repetitive code segments, in which the entire code was written in one or two functions were classified to the first category. Solutions with several functions (either object-oriented or procedural), each responsible for few aspects of the solution were classified into the second category. Solutions with many functions, each responsible for a single functionality unit, with a clear separation between the Polynomial code and the program that uses it were classified to the third category. In fact, in terms of software engineering, only the solutions classified to the third category can be considered as sufficiently modular, since they enable one to reuse the Polynomial code in other programs easily, without additional efforts to cut redundant code. Fig. 1 shows the distribution of the solutions of the first group (one assignment) and the evolution of modularity distribution across the three phases of the second group (phased assignment). Fig. 1. Modularity Level As shown, the percentage of modular code (partial and full) was the highest among the students of the first group. Even when compared to the distribution of percentage of the third phase of the second group (who addressed identical assignment) there is significantly higher percentage in the first group, suggesting that When the "full picture" is present during design, it is easier to design a high quality solution, than in cases when the picture becomes clearer step by step. It is also evident from Fig. 1 that there is a minor increase in the number of modular solutions as the students were given further requirements along the phases. This increase may be attributed to the fact that when it becomes clear to the students that the code they wrote for previous phases may be adapted to solve the new requirements as well, it is worth the re-design efforts. Yet, the majority of the students in the second group (60%) stick to the non-modular architecture although it was clear that their solution is of very low quality.
CP1-045-A **17:15-17:30**	Factors Influencing Individual in Adopting e-Wallet **Muhammad Anshari,** Munirah Ajeerah Arine, Norzaidah Nurhidayah and Hidayatul Aziyah Darussalam Universiti Brunei Darussalam, Brunei Abstract-The research examines individuals in terms of the feasibility of an adopting digital wallet also known as ‘e-wallet’. It aims to assess the technological readiness among customers especially youth by measuring the acceptance level of digital wallet adoption in a massive implementation of the digital economy. Adoption of e-Wallet for the purpose of improving the efficiency of financial institutions as well as for the provision of new services for the convenience of the customers. The nature of the study was developed in the context of South East Asia focusing on Brunei Darussalam. The study developed a framework for assessment based on the unified theory of acceptance and use of technology (UTAUT) model. The study revealed that the main construct of the model to be predictors of behavioral intention is the attitude towards using technology and anxiety. This results might be as a result of the millennial generation being in constant interaction with various types of technology, paired with the rising internet connectivity leading to the minimal impact of the digital wallet adoption.

SESSION

CP1-062 **17:30-17:45**	End-to-End Wireless Control Plane for SDN in Data Centers Zuneera Umair, **Umair Mujtaba** Qureshi, Xiaohua Jia and Gerhard Petrus Hancke City University of Hong Kong, Hong Kong Abstract- Enabling Software Defined Networking (SDN) in existing data centres, requires the deployment of an entire physical wired network for either control or data plane. This leads to high cost and cabling complexity. This paper presents an end to end wireless control plane architecture to be deployed on top of the existing wired data centre network. In the proposed architecture, Top of Rack wireless switches (ToR Switches) are introduced, these switches are grouped in to clusters and connected to the SDN Controller via wireless Access Points (APs) and Relay Nodes (RNs). Since control traffic is lower in comparison to the data traffic, we propose 2.4/5 GHz band to be used between cluster of switches and an AP. Whereas 60 GHz band is proposed between AP/RN and a controller. The efficacy of the proposed architecture depends on its ability to use minimum number of APs/RNs such that the control traffic demands of the switches are fulfilled. In this regard two algorithms are proposed. First algorithm clusters the switches and places minimum number of APs. In the second algorithm, minimum number of RNs are placed such that all the APs are connected to the Controller. The simulation results imply that with the proposed architecture the cabling complexity in the control plane is reduced to zero and additional switches may be easily added. Furthermore, the cost of deploying an end-to-end wireless control plane is far less than the wired counterpart.
CP1-013 **17:45-18:00**	Strengthen Password Security using Smartphone Sensors and Keystroke Dynamics **Tanapat Anusas-Amornkul** King Mongkut's University of Technology North Bangkok, Thailand Abstract- Presently, a password authentication is a weak point for security in the authentication scheme because a password is easy to be stolen and a user may ignore the security by using a simple password, which is easy to remember or using the same password for all accounts. From the related works, basic keystroke dynamics features, i.e. key hold time, latency time, and interkey time, were studied on a smartphone. The results showed the weak aspect to use only basic keystroke dynamics for authentication on the phone. In this research, the study of smartphone sensors combining with keystroke dynamics is proposed to strengthen the password authentication, called a biometric authentication. New features are key hold pressure, finger area, and accelerometer sensors. The classification techniques in this work are Naïve Bayes, k Nearest Neighbors (kNN), and Random Forest. The classification accuracy percentage and equal error rate (EER) are used for measuring the performance of the features and classifiers. From the results, Random Forest gives the best performance and if all smartphone sensors and keystroke dynamics are used as features, the best accuracy percentage is at 97.90% and EER is at 5.1%.
CP1-015 **18:00-18:15**	SimScrumF: a game for supporting the process of teaching Scrum **Luiz Ricardo Begosso**, Luis Franco, Douglas Cunha and Luiz Carlos Begosso FEMA, Brazil Abstract- This paper presents our work in progress using gamification principles to create a simulator for supporting the process of teaching Project Management concepts, specifically the

	Scrum methodology for the Software Engineering course. We created the SimScrumF - Scrum Simulator, a game that is focused on promoting the engagement of students in the learning process of agile concepts and the Scrum methodology. This game is based on CRPG – Computer Role-Playing game, where the student controls the actions of a character immersed in some well-defined world. The architecture of the game is multi-language, to facilitate the learning of students from different countries. Our game simulates different circumstances where the student can "live" the different Scrum phases and roles: Product Owner, Scrum Master and member of the Development Team. When the student finishes the sprint and delivers the product to the client, the student will earn more or fewer experience points, depending on the satisfaction of the client. We will describe the details of the implementation of the project and how the student can have real situations in software development.
CP1-032 **18:15-18:30**	An Analysis of Numerical Grid-Based Authentication **Sirapat Boonkrong** Suranaree University of Technology, Thailand Abstract-Passwords have been used as an authentication method for a long time. Many variations have also been proposed and applied. Grid-based passwords are also ones that have caught up with others in popularity. This paper analyses the security of such system. How the way that users select cell positions in different grid sizes affect overall security of the system is investigated. How they think of the ease of use of each of the grid sizes is also studied. As a result, an attempt is then made to find a balance between security and usability.
CP1-044 **18:30-18:45**	Software Engineering in Medical Informatics: A Systematic Literature Review **Gonca Gokce Menekse Dalveren** and Deepti Mishra Norwegian University of Science and Technology, Norway / Atilim University, Turkey Abstract- This study presents a systematic literature review to provide overall view of the application of Software Engineering (SE) in Medical Informatics (MI) field. Articles published from 2010 to 2019 from seven selected databases (Emerald, PubMed, IEEE, ACM, Taylor Francis, SAGE and Wiley) were investigated. The existing literature was analyzed, and the emerging areas of research in the medical informatics field have been identified. According to the findings of this study, medical informatics research has been applied in many fields but there is still potential of further research in different areas. Most of the reviewed studies were conducted on data mining, decision support, deep learning and IoT. Also, it can be said that most of the applications are provided as web-based instead of mobile applications. To conclude, the results of this study provides insights to the researchers about the research directions and the gaps in the literature in the MI and SE fields.
CP1-068 **18:45-19:00**	Extending IT-based Competitive Strategy Framework using Architecture Vision and Business Architecture of TOGAF Architecture Development Method (ADM) **Ira Puspitasari** Universitas Airlangga, Indonesia Abstract- Aligning IT solutions with business requirements has been and continues to be a major problem in IT management. Despite the variety of the comprehensive IT business alignment frameworks available, many enterprises struggle with the implementation because of the

	excessive resource requirements and the high complexity processes. The difficulties of applying the existing frameworks and/or methodology are even more challenging for small and medium-sized enterprises (SMEs) because of the limited resources and capabilities in SMEs. Yet, the right IT implementation in SMEs provides the same benefits as in large enterprises. This study aims to develop a specific and practical IT-business alignment framework to assist IT-business alignment efforts in SMEs. The proposed solution is the extension of IT-based competitive strategy framework using Architecture Vision and Business Architecture of TOGAF Architecture Development Method (ADM). The methodology follows the design-science research, i.e., designing the framework extension and evaluating the framework application in six SMEs in Indonesia. The results of the framework application demonstrate the framework suitability to address SMEs' needs and constraints. The stakeholders' assessment also confirms the benefit of the framework. The proposed framework is easy to understand and to use, and the outcomes are generally applicable for SMEs.
CP1-030 **19:00-19:15**	Evaluation of water requirement for coconut growing with remote sensing technology **Walaiporn Phonphan**, Manatsanan Thanakunwutthirot and Supeerat Plangcharienpon Suan Sunandha Rajabhat University, Thailand Abstract- Samut Songkhram is one province in Thailand which has coconut cultivation for domestic consumption and export abroad. However in the dry season, will be faced with the problem of using water due to the problem with sea water condition that raised, which the initial solution is to bring fresh water from the upper dams to push saltwater out of the area. Therefore, the data used of fresh water in the area, is important to water management in the upcoming crisis. The assessment of water requirement for coconut cultivation is mainly aimed to determine the area of coconut growing through remote sensing technology and assess the water demand in the coconut growing area. The result found, the area of coconut cultivation as 74876 Rai, where was analyzed by satellite data of Landsat8 with Supervised Classification method. The accuracy from interpreted data is 92%. The determination of water requirements for planting coconut were analyzed from the equation of Penman Monteith, average equal to 458,473,908 cubic meters. The value of Reference Crop Evapotranspiration average ETo is 3.80 mm / day and the coefficient of water use (Crop Coefficient) average Kc is 1.35. This research found the amount of coconut water needs in the early stages of growth with relatively little water demand and gradually increased, and there is no change in water usage.
CP2-013 **19:15-19:30**	Developing a Knowledge-Driven Decision Support System for University/College Selection Problem in Kuwait **Suat Kasap**, Danah Abbas, Maryam Khajah, and Marwa Ashknani American University of the Middle East, Kuwait **Abstract**—The future of any high school student depends mostly on selecting the right place to study after graduating from high school. Most high school graduates are lost in selecting their right path in Kuwait due to increasing number of university or college alternatives. This paper explains development of a decision support tools that helps high school fresh graduates to choose the best university or college in Kuwait based on their preferences. To choose the right university to apply, there are many decisions that should be taken into considerations. These decisions are related to variety of universities/colleges and the students' preferred criteria.

SESSION

	Decisions upon which university should be selected depends on a list of criteria's, this makes the problem is a multiple criteria decision making (MCDM) problem. A Decision Support System (DSS), more specifically, a knowledge-driven DSS is developed to consider this problem. Analytic Hierarchy Process (AHP) is a MCDM process that is chosen to provide alternative solutions for the students based on their several criteria's. Microsoft excel is used in applying AHP, and a Website is built to represent the future business.

Dinner | <19:30-21:00>

SESSION

August 25, 2019

Session 5

Pattern Recognition and Classification

09:30-11:30

Gallery @Ground floor

Chaired by Prof. Fu-Hsing Wang

Chinese Culture University, Taiwan

8 Presentations—

CP1-2001-A; CP1-034; CP1-027; CP1-2002-A; CP1-051; CP1-060; CP1-2003-A; CP1-028

***Note**:

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- One Best Presentation will be selected from each parallel session and the author of best presentation will be announced and awarded when the session is over.

SESSION

CP1-2001-A **09:30-09:45**	A neural network based prediction model of tomato harvesting patterns **Kyung Jin CHA**, Jaijin Jung and Hwa Jong KIM Kangwon National University, South Korea Abstract- There have been many approaches in developing prediction models for crop harvesting. They are usually aimed to predict mass harvesting or mass density. In this research, we suggest a model which can distinguish harvesting patterns of tomato, recognizing whether the tomato is growing well or not. By knowing the present growing pattern, we can control the green house environment settings to improve the harvesting. When developing crop prediction models, most difficult part is feature engineering and preparing the predictor data. However a deep neural network (DNN) model can minimize the feature engineering. We used tomato data from a green house in Korea size of 6,000 m2, of several crop durations of 4~ 8 months including growing and harvest periods. We developed a DNN based model for predicting harvest patterns of wellness of tomato. We compared models with RandomForest, RNN, and CNN. Main prediction variables are temperature and humidity. The response variable is the goodness of harvest, predicting harvest will be better or not in the up coming week. Usually CNN with 1- dimensional filter is better in computation and pattern recognition of time series data. We used the humidity and temperature data because they are known as most important factor and can be measured accurately and objectively than other sensor data. For example, we excluded ground moisture and nutrient content. Nutrition data is hard to record and depends on the brand, density and frequency of nutrition. Rather than trying to get an accurate model to predict the next mass harvest, we suggested a stable and extendable model which can be used to advise controlled information to adjust temperature and humidity in a green house.
CP1-034 **09:45-10:00**	A Recommendation Model for Medical Data Visualization Based on Information Entropy and Decision Tree Optimized by Two Correlation Coefficients Huishan Huang, Runtong Zhang and **Xinyi Lu** Beijing Jiaotong University, China Abstract-Medical practitioners usually have difficulties in obtaining information effectively from massive data due to limited time and energy. This paper proposes a novel recommendation model for medical data visualization based on decision tree and information entropy optimized by two correlation coefficients, that is, Pearson's correlation coefficient and Kendall's correlation coefficient(P&K.CC). After investigating visualization techniques under different medical scenarios, we construct a medical domain knowledge-based decision tree which employs two correlation coefficients as new measures of feature quality to confirm the optimal splitting attributes and points in its growth, as well as prioritize the medical datasets based on improved information entropy. Finally, in contrast to several traditional decision tree classifiers, the results indicated that the proposed method achieves a better accuracy of the scenario classification of medical data. At the same time, the method can find the datasets that perform better in knowledge presentation and visualization.
CP1-027 **10:00-10:15**	What Number of Features is Optimal? A New Method Based on Approximation Function for Stance Detection Task Vychegzhanin Sergey, Razova Elena and **Kotelnikov Evgeny** Vyatka State University, Russia

	Abstract- Selecting a text representation model faces a crucial problem of choosing an optimal number of features. The optimality criterion is the minimum number of features, which allows to achieve (or preserve) the maximum performance. The article suggests a new method of determining the optimal number of features, in which both components of the optimality criterion are taken into consideration. Using the proposed method, we first construct the dependence of task performance on the number of features, then the obtained dependence is approximated on the basis of Weibull distribution function, and the optimal number of features is determined by analyzing the growth rate of this function. We called this method DOFNAF (Determining the Optimal Feature Number by the Approximating Function). The proposed method is tested on stance detection task, consisting in identifying the position ("for" or "against"), which the author of the text supports towards the object (or objects) under discussion. The comparison involves constant methods, a method based on the function of the total number of features, a method of performance maximum, as well as Recursive Feature Elimination with Cross-Validation (RFECV) and Correlation-based Feature Selection (CFS) methods. The DOFNAF method allows to determine the minimum number of features compared with the existing methods and at the same time to maintain the classification performance.
CP1-2002-A **10:15-10:30**	Artificial Neural Network Model for Predicting Tomato Production in Smart Farm **Hwa Jong KIM,** Sung Eun Hong, Kyung Jin CHA Kangwon National University, South Korea Abstract- Recently, with the emergence of smart farm technology, various IoT devices were installed in cultivation environment facilities, and the environment of the farm is measured, collected and controlled to create an optimum environment for crops. The increase in the number of Smart Farm-enabled farms is accumulating environmental data measured of farms. An analysis of the collected environmental information and crop growth information was carried out under the assumption that a model would be possible to predict the yield of crops. In our research, we have developed an artificial neural network model that predicts the production of tomatoes using input information of environmental information (temperature, humidity, carbon dioxide, radiation, etc.) collected by IoT devices to predict the production of smart farm technology. The work carried out in the study is a layering of the artificial neural network model for the prediction of yield and the process of integrating the units of continuous data collected directly by the IoT device. Existing crop production forecasting was mainly a study of finding a linear equation consisting of input data and weighting, like the regression model. [1-2] Research has shown that we have developed a more data-based yield prediction model using a variety of input data given the latest deep-learning techniques. In addition, future studies of this model can be used as an input to the control of the cultivation environment if it is possible to predict the yield according to the input of the current state of the given environmental factor.
CP1-051 **10:30-10:45**	Homogeneous Ensemble Instance Intervals Determination Method of Time Series Data Based on Granular Computing **Jaewoong Kang,** Wooseong Yang and Mye Sohn Sungkyunkwan University, South Korea

	Abstract- It is very important to determine the size of the instance since it has a large impact on the recognition performance of the devices. In this paper, we propose a novel method to recognize the intervals of the time-series data using granular computing. Unlike traditional methods which use fixed size or knowledge-based, our method is conducted data-driven. Based on the concept of the granular computing, we classified the operation data of devices into three levels and proposed a multi-SVM-based machine learning method that can automatically classify each granule. We have proven the excellence of our method by conducting and evaluating experiments with two perspectives.
CP1-060 **10:45-11:00**	Digital Speech Therapy for the Aphasia Patients: Challenges, Opportunities and Solutions **Oche Egaji,** Ikram Asghar, Mark Griffiths and William Warren University of South Wales, United Kingdom Abstract-This paper outlines the potential challenges of adopting digital solutions for treating patients with aphasia. Current research has focused on the use of non-immersive Virtual Reality (VR) approach to therapy, and the outcome of their evaluation with people with aphasia has been promising. There is currently no research on the effect of using fully immersive VR technology as a digital therapy solution for people with aphasia. This paper aims to fill that gap by proposing the integration of Immersive VR with an appropriate Artificial Intelligence (AI) powered voice recognition model in creating a digital therapy solution for people with aphasia. The authors hoped that this application will ease the workload of the speech therapist and will enhance the long-term recovery process for people with aphasia.
CP1-2003-A **11:00-11:15**	Changes in online user behavior: Generation Alpha **Riaan Rudman** Stellenbosch University, South Africa Abstract- The Internet is considered the fastest growing publication medium of all time. From static informative characteristics of Web 1.0, the interactive experience Web 2.0 provides through to the Web 3.0 experience where machines are able to understand and catalogue data in a manner similar to humans, this evolution has been exponential. The content being produced is not text, but rather streams of data. Much of these streams of data is in the form of images, voice, video and meta-data. This data is being recombined for new uses. The Internet has matured in an unique manner and acts as a catalyst for other technologies to evolve. It facilitates a world wide data warehouse where any format of data can be shared and understood by any device over any network. The evolution of the Internet brought forth fundamental change to the user experience as well as changing how users access and experience information and content. Users have also evolved. Given the pace at which technology is evolving, this is the first time in the history of the internet that multiple generations of users are using the internet, from “baby boomers” to “Generation Alpha”. They have different expectations and these expectations influence the entire user experience of the Internet (and applications using the Internet as a foundation) and require an understanding of the technologies to lever of the new methodologies of cataloguing vast arrays of data. The objective of the research is to define the evolution of the Internet, and identify new opportunities that arise from the evolution of the Internet and changes in user expectation. A

	systematic literature review highlighted the changing context of the Internet and how the user experience has evolved to keep up with the evolution of the internet and visa versa. The research highlights the general characteristics of the modern user and how this impacts the consumption and provision of content.
CP1-028 **11:15-11:30**	Rainbow Colorings on WK-recursive pyramids **Fu-Hsing Wang** and Cheng-Ju Hsu Chinese Culture University, Taiwan Abstract- A path P is a rainbow path if P with all edges of different colors. An edge coloring graph G is rainbow connected if every two vertices are connected by a rainbow path. An edge coloring under which G is rainbow connected is a rainbow coloring. Rainbow connection number of G is the minimum number of colors needed under a rainbow coloring. In this paper, we propose linear-time algorithms for constructing rainbow colorings on WK-recursive networks and WK-recursive pyramids and thus establish upper bounds to the size of the rainbow connection numbers on WK-recursive networks and WK-recursive pyramids.

Lunch @Atrium (catering place) | <12:00-14:00>

SESSION

August 25, 2019

Session 6

Electronic Technology Applications

09:30-11:45

Class Room I @Ground floor

Chaired by Prof. Janneth Chicaiza

Universidad Técnica Particular de Loja, Ecuador

9 Presentations—

CP2-026; CP1-029; CP1-005; CP1-041; CP1-052; CP1-023; CP1-075; CP2-031; CP1-043

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SESSION

CP2-026 **09:30-09:45**	Study on Worldwide Development and Trends of Quantum Technologies based on patent data **Juan Zhang**, Qianfei Tian, Chuan Tang, Lina Wang, Jing Xu, Junmin Fang Chengdu Library and Information Center, Chinese Academy of Sciences, China **Abstract**—Quantum technologies attracted much attention for their disruptive potential in last two decades. The article analyzes the worldwide patent landscape for quantum technologies based on data extracted from Derwent Innovation and Web of Science. The quantum technologies were grouped into three distinct technology areas of quantum computing, quantum communication and quantum sensing, to demonstrate detailed development and trends respectively. It shows that quantum technology is a highly competitive research field, and United States, China and Japan are the most prominent countries, in particular China made a great progress in recent years. United States has a significant advantage in the field of quantum computing, which is the most promising field, meanwhile China has a significant advantage in the field of quantum communication and succeeds in launching a quantum satellite.
CP1-029 **09:45-10:00**	Improved User Experience in Digital Library through Advanced Content Synthesizing **Desislava Paneva-Marinova**, Lubomir Zlatkov and Lilia Pavlova Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences, Bulgaria Abstract- In the process of exploitation of the digital libraries and their resources, it is necessary to offer flexible tools for content synthesis, using basic human brain activities in the content selection process. The aim is to offer the user the opportunities to experience the feeling of accessibility of the provided objects; better benefit and effect of exploring the digital service, immersing in the presented information environment; motivation to continue using the resource, receiving emotional experience; and so long. This paper is focused on content synthesizing activity trying to give new solutions for improved user experience in digital libraries.
CP1-005 **10:00-10:15**	Design and Application of a Service Outsourcing Cloud for the Insurance Industry **Huaihai Hui**, Des Mclernon, Ruifeng Zhang, Changwei Liu and Jianguo Huang University of Leeds, United Kingdom /Chinese Academy of Sciences, China Abstract- With the development and maturity of cloud computing technology, many cloud-based solutions for specific industry applications are also rapidly emerging. This study designed and implemented a Service Outsourcing Cloud for the Insurance Industry (SOC-II) for China's huge market demand, especially for Business Process Outsourcing (BPO) companies serving the insurance industry. Firstly, this research presents the cloud computing ecosystem, conducts SOC-II needs analysis, and then proposes the system architecture and logical architecture of SOC-II. Secondly, this paper introduces an image processing case in a SOC-II production operation system, and gives the operating mode and management mode of SOC-II. Thirdly, we summarize the main features of SOC-II and the new changes that SOC-II brings to the insurance industry. Finally, the article discusses the challenges of cloud computing.
CP1-041 **10:15-10:30**	Ontological Model for the Semantic Description of Syllabuses Mariela Tapia-Leon, **Janneth Chicaiza**, Carlos Aveiga and Mari Carmen Suárez-Figueroa

	Universidad Técnica Particular de Loja, Ecuador Abstract-The syllabus is a relevant document to organize how the teaching-learning process will be carried out during an academic course in Higher Education Institutions (HEI). Usually, this document is written in a human-readable format that do not enable automatic processing through intelligent services to support teaching and learning. Therefore, we created OntoSyllabus ontology for the representation of syllabuses applying the NeOn methodology. The semantic model of a syllabus will allow the comprehension for both: machines and humans, and it will facilitate the interchange of data between different services and applications. The ontology was created based on the results of our three previous studies, which helped us to determinate the terms and relations in the syllabus ontology. The documentation and the computable model are available on the Internet for their reuse.
CP1-052 **10:30-10:45**	Optimal Design of Automatic Train Operation Information with the Consideration of Regenerative Braking **Qian Pu,** Xiaomin Zhu, Runtong Zhang, Jian Liu, Dongbao Cai and Guanhua Fu Beijing Jiaotong University, China Abstract- Energy saving is a major consideration of train operation to realize environmentally-friendly urban railway systems. In this paper, train control information is studied with the consideration of regenerative braking to realize a better energy saving. The static and dynamic models of train are established firstly. Then the energy flow of the urban railway train system is analyzed as well as the train operation performance indexes are constructed. Performance indexes of energy consumption, running time, passenger comfort and stopping accuracy are taken into account. To get the optimized Pareto solutions of control information, multi-objective particle swarm optimization algorithm is used to solve the problem with the popular running styles. Through the case study, train control information can be obtained after the software simulation which validate our proposed method. The selected optimization algorithm MOPSO performs better than the NSGA-II algorithm. And the optimization results can saving 9.7% energy compared with the practice running data. Besides, the sensitive analysis of regenerative braking coefficient is conducted in the last to show the influence of regenerative braking factory on the train control information.
CP1-023 **10:45-11:00**	Influencing factors on students' continuance intention to use learning management system (LMS) **Ahad Zareravasan** and Amir Ashrafi Masaryk University, Brno, Czech Republic Abstract- In the last decades, universities and higher education institutes have widely employed learning management system (LMS) to monitor and manage online learning and teaching. Contrary to the significant role of LMS in educational settings, most research has focused on initial acceptance, and few attempts have been made to investigate factors influencing students' continuance intention to use LMS. The present study is an effort towards this research direction by proposing an integrated model of Expectation-Conformation Theory (ECT), and Technology Acceptance Model (TAM). The proposed model was tested using statistical data from 153 students

	from an online university. To verify the proposed theoretical model, we ran partial least squares (PLS)/ structured equation modeling (SEM). The findings of this study revealed that the perceived usefulness is the strongest predictor of students' continuance intention. Surprisingly, our results also indicated that students' attitude toward LMS and their satisfaction level exert no significant influence on continuance intention.
CP1-075 **11:00-11:15**	The Determinants Of Hotel Room Rates In Beirut: A Hedonic Pricing Model **Nadia El Nemr,** CANEL-DEPITRE BEATRICE and TAGHIPOUR ATOUR University of LeHavre, France Abstract-This work attempts to identify locational, structural and other attributes that have an effect on room rates in Beirut region. Therefore, a sample of 89 hotels were considered in this study. Data were collected from TripAdvisor website during March 2019, considered as a low season in Lebanon. An OLS regression analysis was used to identify significant variables. Results has shown a strong positive significance of star rating category and accessible rooms, and a strong negative significance of centrally located, business and safe labels. Hotel managers are advised to use current findings and analysis to adjust their pricing strategies and communicated image.
CP2-031 **11:15-11:30**	The Development e-Tracking Application for Hospitals K. Kularbphettong, S. Klinpub and **J. Chutrtong** Suan Sunandha Rajabhat University, Thailand **Abstract**—This paper describes the development of e-Tracking System based on Mobile Application to help patients and officers to keep track of the processes in order to resolve problems of working with in a day. This application was designed to support and enhance document tracking system. In addition to reducing paper usage, the application provides a map and gives a direction in the hospital by applying QR Code scanning technology on the android operating system for data gathering. The users could see the hospital map which has shown a directory and description in each floor as the simulation. QR Code technology would run on a camera phone and QR Code Reader program for photo shooting, then it would process this QR Code as the original data for scanning by phone or the other device. To evaluate the system performance, questionnaires for system usability and Black Box Testing were used to measure expert and user satisfaction. The findings revealed that the users were more interested in QR Code application for helping patients in the hospital and the satisfaction on the system was in the highest level (X = 4.66, SD = 0.11).
CP1-043 **11:30-11:45**	A Virtual Reality Based Gas Assessment Application for Training Gas Engineers **Ikram Asghar,** Oche A Egaji, Luke Dando, Mark Griffiths, Phil Jenkins University of South Wales, United Kingdom Abstract- Once a gas leak is reported, the rescue operation usually requires safe and precise identification of a leak source and stopping it. However, it is risky to train new gas engineers in a real gas leak situation. This paper aims to address this challenge by proposing a virtual reality (VR) based Gas Assessments and Training (GAT) Application (App) that helps gas engineers gain

	practical experience on correct gas safety procedures. The GAT App will also train gas engineers to make timely decisions and practice relevant safety measures when dealing with an actual gas leak. Sixteen gas engineers evaluated the GAT App. All the participants carried out several tasks with the GAT App and completed System Usability Scale (SUS) questionnaires afterwards. The data revealed an average SUS score of 84.06, which indicates that the gas engineers enjoyed using the GAT App and will recommend it to their colleagues. However, there is a need for more user testing for result generalisation.

Lunch @Atrium (catering place) | <12:00-14:00>

POSTER

CP1-035	A Meta-model For Software Project Change And Configuration Management Khansa Khan, Farooque Azam, Muhammad Waseem Anwar and Ayesha Kiran National University of Sciences and Technology (NUST), Pakistan Abstract- Project change and configuration management refers to the process of controlling and managing of change in project development process. Change can occur in any of the items and phases. This paper has focused on change management i.e. when change occurs in requirements of the software project. Several approaches have been proposed for change/configuration management. But, a metamodel is required that accommodates the tracking of change in three of the requirements i.e. Functional Requirement (FR), Non-Functional Requirements (NFR) and Domain Requirements (DR). In this paper, we have proposed a metamodel for tracking that how change in one requirement impacts change in other requirement so that it can later manage the development process of the project. It provides the identification of hierarchal relation b/w FRs, NFRs and DRs and helps to authorize the changes in order to ensure the requirements consistency in the project.
CP1-056	Study on the prediction of Patent Hiding Company Using Patent Information Analysis Youngho Kim, Junseok Lee, Jiho Kang, Sangsung Park, Sunghae Jun and Dongsik Jang Korea University & CheongJu University, South Korea Abstract-Establishment of an effective R&D strategy can be achieved through Prior art search. Prior art search is aimed at identifying major applicants in a specific technology field and is mainly carried out using patents. However, some companies hide their patents as M&A or other companies with most shares in order to avoid exposure. It is difficult to identify the actual owners of patents of such patent hiding companies. Thus, patent hiding companies hinder successful prior art search. To solve this problem, this paper proposes a model for predicting patent hiding companies by using text information and quantitative indicators of patents. As experimental data, N screen technology patents registered in USPTO are used. As a result of the experiment, Cleversafe was found to be IBM's patent hiding company.
CP1-037	A Meta-model for Planning and Execution Activities in Software Project Integration Management Fatima Waheed, Farooque Azam, Muhammad Waseem Anwar and Ayesha Kiran National University of Sciences and Technology (NUST), Pakistan Abstract- Project management is one of most important parts of every business and it demands to be controlled effectively. Project integration is one of the knowledge area of project management. It is a technique for influencing diverse methodology to coordinate; it takes different strategies that are being used in a task and guarantees that they are sorted out. Much work has been done on optimization of project management processes but not specifically on project management knowledge areas. This paper discusses the core knowledge area of project management i.e. project integration management. A meta-model for project integration management, for converting manual tasks into automated one, is presented in this research. The architectural concepts of proposed meta-model is described using different levels of meta-modeling i.e. M1, M2, M3, M4. The applicability of proposed approach is also validated through a case study.
CP1-057	A Study on Visualization of Technology Transfer using Distance based Patent Network Analysis Juhyun Lee, Junseok Lee, Jiho Kang, Sangsung Park, Sunghae Jun and Dongsik Jang

	Korea University & CheongJu University, South Korea Abstract- Technology transfer refers to the transfer of patents from legal holders to others through joint research, mergers and acquisitions. Transferred patents apply to IP-R&D of received companies. In particularly, companies actively carrying out technology transfer construct a patent portfolio strategy through it. Recently, companies that building patent portfolio strategy explore similar technologies to protect theirs. In past, a qualitative method has been used for the above process. However, the method consumes a lot of time and money. Therefore, in this study, we propose a method to discover patents similar to each other by using data mining. Also visualizing the patent portfolio strategy through the information of those patents. To do this, we collected Google's patents for conducting a case study. Collected patents were projected onto a semantic space through a distributed representation of documents. It then used the distance information of the projected patents to draw the network. As a result, it was possible to visualize Google's patent portfolio strategy.
CP1-036	A Novel Framework for Change Requirement Management (CRM) In Agile Software Development (ASD) Zainab Shehzadi, Farooque Azam, Muhammad Waseem Anwar and Iqra Qasim National University of Sciences and Technology (NUST), Pakistan Abstract- Requirements changes play a huge role in Software Development Life Cycle (SDLC). Therefore, the change requirement management (CRM) is always considered an important activity in SDLC. Changing one requirement have a major impact on other requirements especially when teams are working from geographically different locations then it's become difficult to manage, categorize, organize and track requirement changes therefore CRM is considered as difficult task in SDLC especially in agile methodology. This paper review different research papers and identify the major problems associated with each existing framework such as time complexity, quick cost estimation, verification of implemented and unimplemented requirements and customer notification. On this basis of identified problems this paper proposed a framework that provides a way how to categorize requirements, track implemented/unimplemented requirements, Save/Update requirements in repository and provide notification to stakeholder about current status of requirement. Proposed framework facilitates organizations to manage changing requirements in agile software development (ASD) and reduces overall complexity and traceability issues of RCM.

MEMOS