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WELCOME

Dear Distinguished Delegates,

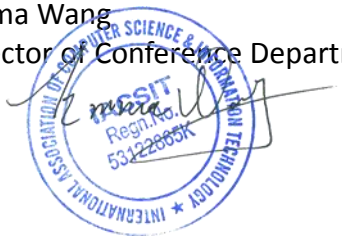
Welcome to 2016 IACSIT Brisbane Conferences. On behalf of IACSIT organization, I would like to thank all the Conference Chairs, Program Chairs and the technical Committees. Their high competence and professional advice enable us to prepare the high-quality program. We hope all of you have a wonderful time at the conference and also in Brisbane.

We believe that by this conference, you can get more opportunity for further communication with researchers and practitioners with the common interest in information computer application, computer modeling and simulation, innovation and information management.

In order to hold more professional and significant international conferences, your suggestions are warmly welcomed. We look forward to meeting you again next time.

Best Regards!

Yours sincerely,
Emma Wang
Director of Conference Department, IACSIT



NOTES

- You can also register at any working time during the conference.
- The organizer won't provide accommodation, and we suggest you make an early reservation.
- Please get the notification for your paper printed out and it is required when you register on desk.
- One excellent presentation will be selected from each session and the author of excellent presentation will be awarded the certificate.
- Get your presentation PPT or PDF files prepared.
- Regular oral presentation: about 15 minutes (including Q&A).
- Keynote speech: about 40 minute (including Q&A).
- Laptop (with MS-Office & Adobe Reader), projector & screen, laser sticks will be provided by the conference organizer.
- Please keep your belongings (laptop and camera etc.) with you.

ANNOUNCEMENT

✧ Publication for International Conference on Information Computer Application:

Journal of Computers
Abstracting/Indexing: DBLP, EBSCO, DOAJ, ProQuest, INSPEC, ULRICH's Periodicals Directory, WorldCat, CNKI,etc.

Journal of Advances in Information Technology
Abstracting/Indexing: INSPEC; EBSCO; ULRICH's Periodicals Directory; WorldCat; CrossRef; Genamics JournalSeek; Google Scholar; Ovid LinkSolver; etc.

✧ Publication for International Conference on Computer Modeling and Simulation:

Journal of Computers
Abstracting/Indexing: DBLP, EBSCO, DOAJ, ProQuest, INSPEC, ULRICH's Periodicals Directory, WorldCat, CNKI,etc.

International Journal of Modeling and Optimization
Abstracting/Indexing: Engineering & Technology Digital Library, ProQuest, Crossref, Electronic Journals Library, DOAJ, Google Scholar, EI (INSPEC, IET).

✧ Publication for International Conference on Innovation and Information Management:

International Journal of e-Education, e-Business, e-Management and e-Learning
Abstracting/Indexing: Engineering & Technology Digital Library, Google Scholar, Electronic Journals Library, QUALIS, ProQuest, EI (INSPEC, IET).

Journal of Advanced Management Science
Abstracting/Indexing: Ulrich's Periodicals Directory, Google Scholar, EBSCO, Engineering & Technology Digital Library and Electronic Journals Digital Library.

*For the journal publication schedule, some authors could not get the journal on conference site. We'll post the journal after publication. A CD including all registered papers will be handed out to the presenters**.**

IACSIT Committee

VENUE

Mercure Brisbane Hotel

Address: 85–87 NORTH QUAY, Brisbane QLD 4003, Australia

Tel: +61-07 3237 2463

The hotel offers spectacular views of the Brisbane River and South Bank Parklands with the best of the city just moments away, including Queen Street Shopping Mall Wheel of Brisbane, South Bank Lifestyle Market, the Brisbane Convention and Exhibition Centre and the businesses and government offices of the CBD. Roma Street Train and Bus Station, City Cat Ferry Stop and the riverside bikeway are also close by.

Blending high style and an independent, locally inspired spirit with the world-class quality and consistency expected of the Mecure Hotels brand, Mercure Brisbane delivers the perfect travel experience to discerning executives and leisure travellers.

AGENDA

First Day				
January 18	**Burke Foyer @ Level 2**	***10:00-17:00***	**Registration**	
Second Day				
January 19 9:20-11:50	**Burke**	***9:20-9:30***	**Opening**	**Opening Remarks *by Prof. Girija Chetty*** University of Canberra, Australia
		9:30-10:10	**Keynote Speech I**	**Levelling the Ground for Data Analysis *by Prof. William Guo*** Central Queensland University, Australia
		***10:10-10:30***	***Coffee Break & Group Photo***	
	Burke	***10:30-11:10***	**Keynote Speech II**	**Big data is not SMART data: Information Fusion to the rescue *by Prof. Girija Chetty*** University of Canberra, Australia
		11:10-11:50	**Keynote Speech III**	**Sharing and Reusing Disaster Management Knowledge *by Dr. Ghassan Beydoun*** Univeristy of Wollongong, Australia
January 19 12:00-13:00	***Lunch @ Terrace***			
January 19 13:00-19:15	**Burke**	***13:00-15:00***	**Session I**	**Computational Biology & Computer Applications** *--8 Presentations*
	Burke	***15:00-16:45***	**Session II**	**Information Technology & Network Engineering** *--7 Presentations*
		***16:45-17:00***	***Coffee Break***	
	Burke	***17:00-19:15***	**Session III**	**Machinery Manufacturing & Modeling & Simulation** *--9 Presentations*
January 19 19:30-20:30	***Dinner @ M Republic Restaurant***			

KEYNOTE

Prof. Girija Chetty

University of Canberra, Australia

Dr. Girija Chetty has a Bachelors and Master's degree in Electrical Engineering and Computer Science, and PhD in Information Sciences and Engineering from Australia. She has more than 25 years of experience in Industry, Research and Teaching from Universities and Research and Development Companies from India and Australia, and has held several leadership positions including Head of Software Engineering and Computer Science, and Course Director for Master of Computing Course. Currently, she is the Head of Multimodal Systems and Information Fusion Group in University of Canberra, Australia, and leads a research group with several PhD students, Post Docs, research assistants and regular International and National visiting researchers. She is a Senior Member of IEEE, USA, and senior member of Australian Computer Society, and her research interests are in the area of multimodal systems, computer vision, pattern recognition and image processing. She has published extensively with more than 120 fully refereed publications in several invited book chapters, edited books, high quality conference and journals, and she is in the editorial boards, technical review committees and regular reviewer for several IEEE, Elsevier and IET journals in Computer Vision, Pattern Recognition and Image Processing.

KEYNOTE

Prof. William Guo

Central Queensland University, Australia

Professor William Guo teaches and researches in computation and applied mathematics at Central Queensland University Australia (CQU). He was the Dean of the School of Engineering and Technology at CQU from Jan 2014-Jan 2015, and the Deputy Dean of the School from Feb 2013-Jan 2014. He has significant experience in academic governance through his services in various committees and boards since 2009, including CQU Education Committee (2011-2012), CQU Academic Board (2013-2014), and Australian Council of Deans of ICT (2013-), and as an Executive Member of Australian Council of Professors and Heads of IS (2012-). His teaching over the past 13 years has covered data structures and algorithms analysis, computational intelligence, systems analysis and architecture, IT/IS project management, e-Business, digital forensics, information security, research methods, and engineering mathematics. He was the recipient of CQU Vice-Chancellor's Award for Good Practice in Learning and Teaching (2012) and Commendation in Student Voice Awards (2014). His research interests include computational intelligence, image processing, bioinformatics, big data modelling and simulation. He has published more than seventy papers in international journals and conference proceedings, and a new text (published by Pearson) in advanced engineering mathematics in 2014. He has supervised research higher degree students to completion. He is a member of IEEE, ACM, ACS, and Australian Mathematics Society (AUSTMS).

KEYNOTE

Dr. Ghassan Beydoun

Univeristy of Wollongong, Australia

Associate Professor Ghassan Beydoun is currently based at the School of Computing and IT Information Systems at University of Wollongong, where he is also Director of oftware Design Science Rsearch Centre at the University of Wollongong. He is also an adjunct senior research fellow at the School of Information Systems, Management and Technology at the University of New South Wales, an associate editor of the International Journal of Intelligent Information Technologies (IJIIT) and an Editorial member of the Journal of Software. He received a degree in computer science and a PhD degree in knowledge systems from the University of New South Wales in 2000. His research interests include multi agent systems applications, ontologies and their applications, and knowledge acquisition. He is currently working on a project sponsored by an Australian Research Council Discovery Grant to investigate the best uses of ontologies in developing methodologies for complex systems and another project with SES on exploring the use of ontologies for flood management decision support. He has authored more than 100 journal and conference papers in these areas over the past 15 years. His most recent publication appeared in IEEE Transactions of Software Engineering, Information Systems journal, Information and Management, International Journal of Human Computer Studies, Information Processing and management and others.

Keynote Speeches

Opening Remarks **9:20-9:30**	 ***Prof. Girija Chetty*** University of Canberra, Australia
Keynote Speech I **9:30-10:10**	 ***Prof. William Guo*** Central Queensland University, Australia, Rockhampton Queensland 4702 **Levelling the Ground for Data Analysis** ***Abstract*—**Comparison of outcomes from different means is a common act in data analysis. Comparisons can be made in either the spatial domain or temporal domain with different scales. Often data available for analysis may have been collected from different periods of time with different rates of sampling, different systems of data acquisition, different accuracies of measurement, different models of data processing and so forth. This uncertainty makes comparisons of results from different means of data analysis very difficult, which

	may lead to furious dispute among the interest groups on any common topic ranging from local scenarios to global contexts. People have been trying numerous ways in minimising various discrepancies that may have been contained in different packs of data available for analysis. All these efforts are to level the ground for hopefully achieving a neutral and reliable conclusion from data analysis. In data mining, for example, data pre-processing is partly to deal with the task of levelling the ground for subsequent activities of data analysis. In spite of these efforts, however, it is still common to see so many arguments built on comparisons from unlevelled grounds in data analysis. One of a commonly ignored factors in temporal data analysis is uneven scaling applied to historical data. This common ignorance has been a significant contributing factor to many heated disputes in the scientific world, which in turn has a great impact on world politics and social behaviours of humankind. In this presentation, we look into the various data sets related to climate changes since the Quaternary (from 2.58 million years ago) around the world, and examine how these data were used by different groups of people to draw different conclusions on climate change. As neutral data analysts, we are able to objectively assess which part of their data analysis should make the ground whereas other parts might not, regardless of which side of the argument these may come from. We are then able to offer our independent opinions on global climate change, currently one of the hottest debates in the world. The implications from this example may have a profound impact on conducting data analysis in other areas of application.

Coffee Break & Group Photo
10:10-10:30

Keynote Speech II

10:30-11:10

Prof. Girija Chetty

University of Canberra, Australia

Big data is not SMART data: Information Fusion to the rescue!

***Abstract*—**BIG data doesn't necessary mean SMART data! Unless significant engineering is done in making sense of this data. Big data has gained much interest in recent years due to the rapid expansion of the massive amount of data that is available for solving different types of tasks within many different application domains. However, today's big data is still on a fairly low level of abstraction in terms of intelligence, when it comes to complex decision support, particularly for real world scenarios with high dimensionality and high level of uncertainty with regards to which patterns to look for in the data. So far, research on big data and decision support has predominantly focused on different types of platforms, such as Hadoop and Spark, for performing big data analytics utilizing traditional machine learning algorithms. There are several problems with this traditional approach, particularly, when the data is coming from multiple heterogeneous sources, and there are concerns regarding uncertainty and reliability of data, coupled with significant complexity involved in building models with non-measurable and high-dimensional variables. The theoretical concepts drawn from information fusion and multimodal systems area can offer a new perspective on big data and can alleviate the problems the big data models face, and has the capacity to make it a smart data, with higher intelligence, and providing better support for decision makers to address more complex problem domains. In this talk, some of the research being pursued will be presented.

Keynote Speech III

11:10-11:50

Dr. Ghassan Beydoun

Univeristy of Wollongong, Australia

Sharing and Reusing Disaster Management Knowledge

***Abstract*—**Disaster Management (DM) is a diffused area of knowledge. It has many complex features interconnecting the physical and the social views of th e world. Many international and national bodies create knowledge models to a llow knowledge sharing and effective DM activities. But these are often narro w in focus and deal with specified disaster types. Over the past five years, we have undertaken research to enable the unification of DM knowledge across v arious disaster types and jurdisctions. Recently, we have been focussing on ap plying this to actual DM practices. In this talk, I will describe our disaster-inde pedent descritpion that models common DM activities across various events. We express this unified view of DM in the form of a metamodel, we call DM M. The metamodel gathers DM concepts and their relationships. It enables par titioning a DM problem into sub-problems. Decision makers can then develop a variety of domain solutions models based on mixing and matching solutions for sub-problems indentified using the metamodel. A repository of domain kno wledge structured using the metamodel would allow the transformation of mo dels generated from a higher level to a lower level according to scope of the di saster problem on hand. I will describe how a process of mixing and matching disaster management actions can be accomplished using our Disaster Manage ment Metamodel (DMM). We apply a metamodelling process to ensure that th is metamodel is complete and consistent. We validate it and present a represen tational layer to unify and share knowledge as well as combine and match diff erent DM activities according to different disaster situations. In developed co

	untries, for recurring disasters (e.g. floods), there are dedicated document repo sitories of Disaster Management Plans (DMP) that can be accessed as needs ar ise. However, accessing the appropriate plan in a timely manner and sharing a ctivities between plans often requires domain knowledge and intimate knowle dge of the plans in the first place. I will describe an agent-based knowledge an alysis method to convert DMPs into a collection of knowledge units that can b e stored into a unified repository based on the unifiying metamodel. The repos itory of DM actions then enables the mixing and matching knowledge betwee n different plans. We use the flood management plans used by SES (State Eme rgency Service), an authoritative DM agency in NSW (New State Wales) State of Australia to illustrate and give a preliminary validation of the approach. It i s illustrated using DMPs along the flood prone Murrumbidgee River in central NSW.

Lunch @ Terrace
12:00-13:00

Session I

Computational Biology and Computer Applications

13:00-15:00

Room Burke

Chaired by Prof. Jung-Shian Li

National Cheng Kung University, Tainan City, Taiwan

※Please kindly participate the whole course of the conference to make sure each item sticks to the agenda and runs smoothly.

A101 13:00-13:15	Using Machine Learning Classifiers to Predict Stock Exchange Index **Mustansar Ali Ghazanfar**, Anam Mustaqeem, Muazzam Maqsood, Sanay Muhammad Umar Saeed, Muhammad Awis Azam and Abid Qaiyum University of Engineering and Technology, Taxila. SDPI, Pakistan. ***Abstract*—**Predicting stock exchange index is an attractive research topic in the field of machinelearning. Numerous studies have been conducted using various techniques to predict stock market volume. This paper presents first detailed study on data of Karachi Stock Exchange (KSE) to predict the stock market volume of ten different companies. In this study, we have applied and compared salient machine learning algorithms to predict stock exchange volume. The performance of these algorithms have been compared using accuracy metrics on the dataset, collected over the period of six months, by crawling the KSE website.
A009 13:15-13:30	Using Frequent Substring Mining Techniques for Indexing Genome Sequences: A Comparison of Frequent Substring and Frequent Max Substring Algorithms **Todsanai Chumwatana** College of Information and Communication Technology, Rangsit University, Thailand ***Abstract***—The amount of electronically stored information in genome sequence database has grown rapidly in the last decade. This makes frequent substring extraction an essential task as most frequent substrings are meaningful in genome sequences, in order to support the application in the area of information retrieval and data analytics. In this paper, two frequent substring mining techniques are investigated: frequent substring and frequent max substring mining algorithms. Many research communities have acknowledged that the frequent substring mining is one of the viable solutions for extracting the interesting patterns in genome or protein in area of bioinformatics. Beside this, the frequent max substring technique has been proposed as an alternative method to extract meaningful patterns. In this paper, experimental studies and comparison results are shown in order to compare two techniques. From the experimental results, the following observations can be

	made. The frequent max substring mining technique provides significant benefits over the frequent substring mining technique in term of storage space. Meanwhile, the frequent substring mining technique requires less computational time as this technique is straight forward.
A010 13:30-13:45	Band Selection for Palmprint Recognition **Junwen Sun**, Waleed Abdulla, Weiming Wang, Qiong Wang and Hai Zhang Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, China & University of Auckland, Auckland, New Zealand ***Abstract***—Biometrics based on palmprint has been developing fast in the past ten years. The newly proposed hyperspectral imaging can provide high accuracy and abundant information about the palms and the tissues, veins underneath. However, due to the limitations of computation speed and storage, we have to select the most representative bands for palmprint recognition. This paper proposes a band selection scheme for hyperspectral palmprint recognition. First, the images with high image entropies and Equal Error Rate (EER) are selected. Then a clustering method is introduced to choose the most representable bands. In our experiments on the HK-PolyU Hyperspectral Palmprint Database, three bands combination can generate the best EER 0.17325%. The proposed approach can also be used for band selection of other hyperspectral systems.
A015 13:45-14:00	Automatic Lip Reading for inability-to-talk Patient During Mechanical Ventilation **Yudai Nagano**, Ryuhei Sakurai, Yu Kawazoe, Kyohei Miyamoto, Hirotake Yamazoe, and Joo-Ho Lee Ritsumeikan University, Japan ***Abstract***—In this paper, we propose a lip reading system for patients who have inability to talk during mechanical ventilation. Existing automatic lip reading system cannot be used for ICU patient, because their endotracheal tube causes visual occlusion. We are aiming to read patient's lip by using mouth model that is attached endotracheal tube for this problem. In this paper, we defined two models of mouth shape. One model represents mouth of ordinary face with a set of keypoints

	extracted by facial keypoints detector. The other model represents mouth of ICU patient. In addition, we compared two models in terms of sequential labeling of visemes and isolated word recognition.
A016 14:00-14:15	Stock Market Forecasting based on Text Mining Technology: a Support Vector Machine Method Yancong Xie and **Hongxun Jiang** School of Information, Renmin **U**niversity of China, Beijing, China ***Abstract***—News items have significant impact on stock markets but their ways are obscure. Lots of previous works aim at finding appropriate forecasting models. In this paper, we use text mining and sentiment analysis on Chinese online financial news, to predict Chinese stock tendency and stock prices based on support vector machine (SVM). Firstly, we collect 2,302,692 news items, which date from 1/1/2008 to 1/1/2015. Secondly, based on this dataset, a specific domain stop-word dictionary and a precise sentiment dictionary are formed. Thirdly, we propose a forecasting model using SVM. On the algorithm of SVM implementation, we also propose two parameter optimization algorithms to search for best initial parameter setting. Result shows that parameter G has the main effect, while parameter C's effect is not obvious. Furthermore, support vector regression (SVR) models for different Chinese stocks are similar whereas in support vector classification (SVC) models best parameters are quite differential. Series of contrast experiments show that: a) News has significant influence on stock market; b) Expansion input vector for additional situations when that day has no news data is better than normal input in SVR, yet is worse in SVC; c) SVR shows a fantastic degree of fitting in predicting stock fluctuation while such result has some time lag; d) News effect time lag for stock market is less than two days; e) In SVC, historic stock data has a most efficient time lag which is about 10 days, whereas in SVR this effect is not obvious. In addition, based on the special structure of the input vector, we also design a method to calculate the financial source impact factor. Result suggests that the news quality and audience number both have significant effect on the source impact factor. Besides, for Chinese investors, traditional media has more influence than digital media.

A020 14:15-14:30	Business Process Improvement using Adjustable Parameters on Simulation – A Case study in Restaurant Business **Salinthip Somphanpae** and Somjai Boonsiri Chulalongkorn University, Bangkok, Thailand ***Abstract***— The business process plays an important role in an organization in achieving its goals. An organization makes a profit or loss depending on effective management procedures. Thus, in response to changes inside and outside the organization it needs to improve and optimize its processes for survival and competitive advantage in the market. Business Process Improvement (BPI) is a way to improve the existing process by using process redesign heuristics. In this paper, the adaptation of BPI methodology is used with redesign heuristics and integrated simulation to measure the influencing factors. An effective number of parameters for improving the performance characteristics of this process are proposed by considering those which affect the slow service response time and impact on queue times. The cycle time, the time taken to complete the task, the cost of operation, and the queue time, are shown in the test results of the simulation process.
A021 14:30-14:45	Conceptualizing IS Sustainability Benefits in Transforming Government Services **Siti Istianah Mahdzur** and Juhana Salim Faculty of Information Science and Technology, National University of Malaysia, Bangi, Selangor, Malaysia ***Abstract***—The transformation of e-Government to Smart Government services triggered many research in the area of business process change, information use and nature of business integration in the changing work system environment to realize organizational benefits. This paper addresses the question, "How can IS sustainability (ISS) benefits be conceptualized in the transformation of Government services?" This study build on the Belief-Action-Outcome (BAO) Framework that leverage on the Information System Integration (ISI) and Work System Theory (WST) and suggest that organizational memory and informational system's ability to achieve organizational knowledge sustainability in realizing ISS benefits. The study couple this theoretical understanding and previous research on ISS benefits embedded in ISI under grids the explanation of our approach to measure an

	organization's ISS benefits. Our measurement approach considers (1) the ability of organizational memory and informational system's integration in the business processes that enable ISS realization, (2) the collaborations of stakeholders in business and system change, and (3) the organization's ability in maintaining the equilibrium between work system elements. The research contributions is on ISS and government service transformation in specifying a conceptual model that link ISS benefits and ISI building upon BOA framework and WST, simultaneously giving adequate understanding of the implication and realization practice of ISS benefits during business change and government service transformation. In sum, the study provides insights into social and organizational perspective of sustainability, i.e. organizational knowledge as a valuable asset in sustaining government services.
A023 14:45-15:00	A Simple Acceleration Method for the Louvain Algorithm **Naoto Ozaki**, Hiroshi Tezuka and Mary Inaba1 The University of Tokyo, Japan ***Abstract***—The Louvain algorithm is well known for its high speed for detecting community structure in networks. In this paper, first, we analyze the Louvain algorithm as the preliminary experiment to uncover the processes that cause wasted computational time and their characteristics. Then based on this, we propose the Louvain Prune algorithm. The experiments show that the Louvain Prune algorithm significantly reduces computational time by up to 90%, and retains almost the same quality as the original Louvain algorithm.

Session Ⅱ

Information Technology and Network Engineering

15:00-16:45
Room Burke

Chaired by Dr. Ryusuke Miyamoto

Department of Computer Science, School of Science and Technology, Meiji University, Japan

※Please kindly participate the whole course of the conference to make sure each item sticks to the agenda and runs smoothly.

A024 15:00-15:15	Development of Objective Index to Determine Autism by Eyeball Movements **Ippei Torii**, Kaoruko Ohtani, Takahito Niwa and Naohiro Ishii Aichi Institute of Technology, 1247 Yachigusa, Yakusa-Cho, Toyota, Aichi, JAPAN ***Abstract***—In this study, the development of the objectivity index for the diagnosis of the autistic children with a lack of the communication ability and an evaluation of the curative effect using the ocular movement measurement is discussed. In past study, we developed communication applications "Eye Talk" and "Eye Tell" for people who have difficulty in conversation and writing such as children with physical disability, ALS patients or elderlies using the blink determination system. The team of Dr. Kitazawa in Graduate School of Frontier Biosciences in Osaka University performed the clinical application to distinguish autism group by measuring "where and when" he/she looks at using Tobii eye trucker. Our study is a judgment by the ocular movement measurement. We developed the image processing technique by afterimage used in the blink determination. First the eye area is captured by a front camera of laptop PC. Second, we extracted the pixels of pupils with 30-40 fps of accuracy and digitized eyeball movements. We converted the difference in eyeball movements between the right and left eyes into a graph and define it in multidimensional measure. We measured the amount of the degree that the eyes of the subject run off the track based on the afterimage, then added up the amount of change of right and left eyes and showed the total. Finally, we set the identification border with density function of the distribution, cumulative frequency function, and ROC curve. With this, we established an objective index to determine autism, normal, false positive, and false negative. This method is used as an objective evaluation indicator to judge non-autistic and autistic people more clearly in early stage.

A026 15:15-15:30	Classification Accuracy of Personal Identification Based on Joint Motions Using 2D Information Ryusuke Miyamoto and **Risako Aoki** Department of Computer Science, School of Science and Technology, Meiji University, Japan ***Abstract***—This paper evaluates the classification accuracy of personal identification by a classification scheme with feature extraction based on joint motions using only two-dimensional information. Experimental results show that the feature extraction based on joint motions can achieve moderate classification accuracy when feature vectors are constructed from only two-dimensional information in an image plane. In addition, the results include interesting knowledge: the classification accuracy is not degraded drastically even if a gait is measured from right in front. In the best case, the classification accuracy becomes 78.95% in the experiment and it is 75.44% in the worst case.
A027 15:30-15:45	A Study of the Factors Affecting the Purchase Intention on Mobile Game Apps **Hsin-Ke Lu**, Peng-Chun Lin and Yi-Chen Lin Information Management Department, SCE, Chinese Culture University, Taipei, Tawan (R.O.C) ***Abstract***—With the widespread popularity of smartphone and tablet devices, consumers' demands for mobile application (App) also rockets rapidly nowadays. According to Flurry's survey, nearly 55 million shipment of smart mobile device were increased in the U.S. market while 1.5 hundred million devices were increased in China Market solely in the past year. This dramatic growth of global smartphone market share also brought about the thriving rise of App. Taiwan Network Information Center (TWNIC) had conducted a survey on Taiwanese's use of mobile devices in 2012, finding out that their most favorite App was game App and social App was the second. This also showed the increasing growth of mobile device and that game App took the lead for the users in Taiwan. In the background of this rapid development and intensive competition of game App, the developers pay much attention to users' considerations for purchasing game App and their use behaviors. The researcher of this study used Unified Theory of Acceptance and Use of

	Technology (UTAUT) as the theoretical framework and further extended its model by adding two dimensions of Price and Product Involvement to investigate consumers' purchase intention of game App. The results show that the constructs, Performance Expectancy and Social Influence had significant effects on behavioral intention on game app, and Facilitating Conditions and Price had direct effect on their purchase behavior. This study suggested product involvement effects on the factors affecting on purchase intention and behavior. This extended UTAUT also offers significant reference for future studies of purchase intention and behavior.
A028 15:45-16:00	Distributed Client-Assisted Patching for Multicast Video-on-Demand Service in an Enterprise Network **Md. Mostofa Akbar**, S. M. Farhad, Munima Jahan, Md. Humayun Kabir Department Computer Science and Engineering, Bangladesh University of Engineering and Technology, Bangladesh. ***Abstract***—Video-on-demand services allow users to select their desired video without watching the broadcast. Videos are stored in distributed servers. A single stream from the server can be utilized to satisfy a batch of common client requests. The key problem of this system is to minimize the server load to satisfy maximum number of clients. We propose a distributed client-side caching technique that reduces the server load significantly and increases the scalability of the system. We have implemented our system and compare our system with another state-of-the-art technique. Experimental results suggest that the newly proposed system outperforms the already proposed client assisted patching scheme.
A001 16:00-16:15	Exploring Global IP-usage Patterns in Fast-Flux Service Networks Ci-Bin Jiang , **Jung-Shian Li** National Cheng Kung University, Tainan City, Taiwan. ***Abstract*—**In recent years, hackers have increasingly used fast-flux techniques to extend the lifetime of malware networks in order to conduct various Advanced Persistent Threat (APT) activities. Such activities typically target nations and or organizations for business or political motives and have the potential to cause immense disruption. Thus, it is essential to study the fast-flux service network and

	find possible attack behaviors. The literature contains various proposals for FFSN detection. However, these methods are either out of date in terms of the features they use for detection purposes or are unworkable under a new FFSN architecture identified in this study (denoted as N-flux networks), in which the IP addresses are swapped in and out at a speed normally associated with benign domains. Accordingly, the present study proposes a two-stage FFSN detection scheme in which a data mining algorithm is employed initially to detect possible FFSNs and a shared-domain detection algorithm is then applied to identify the nature of the FFSN through an analysis of its malware connections. The feasibility of the proposed scheme is demonstrated by analyzing five real-world datasets. It is shown that the proposed scheme achieves both a higher detection accuracy and a lower detection delay than existing schemes such as GRADE, Flux-Score, FFBD and SSFD.
A104 16:15-16:30	An Efficient Semantic Ranked Keyword Search of Big Data Using Map Reduce P.Srinivasa Rao, **M.H.M. Krishna Prasad** , K. Thammi Reddy Dept.of CSE, JNTUK, Kakinada ***Abstract*—**Information retrieval is fast becoming the prevailing form of information access, surpassing traditional database style searching. Ontologies have become the tool of choice employed in many information retrieval systems and more prominently in semantic information retrieval. In order to overcome the disadvantages in key word based information retrieval systems, which transfer irrelevant information, ontology has been designed. A system with ontology mimics the real world, where every task is laced with certain meaning as this is basic idea behind knowledge processing. Hadoop, which is an open source frame work for storing and processing large datasets, is used for preprocessing the text documents. First, a set of text documents are considered. Preprocessing is performed on a large domain of data using Hadoop MapReduce. This includes the removal of the stop words along with stemming and excluding less frequency words. Despite this preprocessing, owing to the colossal number of index terms still floating in the considered domain data, the problem of high dimensionality is encountered. Therefore the dimensionality of such a group of terms is reduced by identifying it as a concept and those concepts can be viewed as a single dimension in a ontology

	based information retrieval system. Now ontology is constructed by assigning synonym set to each concept in this structure using tools like word net. Thus constructed ontology can be mapped on to the processed query which gives us the relevant information from the data pool considered.
JA007 16:30-16:45	The Effects of Location-based MobileMarketing between Push and Pull on Usage Intentions **Chih-Hui Shieh** and I-Heng Hsieh National Kaohsiung First University of Science and Technology, Taiwan ***Abstract*—**The purpose of this study is to investigate the effects of location-based mobile marketing (LBMM) between push and pull on usage intentions. We carried out a pretest carefully to confirm the representative variable of Push-LBMM. The pretest based on a between-subjects design. Results indicated that the effects of opt-in and opt-out on usage intentions were significantly different, and opt-in led to higher usage intentions. Therefore, we chose opt-in Push-LBMM to represent Push-LBMM in the formal experiment. We find that Pull-LBMM is associated with higher usage intention as compared to Push-LBMM. We also find that technology acceptance plays a mediating role in the relationship between LBMM and usage intentions. Based on experimental results, theoretical and managerial implications are also discussed.

Coffee Break & Group Photo
16:45-17:00

Session Ⅲ

Machinery Manufacturing and Modeling and Simulation

17:00-19:15
Room Burke

Co-Chaired by Prof. Wojciech Grega
Department of Automatics and Biomedical Engineering AGH University of Science and TechnologyKrakόw, Poland

Co-Chaired by Prof. Wernhuar Tarng
National Hsinchu University of Education, Taiwan, R.O.C.

※Please kindly participate the whole course of the conference to make sure each item sticks to the agenda and runs smoothly.

MS16001 17:00-17:15	ABDiSE: Agent-Based Disaster Simulation Environment **Tzu-Liang Hsu** and Jane W. S. Liu Institute of Information Science, Academia Sinica, Taiwan ***Abstract*—**The framework Agent-Based Disaster Simulation Environment (ABDiSE) provides agent-based model elements of common types of natural disasters, including fires, floods and debris flows. Active objects describe how agents move, attach, and interact with each other. The simulation engine provided by the framework enables the objects to be executed for purposes of simulating the causes and dynamics of the disaster modeled by them. ABDiSE is extensible: Agents and external simulators needed to model elements and dynamics of new disaster scenarios and define behaviors and interactions of agents can be added without requiring recompilation.
MS16009 17:15-17:30	Simulation Framework for Engine Control Unit Inspection **Won Kyung Ham** and Sang C. Park Ajou University, Korea ***Abstract*—**for the inspection of engine control units (ECUs) at the manufacturing phase, which is based on a hardware-in-the-loop simulation (HILS) technology. ECUs enable the sophisticated control and management of subsystems of an engine, and it enhances the performance of a vehicle system, such as safety assistance and fuel efficiency. Because of these reasons, the failure of the ECU can be hazardous to entire vehicle systems and human safety. Therefore, the integrity of the ECU has been a crucial issue in the automotive industry. Thus, International Organization for Standardization (ISO) 26262 has been initiated to secure safety integrity of automotive electronic systems, and the part 7 of ISO 26262 is for the quality control of manufactured ECUs in the production and operation phase of the ECU lifecycle. However, the execution procedure of the Part-7 has been ambiguous by difficulties that are existing test methods for the integration of ECU software and hardware requires much time and inspection in manufacturing systems has limited time by manufacturing cycle time. In this research, we propose a novel HILS approach for testing ECUs that is a test-model-based HILS test, and design an inspection system

	based on the proposed approach.
MS16011 17:30-17:45	Enhanced Dynamic Capacity Allocation Algorithm For Semiconductor Fabrication With Engineering Lots **Yong H. Chung**, Won K. Ham, and Sang C. Park Ajou University, Korea ***Abstract*—**This paper proposes an algorithm to avoid capacity loss of production lots from the presence of engineering lots. To survive in modern semiconductor industry, it is very important to achieve the minimum cycle time of engineering lots. For that reason, the dynamic capacity allocation technique, which is a technique to ensure tool capacity of engineering lots, has been applied. The orientation of the method is on controlling a trade-off between engineering lots and production lots. In other words, the special handling for engineering lots may cause excessive tardiness of production lots. Although it is important to achieve short cycle time of engineering lots, it is necessary to avoid excessive tardiness of production lots. To do so, it is necessary to enhance existing dynamic capacity allocation method. The proposed algorithm determines the machine for processing of an engineering lot with consideration the schedule of identical machines.
MS16012 17:45-18:00	Modelling of the Glass Melting Process for Real-Time Implementation **Wojciech Grega**, Adam Pilat, Andrzej Tutaj AGH University of Science and Technology in Krakow, Poland ***Abstract*—**Improvement of process efficiency and product quality is available through implementation of more complex control algorithms and more accurate process models. It is especially critical for the glass industry production chain since glass production is a complex processes with high energy usage. The accuracy and robustness of advanced control algorithms is strictly dependent on the quality of the underlying mathematical model of the production process. This paper presents the formalisation and an empirical investigation of the hypothesis that a simplified, Finite Element Method (FEM) - based model can capture the closed-loop process dynamics over longer time scales and is suitable for real-time applications. The paper demonstrates how a trade-off between model

	complexity and simulation time can be found.
MS16020 18:00-18:15	Determination of Design Flood Level for Tidal River Reach **Li Li** and Kyung Soo Jun Graduate School of Water Resources, Sungkyunkwan University, Korea ***Abstract*—**Flood water level in tidal rivers is, in general, determined by river discharge and tidal water level at downstream boundary. Due to the variable tidal boundary conditions, water levels associated with a certain flood event can be significantly different. To consider the variability of tidal boundary condition in determining the design water level, a probabilistic approach is adopted. The current practice to evaluate design water levels is using steady state flow model with a design flood discharge as an input. The main shortcomings of the steady flow model are that (a) it cannot reflect the flood wave attenuation so that water levels are usually overestimated; (b) the downstream boundary condition in steady flow model is assumed to be a constant high level, which can also result in overestimation, and (c) model parameters representing flow resistance are considered to be constant at all times. A looped network unsteady flow model, which allows variable roughness coefficients at all computational points, is developed for the tidal reach of the Han River in Korea. Design water levels are calculated by an unsteady flow model considering the joint effect of flood discharge and tidal water level. For a design flood event, possible boundary conditions are obtained by sampling starting times of tidal level time series. Peak water levels corresponding to each tidal boundary condition are computed along the channel, and then, design water levels are determined by computing the expectations of peak water levels. The results are compared with the design water levels estimated using current practice. It comes out that (a) the tidal effect can reach to the Jamsil submerged weir and is obvious in the downstream reach of the Singok submerged weir; (b) the variability of peak water levels due to the tidal effect is greater if maximum discharge is smaller; (c) design water levels estimated by proposed method is lower than that from current practice, and the difference is greater as it is closer to the downstream boundary; and (d) comparing to constant roughness coefficient, variable

	roughness coefficients result in significant difference in design water levels, which indicates the importance of using appropriate roughness coefficients.
MS16023 18:15-18:30	Operational Efficiency Improvement Of Material Handling Equipment In Assembly Line Based On Simulation **Dae S. Chang** and Sang C. Park Ajou University, Korea ***Abstract*—**This paper presents the operational efficiency improvement of the MHE (material handling equipment) in the assembly line based on simulation. The operational efficiency improvement of the MHE in the assembly line affects the on-time delivery of the in-plant logistics and a fixed cost to produce products. Based on a domain analysis, we modeled the modeling elements of material handling system and the assembly line. Also, we defined simulation KPIs (Key Performance Indicators) to decide operational efficiency performance of the MHE. The simulation models of the assembly line and material handling system, built using an in-house tool based on DEVS formalism, is interfaced with custom designed simulation nodes which express behavior of assembly line. The result of the operational efficiency improvement of the MHE is illustrated using a case study.
MS16024 18:30-18:45	Simulation and visualization of the positioning system of the brain in Virtual Reality **Ekaterina Prasolova-Førland**, Henrik Hjelle, Hege Tunstad, Frank Lindseth Norwegian University of Science and Technology, Trondheim, Norway ***Abstract*—**The goal of this project is to investigate how simulation and 3D visualization in virtual reality can be used to make the human navigation system understandable for the broad public. The research on the cells that constitute a positioning system in the brain was awarded the Nobel Prize Award in Physiology or Medicine in 2014. While this research is of significant importance, the underlying concepts might be difficult to understand for non-specialists. To present the positioning system in the brain to a broader audience, an interactive 3D visualization of the major components of this system (including hippocampus, entorhinal cortex, grid and place cells) was created in Second Life. In addition, a simplified simulation of how grid and place cells function was developed using the same platform. This

	educational demo was presented and evaluated by the members of general public at a number of venues and occasions, including a local science museum. Based on the evaluation results, experiences and lessons learned from this project, we provide a set of recommendations for creating educational 3D visualizations in virtual reality.
MS16006 18:45-19:00	Power Consumption Modeling of Data Center IT Room with Distributed Air Flow **Xiaojing Zhang**, Therese Lindberg, Krister Svensson, Valeriy Vyatkin and Arash Mousavi ABB Corporate Research in Västerås, Sweden ***Abstract*—**Modern data centers are characterized by large sizes, high energy consumption and complexity involving IT, power supply, ventilation and cooling. Data center energy efficiency is a major concern for data center design and operation. To improve data center energy efficiency through efficient cooling and ventilation, advanced process control and optimization, process models to describe the process power consumption are required. In this work, data center power consumption models are investigated. A concept of distributed air flow control is presented. The objective is to develop a comprehensive data center power consumption model to describe IT room, computer room air handling (CRAH), data center ventilation and cooling characteristics as well as distributed air flow control. Data center operation scenarios with uneven IT load are simulated. Results show that the distributed air flow control can save the cooling energy significantly.
MS16201 19:00-19:15	Development and Application of a Virtual Laboratory for Synthesizing and Analyzing Nanogold Particles **Wernhuar Tarng**, Chia-Chun Hsie, Chih-Ming Lin, Chi-Young Lee National Hsinchu University of Education, Taiwan ***Abstract*—**In this study, a virtual laboratory for synthesizing and analyzing nanogold particles is developed by using the virtual reality technology and situated learning theory. The users can conduct a virtual experiment to become familiar with the process of synthesizing nanogold and understand that nanogold particles in different sizes can be produced by mixing chloroauric acid (HAuCl4) with sodium citrate (Na3C6H5O7) in different concentrations. A further analysis can be performed by

	observing the 3D structure of nanogold using the virtual transmission electron microscope to investigate its property within the nanoscale spatial domain. The virtual laboratory developed in this study has been applied in university chemistry courses and the learning objective is to increase students' knowledge in nanotechnology through the operation of virtual experiments. A teaching experiment has been conducted to investigate whether the virtual experiment can enhance their learning achievements, and the results show that it is more effective than a real experiment. Questionnaire results also reveal that most students held positive attitudes towards the virtual laboratory, and they thought it could enhance their interest and motivation in learning nanotechnology.
MS16019 POSTER	An Algorithm Model For Incremental Dectection Of Spam Reviews Maoan Wang, Jun Sun, Yifan Wu, Guoshi Wu Beijing University of Posts and Telecommunications, Beijing, P.R.China, China ***Abstract*—**Surging smartphone use and pervasive O2O services mean customers canpost their reviews about restaurants and shops online. However,many merchants may hire some people to post positivebut fraud reviews in order to attract more customers.Therefore, a model need to be built to detect spam reviews.In this paper, firstly, we build a detection model using traditional batch processing which view the detection as a binary classification problem. Next, since many reviews are coming sequentially, batch processing is not efficient and useful. We will use another incremental algorithm—Hoeffding Option Tree to update the model without processing the past data repeatedly. We find that the incremental method can drastically improve the speed and the accuracy is also satisfying.
MS16021 POSTER	Heterogeneous Model Merging Based On Model Transformation Hongtian Ma, Hehua Zhang, Ming Gu School of Software, Tsinghua University, Beijing, China ***Abstract*—**The system design and development of embedded software is under a lot of challenges. Model-based software systems are drawing more and more attentions. In our previous work we proposed a system level design language named SyncBlock and developed a toolset for the design of synchronous embedded system. Although

	our toolset is superior for building synchronous models, it is difficult to model the external environment of embedded system ideally, and does not support asynchronous modeling functionalities or the merging of heterogeneous models of computation. Ptolemy II is a well-known modeling platform which supports many well-defined heterogeneous models of computation. In this paper we propose a series of rules and mechanisms on model transformation from SyncBlock to the SR model of computation in Ptolemy II for heterogeneous model merging. Using our method, we can model and simulate synchronous embedded systems by SyncBlock, and then simulate the designed model further coupling with external environment modeled by other models of computation in Ptolemy II like Discrete Event Domain, and finally generate codes by the SyncBlock modeling tool. Through heterogeneous model merging by model transformation, we combine the advantages of the two modeling tools.

Dinner @ M Republic Restaurant
19:30-20:30

Note