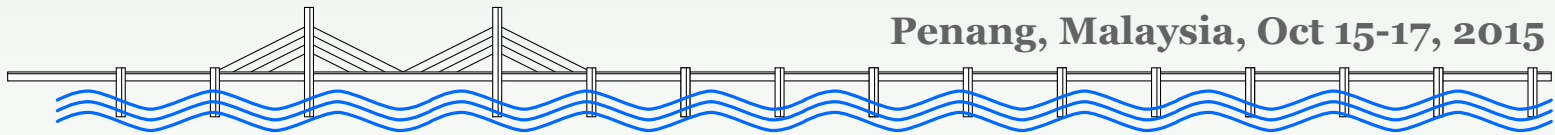


The **Fourth** Asian Conference on Information Systems

Penang, Malaysia, Oct 15-17, 2015



The Program

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Program of
the Fourth Asian Conference
on Information Systems

ACIS 2015

15-17 October 2015
Penang, Malaysia

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1. Message from General Co-Chairs

It gives our great pleasure to welcome you to ACIS 2015, The Fourth Asian Conference on Information Systems. This year, ACIS will be held in Penang, Malaysia. As the Pearl of Orient, Penang is one of the commercial hub of Malaysia with outstanding sunny beaches year round and is recognized as a UNESCO heritage site.

The Fourth Asian Conference on Information Systems, ACIS 2015, following the successes of ACIS 2012 (Siem Reap, Cambodia), ACIS 2013 (Phuket, Thailand), and ACIS 2014 (Nha Trang, Vietnam), is a meeting of researchers, professionals, and practitioners to discuss various current issues in information systems and related areas with a special focus on the current conditions and the future sustainable developments of Asian countries. ACIS 2015 is organized by the Universiti Sains Malaysia (University of Science, Malaysia; USM), Yamaguchi University, the Institute of Electrical Engineers of Japan (IEEJ), and the Japan Advanced Institute of Science and Technology (JAIST). ACIS aims to bring together scholars, researchers, and managers from various areas and industries for intellectual exchange, research cooperation, and professional development.

The conference would not have happened without the earnest efforts of the conference committee starting from Prof Michitaka Kosaka, the honorary chair and all the co-chairs. We also had an excellent local organizing team that has worked very hard to organize ACIS 2015 in Penang. First, we would like to thank the local organizing committee chairperson, Ms. Maziani Sabudin; Accommodation/Conference Venue: Dr. Ahmad Sufril Azlan Mohamed, and Dr. Zarul Fitri Zaaba; Transportation & Excursion: Dr. Gan Keng Hoon and Dr. Tan Tien Ping; Publication/Printing & Registration: Prof. Azman Samsudin, Prof. Abdullah Zawawi Hj. Talib, Mr. Mohamad Azam Osman, and Dr. Fadratul Hafinaz Hassan; Financial: Ms. Rosnah Idrus and Dr. Wong Li Pei; Publicity/Protocol: Mr. Azlan Osman, Dr. Syaheerah Lebai Lutfi, and Dr. Nasuha Lee Abdullah; Conference Kit & Program Book: Ms. Norlia Mustaffa, Dr. Siti Khaotijah Mohammad, and Mr. Ahmad Anas Ismail; Secretary: Ms. Zali Zaiton Hussin; and Technical: Mr. Shik Abdulla Mohamed Ali.

Finally, we would like to thank all the conference participants for making ACIS 2015 a success, and hope that you have an enjoyable and fruitful stay in Penang.

Toshiyuki Ono, Hitachi Ltd.
Ahamad Tajudin Khader, Universiti Sains Malaysia

ACIS 2015 General Co-Chairs

2. Message from Program Co-Chairs

The Fourth Asian Conference on Information Systems, ACIS 2015 is held in Penang, Malaysia during October 15th – 17th, 2015, following the successes of ACIS 2012 (Siem Reap, Cambodia), ACIS 2013 (Phuket, Thailand), and ACIS 2014 (Nha Trang, Vietnam). The topic includes various current and future issues in information systems ranging from artificial intelligence, data mining, communication technology, image processing, pattern recognition, and information/cyber security. This year, ACIS 2015 received 35 full papers and 12 poster papers from over 9 countries including Malaysia, Japan, Indonesia, Iran, Thailand, and Vietnam. Each submitted paper is reviewed by two reviewers. ACIS 2015 program committee consists of 58 PC members and 4 external reviewers from over 8 countries including Japan, Malaysia, Greece, India, Iraq, Saudi Arabia, Thailand, and U.K. We would like to thank the PC members as well as the external reviewers for putting in the extra effort.

After our review process, the Program committee accepted 21 full papers, 13 short papers, and 12 poster papers. The full paper acceptance rate is 60% (21/35). The ACIS 2015 conference program also has Special Session on Service Science. The special session received 16 papers and accepted 13 papers as full papers. We wish to thank the special session chairs; Muriati Mukhtar (Universiti Kebangsaan Malaysia, Malaysia), Jing Wang (Beihang University, China), Haruko Nagaoka (Hitachi, Ltd., Japan), and Chiaki Hirai (Hitachi, Ltd., Japan).

Please enjoy ACIS 2015 program and discussion with the conference participants!

Takuya Maekawa, Osaka University
Yuto Lim, Japan Advanced Institute of Science and Technology
Azman Samsudin, Universiti Sains Malaysia

ACIS 2015 Program Co-Chairs

3. Organizing Committees

| | |
|-----------------------|--|
| Honorary Chair | Prof. Michitaka Kosaka (JAIST, Japan) |
| General Co-Chairs | Dr. Toshiyuki Ono (Hitachi Ltd, Japan) |
| | Prof. Ahamad Tajudin Khader (USM, Malaysia) |
| Program Co-Chairs | Prof. Takuya Maekawa (Osaka Univ., Japan) |
| | Prof. Yuto Lim (JAIST, Japan) |
| | Prof. Azman Samsudin (USM, Malaysia) |
| Publication Co-Chairs | Prof. Masakazu Takahashi (Yamaguchi Univ., Japan) |
| | Prof. Abdullah Zawawi Hj. Talib (USM, Malaysia) |
| Publicity Co-Chairs | Mr. Tomoyuki Nagata (Mitsubishi Electric Corp, Japan) |
| | Mr. Azlan Osman (USM, Malaysia) |
| Financial Co-Chairs | Dr. Shinichi Hayashi (Hitachi Ltd, Japan) |
| | Ms. Rosnah Idrus (USM, Malaysia) |
| Local Arrangement | Ms. Maziani Sabudin (USM, Malaysia) |
| Sponsors | The Institute of Electrical Engineers of Japan (IEEJ) |
| Supports | Universiti Sains Malaysia (USM) |
| | Japan Advanced Institute of Science and Technology (JAIST) |
| | Yamaguchi University |

Conference Local Arrangement Committee (USM, Malaysia):

| | |
|-------------------------------------|---------------------------------|
| Advisor | Prof. Ahamad Tajudin Khader |
| Chairperson | Ms. Maziani Sabudin |
| Accommodations/Conference Venue | Dr. Ahmad Sufiril Azlan Mohamed |
| | Dr. Zarul Fitri Zaaba |
| Transportation & Excursion | Dr. Gan Keng Hoon |
| | Dr. Tan Tien Ping |
| Publication/Printing & Registration | Prof. Azman Samsudin |
| | Prof. Abdullah Zawawi Hj. Talib |
| | Mr. Mohamad Azam Osman |
| | Dr. Fadratul Hafinaz Hassan |
| Financial | Ms. Rosnah Idrus |
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| | Dr. Syaheerah Lebai Lutfi |
| | Dr. Nasuha Lee Abdullah |
| Conference Kit & Program Book | Ms. Norlia Mustaffa |
| | Dr. Siti Khaotijah Mohammad |
| | Mr. Ahmad Anas Ismail |
| Secretary | Ms. Zali Zaiton Hussin |
| Technical | Mr. Shik Abdulla Mohamed Ali |

Program Committee:

Takuya Maekawa (Osaka University)
Masakazu Takahashi (Yamaguchi University)
Masaki Samejima (Osaka University)
Toshiyuki Ono (Hitachi Ltd.)
Sachio Hirokawa (Kyushu University)
Naoki Mori (Osaka Prefecture University)
Tetsuo Tanaka (Kanagawa Institute of Technology)
Shimpei Matsumoto (Hiroshima Institute of Technology)
Shingo Otsuka (Kanagawa Institute of Technology)
Tomoyuki Nagata (Mitsubishi Electric Corporation)
Mitsunori Matsushita (Kansai University)
Ryosuke Saga (Osaka Prefecture University)
Masao Izumi (Osaka Prefecture University)
Yuto Lim (Japan Advanced Institute of Science and Technology)
Makoto Okada (Osaka Prefecture University)
Rei Itsuki (Hiroshima International University)
Shinichi Hayashi (Hitachi Ltd.)
Kazuhiro Takeuchi (Osaka University)
Tomohiro Murata (Waseda University)
Christos Douligeris (University of Piraeus)
Roshidi Din (Universiti Utara Malaysia)
Wahidah Hussain (Universiti Sains Malaysia)
Ali Kattan (Ishik University)
Masanori Akiyoshi (Kanagawa University)
Atulya Nagar (Liverpool Hope University)
Nurul Hashimah (Universiti Sains Malaysia)
Mohd Azam Osman (Universiti Sains Malaysia)
Gan Keng Hoon (Universiti Sains Malaysia)
Wan Mohd Nazmee Wan Zainon (Universiti Sains Malaysia)
Takenao Ohkawa (Kobe University)
Zurinahni Zainol (Universiti Sains Malaysia)
Fadratul Hafinaz Hassan (Universiti Sains Malaysia)
Zarul Fitri Zaaba (Universiti Sains Malaysia)
K.G. Subramanian (Liverpool Hope University)
Khaled Suwais (Arab Open University)
Takaki Nakamura (Tohoku University)
Tomomi Kaneko (Hokkaido University of Science Junior College)
Norlia Mustafa (Universiti Sains Malaysia)
Ayako Hiramatsu (Osaka Sangyo University)
Maziani Sabudin (Universiti Sains Malaysia)
Takashi Onoyama (Hitachi Solutions, Ltd.)
Kazuhiko Tsuda (Tsukuba University)
Akihiko Ohsuga (The University of Electro-Communications)
Nasuha Lee Abdullah (Universiti Sains Malaysia)
N.S. Narayanaswamy (Indian Institute of Technology Madras)
Abidah Mat Taib (Universiti Teknologi Mara Perlis)
Nuraini Abdul Rashid (Universiti Sains Malaysia)
Ryoju Hamada (Sirindhorn International Institute of Technology, Thammasat University)
Toshiyuki Moritsu (Hitachi Ltd.)

Hirofumi Terada (Hitachi Ltd.)
Shinji Kitagawa (Fuji Electric)
Yasuko Fukuzawa (Hitachi Ltd.)
Tatsuya Nakae (Hitachi Ltd.)
Hidekazu Yanagimoto (Osaka Prefecture University)
Umi-Kalsom Yusof (Universiti Sains Malaysia)
Nur Zakaria (Universiti Utara Malaysia)
Nobuo Suzuki (KDDI R&D Laboratories)
Mikito Ogata (Global Link)

Special Session on Service Science

Organizing Committees:

Muriati Mukhtar (Universiti Kebangsaan Malaysia, Malaysia)
Jing Wang (Beihang University, China)
Chiaki Hirai (Hitachi, Ltd., Japan)
Haruko Nagaoka (Hitachi, Ltd., Japan)

Reviewers:

Michitaka Kosaka (JAIST, Japan)
Motohisa Funabashi (JAIST, Japan)
Youji Kohda (JAIST, Japan)
Masanori Akiyoshi (Kanagawa University, Japan)
Ryosuke Saga (Osaka Prefecture University, Japan)
Ayako Hiramatsu (Osaka Sangyo University, Japan)
Chiaki Hirai (Hitachi, Ltd., Japan)
Yukiko Morimoto (Hitachi, Ltd., Japan)
Tadasuke Nakagawa (Hitachi, Ltd., Japan)
Hiroaki Nasu (Hitachi, Ltd., Japan)
Haruko Nagaoka (Hitachi, Ltd., Japan)

4. Program Overview

| Oct. 15th (Thursday) | | | |
|--|--|--|---|
| 8:00 - 8:45 | Registration | | |
| 8:45 - 9:00 | Opening | | |
| 9:00 - 10:00 | <u>Keynote 1</u> Room Butterworth 4 & 5 | | |
| 10:00 - 10:20 | Break | | |
| 10:20 - 12:10 | <table border="1"> <tr> <td><u>Main Session 1</u> Room Butterworth 4 & 5 <i>Best Paper Candidate</i></td> <td><u>Service Science Session 1</u> Room Butterworth 3 <i>Service System Design, Evaluation Methodology (1)</i></td> </tr> </table> | <u>Main Session 1</u> Room Butterworth 4 & 5 <i>Best Paper Candidate</i> | <u>Service Science Session 1</u> Room Butterworth 3 <i>Service System Design, Evaluation Methodology (1)</i> |
| <u>Main Session 1</u> Room Butterworth 4 & 5 <i>Best Paper Candidate</i> | <u>Service Science Session 1</u> Room Butterworth 3 <i>Service System Design, Evaluation Methodology (1)</i> | | |
| 12:10 - 13:30 | Lunch | | |
| 13:30 - 15:20 | <table border="1"> <tr> <td><u>Main Session 2</u> Room Butterworth 4 & 5 <i>System and Software</i></td> <td><u>Service Science Session 2</u> Room Butterworth 3 <i>Service System Design, Evaluation Methodology (2)</i></td> </tr> </table> | <u>Main Session 2</u> Room Butterworth 4 & 5 <i>System and Software</i> | <u>Service Science Session 2</u> Room Butterworth 3 <i>Service System Design, Evaluation Methodology (2)</i> |
| <u>Main Session 2</u> Room Butterworth 4 & 5 <i>System and Software</i> | <u>Service Science Session 2</u> Room Butterworth 3 <i>Service System Design, Evaluation Methodology (2)</i> | | |
| 15:20 - 15:40 | Break | | |
| 15:40 - 17:30 | <table border="1"> <tr> <td><u>Main session 3</u> Room Butterworth 4 & 5 <i>Data Mining and Pattern Recognition</i></td> <td><u>Service Science Session 3</u> Room Butterworth 3 <i>Case Study</i></td> </tr> </table> | <u>Main session 3</u> Room Butterworth 4 & 5 <i>Data Mining and Pattern Recognition</i> | <u>Service Science Session 3</u> Room Butterworth 3 <i>Case Study</i> |
| <u>Main session 3</u> Room Butterworth 4 & 5 <i>Data Mining and Pattern Recognition</i> | <u>Service Science Session 3</u> Room Butterworth 3 <i>Case Study</i> | | |
| 17:30 - 18:00 | Break | | |
| 19:00 - 21:00 | Welcome Reception | | |
| Oct. 16th (Friday) | | | |
| 9:00 - 10:00 | <u>Keynote 2</u> Room Butterworth 4 & 5 | | |
| 10:00 - 10:20 | Break | | |
| 10:20 - 12:10 | <table border="1"> <tr> <td><u>Main Session 4</u> Room Butterworth 4 & 5 <i>Knowledge</i></td> <td><u>Main Session 5</u> Room Butterworth 3 <i>Security</i></td> </tr> </table> | <u>Main Session 4</u> Room Butterworth 4 & 5 <i>Knowledge</i> | <u>Main Session 5</u> Room Butterworth 3 <i>Security</i> |
| <u>Main Session 4</u> Room Butterworth 4 & 5 <i>Knowledge</i> | <u>Main Session 5</u> Room Butterworth 3 <i>Security</i> | | |
| 12:10 - 13:30 | Lunch | | |
| 13:30 - 15:20 | <u>Poster Session</u> Room Butterworth 2 | | |
| 15:20 - 15:40 | Break | | |
| 15:40 - 17:30 | <table border="1"> <tr> <td><u>Main Session 6</u> Room Butterworth 4 & 5 <i>Data and Storage</i></td> <td><u>Main Session 7</u> Room Butterworth 3 <i>Data Mining and Optimization</i></td> </tr> </table> | <u>Main Session 6</u> Room Butterworth 4 & 5 <i>Data and Storage</i> | <u>Main Session 7</u> Room Butterworth 3 <i>Data Mining and Optimization</i> |
| <u>Main Session 6</u> Room Butterworth 4 & 5 <i>Data and Storage</i> | <u>Main Session 7</u> Room Butterworth 3 <i>Data Mining and Optimization</i> | | |
| 17:30 - 18:00 | Break | | |
| 19:00 - 22:00 | Banquet and Closing | | |
| Oct. 17th (Saturday) | | | |
| 9:00 - 11:30 | <u>CSPC Session (Doctoral Consortium)</u> Room Butterworth 4 & 5 | | |
| 11:45 - 15:00 | Excursion (non-Malaysian participants) | | |
| | <table border="1"> <tr> <td>Lunch</td> </tr> <tr> <td><u>CSPC Session (Doctoral Consortium)</u> Room Butterworth 4 & 5</td> </tr> </table> | Lunch | <u>CSPC Session (Doctoral Consortium)</u> Room Butterworth 4 & 5 |
| Lunch | | | |
| <u>CSPC Session (Doctoral Consortium)</u> Room Butterworth 4 & 5 | | | |

5. Program Details

| Oct. 15th (Thursday) | | |
|----------------------|--|---|
| 8:45 - 9:00 | Opening | |
| 9:00 - 10:00 | <u>Keynote 1</u> Room Butterworth 4 & 5 | |
| | Chair: Prof. Michitaka Kosaka | |
| | Prof. Takao Terano, Tokyo Institute of Technology, Japan <i>The Shape of Social Simulation to Come</i> | |
| 10:20 - 12:10 | <u>Main Session 1</u> Room Butterworth 4 & 5 <i>Best Paper Candidate</i> Chair: Dr. Toshiyuki Ono | <u>Service Science Session 1</u> Room Butterworth 3 <i>Service System Design, Evaluation Methodology (1)</i> Chair: Dr. Chiaki Hirai |
| | Adnan Hamid, Nasuha Lee Abdullah, and Rosnah Idrus <i>Preliminary Study on Open Source Software Implementation in the Malaysian Public Sector</i> | Michitaka Kosaka <i>A Framework for Service System Research based on System's Approach</i> |
| | Jing Tian, Xinchang Hao, and Tomohiro Murata <i>Multi-objective EDA for Multi-mode Project Scheduling with Resource Constraint</i> | Motohisa Funabashi <i>Key Research Topics Developing Service Systems for Vitalizing Local Communities</i> |
| | Kahori Okamoto, Ryosuke Yamanishi, and Mitsunori Matsushita <i>Exploratory Searches for Sound Effects: Verification of Similarity based on the Acoustic Features of Sound Effects</i> | Muriati Mukhtar <i>Service Dominant Logic: A Promise of a Requirements Elicitation Approach for Innovative E-services</i> |
| | Lee Jun Choi and Cheah Yu-N <i>Paraphrase Detection using String Similarity with Synonyms</i> | Jing Wang and Meina Zhao <i>Consumer Cognition of Customization Service based on Event-Related Potentials</i> |
| | | Yong Nie and Michitaka Kosaka <i>Building Customer Self-service Platform: The Next Generation of Servitization in Manufacturing</i> |
| | | |
| 13:30 - 15:20 | <u>Main Session 2</u> Room Butterworth 4 & 5 <i>System and Software</i> Chair: Prof. Takuya Maekawa | <u>Service Science Session 2</u> Room Butterworth 3 <i>Service System Design, Evaluation Methodology (2)</i> Chair: Prof. Jing Wang |
| | Nur Hafizah Haron and Sharifah Mashita Syed-Mohamad <i>Test and Defect-based Assessment of Software Test Adequacy</i> | Hiroyuki Sakano and Michitaka Kosaka <i>Co-creating and Implementing Service Values into New Products: - A Proposal for SDL based Product Planning Process -</i> |
| | Yuto Lim and Yasuo Tan <i>Concept, Implementation and Service Category of Smart Homes</i> | Ryosuke Saga and Shoji Nohara <i>Factor Analysis of Investment Judgment in Crowdfunding using Structural Equation Modeling</i> |
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| | <p>Takayuki Suzuki, Tomohiro Takahashi, Tetsuo Tanaka, and Kazunori Matsumoto <i>Prototyping and Trial Experiment of Lecture and Learning Support System that uses Students' Action History</i></p> <p>Shotaro Murata, Kazumasa Kaneta, Shigenori Ioroi, and Hiroshi Tanaka <i>(Short) Accommodation of Multiple Users in High-accuracy Indoor Positioning System using Smartphones</i></p> <p>Mohammad Alipour, Abdollah Saberi Manesh, Seyed Aliakbar Mousavi, Putra Sumari, and Muhammad Rafie Mohd Arshad <i>(Short) Alternative Rotation Matrix for Human Motion Tracking</i></p> | <p>Yukiko Nishioka and Michitaka Kosaka <i>Effectiveness of "Design Office" in Service Value Co-creation</i></p> <p>Nur Fazidah Elias, Hazura Mohamed, and Rira Rahayu Arridha <i>Measuring Perceived E-service Quality</i></p> <p>Wan Muhamad Noor Azam Wan Ya, Muriati Mukhtar, and Yazrina Yahya <i>ICT Entrepreneur Development Model based on T-shaped Skills</i></p> |
| 15:40 - 17:30 | <p><u>Main Session 3</u> Room Butterworth 4 & 5 <i>Data Mining and Pattern Recognition</i></p> <p>Chair: Prof. Masakazu Takahashi</p> | <p><u>Service Science Session 3</u> Room Butterworth 3 <i>Case Study</i></p> <p>Chair: Prof. Muriati Mukhtar</p> |
| | <p>Masao Izumi and Kenji Hashimoto <i>A Method for Cooking Motion Detection from Video</i></p> | <p>Nguyen Thuy Dung and Michitaka Kosaka <i>(Short) Value Co-creation in Higher Education from the Viewpoint of Service Marketing: Case Study of JAIST iMOST Course</i></p> |
| | <p>Teh Xin Xi, Tan Zhiyu, Wong Kean Yi, and Gan Keng Hoon <i>Review Summarization using Feature-based Sentence Categorization</i></p> | <p>Nay Zar Aung and Youji Kohda <i>(Short) Employees' Proficiency in Service Sector: A Case Study in Myanmar</i></p> |
| | <p>Yusuke Takahashi, Hiroshi Yajima, Takuya Dan, and Takashi Murata <i>Research on Motivation Management for Project Members</i></p> | <p>Hong Li, Zhong Yao, and Yan Bai <i>(Short) Social Commerce User Purchase Intention Study: What Factors are Taking Effect?</i></p> |
| | <p>Noor Rizvana Ahamed Kabeer and Gan Keng Hoon <i>(Short) A Framework for Aspect and Sentiment Extraction for Online Review</i></p> | <p>Narongsak Pongsathornwivat, Chawalit Jeenananta, and Van-Nam Huynh <i>Supply Chain Innovation in Thai Hotel Industry</i></p> |
| | <p>Indah D. Lestantri, Novi Chamsaria, Siti Maria Ulfa, and Ferina Greebe <i>(Short) Internal Control Proposals Monitoring System using SAC Model</i></p> | <p>Mohammed al-Aaidroos, Norleyza Jailani, and Muriati Mukhtar <i>Shariah Compliant Online Services: The Case of Online Auction</i></p> |
| | | <p>Shuang Xu and Michitaka Kosaka <i>The Process of Maximizing the Co-created Service Value based on the Service Field Concept</i></p> |
| | 19:00 - 21:00 | Welcome Reception |

| Oct. 16th (Friday) | | |
|--------------------|--|--|
| 9:00 - 10:00 | <u>Keynote 2</u> Room Butterworth 4 & 5 | |
| | Chair: Prof. Abdullah Zawawi Hj. Talib | |
| | Prof. Rosni Abdullah, Universiti Sains Malaysia, Malaysia <i>Big Data: Opportunities for Research in Computing</i> | |
| 10:20 - 12:10 | <u>Main Session 4</u> Room Butterworth 4 & 5 <i>Knowledge</i> | <u>Main Session 5</u> Room Butterworth 3 <i>Security</i> |
| | Chair: Prof. Tetsuo Tanaka | Chair: Prof. Yuto Lim |
| | Chan Huah Yong, Habibah Lateh, Mohd. Razha Abd. Rashid, Anton Abdulbasah, and Jainambu M.D. Mohd Sultan <i>The Effect of Intervention on Landslide Knowledge among Students in Higher Institution, Malaysia: A Case Study</i> | Rashid Ahmad and Zarul Fitri Zaaba <i>Improving Computer Security Warning: A Mental Model Approach</i> |
| | Lim Chia Yean and Muhammad Rafie Hj. Mohd. Arshad <i>A Triad-based Contextualisation Approach for Better Understanding a Critical Issue</i> | Nguyen Thien Binh, Quan Thanh Tho, and Nguyen Minh Hai <i>On-The-Fly Abstract Interpretation to Handle Obfuscated Polymorphic Virus with HOPE</i> |
| | Tomomi Kaneko, Wataru Hase, Ryoju Hamada, Chawalit Jeenanunta and Masahiro Hiji <i>(Short) Interpretation of BASE Business Games upon i-system</i> | Khoo Ting Loon and Maziani Sabudin <i>(Short) E-Key Management System: Web Application</i> |
| | Lim Heng Kuan and Gan Keng Hoon <i>(Short) Bibliographical-based Facets for Expertise Search</i> | Musa Midila Ahmed and Sukumar Letchmunan <i>(Short) Addressing SOSE Security Challenge</i> |
| 13:30 - 15:20 | <u>Poster Session</u> Room Butterworth 2 | |
| | Kazuya Ohara, Takuya Maekawa, Yasue Kishino, Yoshinari Shirai, and Futoshi Naya <i>Preliminary Investigation of Low-cost Device-free Passive Indoor Positioning using Model Transfer</i> | |
| | Joseph Korpela, Ryosuke Miyaji, Takuya Maekawa, Kazunori Nozaki, and Hiroo Tamagawa <i>Evaluating Toothbrushing Performance using GMM-based Sound Recognition and Regression Analysis</i> | |
| | Daisuke Yagi, Takayuki Suzuki, Tetsuo Tanaka, and Kazunori Matsumoto <i>Towards Personal Identification using Eye Tracking Patterns</i> | |
| | Mohammad Mohammad Shehab, Ahamad Tajudin Khader, and Mohammed Azmi Al-Betar <i>Cuckoo Search Algorithm for Stochastic White Matter Fiber Tracking</i> | |
| | Ahmed I. Alsalibi and Putra Sumari <i>Performance and Reliability Awareness Scheme for Flash Memory-based Solid State Disk</i> | |
| | Naohiro Takahashi and Shingo Otsuka <i>Construct of Senior Watching Room using Single Board Computer</i> | |
| | Kai Iwasaki and Shigenori Ioroi <i>Proposal of Indoor Positioning System based on Sound Waves with Band-pass Filter</i> | |
| | Haruka Kubo, Takanori Yamashita, Brendan Flanagan, Yoshifumi Wakata, Naoki Nakashima, Hidehisa Soejima, and Sachio Hirokawa <i>Feature Words to Predict Long Post-operatively Stay in Semi-structured Medical Records</i> | |

| | | |
|---------------|--|--|
| | <p>Riku Shimosakai and Shingo Otsuka <i>Construction of Weather Information System for Sustainable Agriculture Support</i></p> <p>Amirah Mohamed Shahiri, Wahidah Husain and Nur' Aini Abdul Rashid <i>An Investigation on Currents Works of Hybrid Data Mining Techniques in Predicting Student Performance</i></p> <p>Nor Rahayu Ngatirin, Zurinahni Zainol and Nur' Aini Abdul Rashid <i>Personalized Assistance to E-learning Students using Hybrid Student Modeling Techniques</i></p> <p>Neesha Jothi, Nur' Aini Abdul Rashid, and Wahidah Husain <i>Data Mining Method for Health Data: A Preliminary Study</i></p> | |
| 15:40 - 17:30 | <p><u>Main Session 6</u> Room Butterworth 4 & 5 <i>Data and Storage</i> Chair: Prof. Ahamad Tajudin</p> | <p><u>Main Session 7</u> Room Butterworth 3 <i>Data Mining and Optimization</i> Chair: Prof. Azman Samsudin</p> |
| | Shoichi Masui and Shunichi Tano <i>Emergent System Control Scheme for Age of Big Data</i> | Hiroki Azuma, Masakazu Takahashi, and Kazuhiko Tsuda <i>Understanding Customer Characteristic of the Payment Trends in the Mail Order Industry</i> |
| | Shinichi Hayashi, Aritoki Takada, and Keisuke Hatasaki <i>Proposal and Evaluation of Volume Tiering Method Cooperating with Server SSD Cache</i> | Muhammad Bukhari Burhanuddin, Muhammad Syazwan Suhaimi, Muhammad Thaqif Isa, Umi Kalsom Yusof, and Mohd Nor Akmal Khalid <i>Football Player Selection using Fuzzy Logic</i> |
| | Mohamed Ghetas, Chan Huah Yong, and Putra Sumari <i>Utility-controlled VMs Placement in Virtualized Data Centers</i> | Mohammad Mohammad Shehab, Ahamad Tajudin Khader, and Mohammed Azmi Al-Betar <i>Using New Selections to Improve Particle Swarm Optimization</i> |
| | Ahmed Alsalibi, Putra Sumari, and Ahmed Abusnanina <i>(Short) Comparison Between State of the Art Garbage Collection Schemes of Flash Memory-based Solid State Disk</i> | Salmah Mousbah Zeed Mohammed, Ahamad Tajudin Khader, and Mohammed Azmi Al-Betar <i>(Short) 3-SAT Using Island-based Genetic Algorithm</i> |
| | Wong Jik Soon and Chan Huah Yong <i>(Short) Optimizing Resource Management for Database-as-a-Service in the Cloud</i> | Masao Izumi and Ryo Hasegawa <i>(Short) Play Analysis of American Football from video</i> |
| 19:00 - 22:00 | Banquet and Closing | |

| Oct. 17th (Saturday) | | |
|----------------------|--|--|
| 9:00 - 11:30 | <p><u>CSPC Session (Doctoral Consortium)</u> Room Butterworth 4 & 5</p> | |
| 11:45 - 15:00 | Excursion (non-Malaysian participants) | Lunch |
| | | <p><u>CSPC Session (Doctoral Consortium)</u> Room Butterworth 4 & 5</p> |

6. Keynote Speeches

Keynote 1

The Shape of Social Simulation to Come

Prof. Takao Terano

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Simulation studies on social systems have a long history, however, the research communities have been very small, so far. In recent decades, because of the advances of computer and agent technologies, social simulation has become one of major tools for the research. In this talk, I will address the origin, techniques, and the shape of the future, referring to our recent research on agent-based modeling. The three keywords are: “operationalization of social sciences,” “architecture and code,” and “control and harness”.

Biography



Takao Terano is Professor, Department of Computational Intelligence and Systems Science, Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology, Tokyo. He received his B.A. degree in 1976, M.A. degree in 1978, both from the University of Tokyo, Japan, and had the Doctor of Engineering Degree in 1991 from Tokyo Institute of Technology, Japan. During 1978 and 1989, he was a research scientist at the Central Research Institute of the Electric Power Industry. During 1990 and 2004, he was a professor of Tsukuba University. His current research interests include Genetic Algorithm-based machine learning, Case-based reasoning, Analogical reasoning, Distributed Artificial Intelligence, Cooperative Agents, Computational Organization Theory, and Knowledge System Development Methodology. He is a member of the editorial board of major AI-related academic societies in Japan and a member of IEEE, AAAI, ACM, and PAAA (president).

Keynote 2

Big Data: Opportunities for Research in Computing

Prof. Rosni Abdullah

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The tremendous amount of data generated from various data sources today are so enormous and complex that they can no longer be handled by traditional data processing applications. Commonly known as Big Data, the proliferation of these datasets happens in three dimensions: increasing volume (amount of data), velocity (speed of data in and out), and variety (range of data types and sources). There is now demand for new approaches and techniques to capture, manage, organize and analyze Big Data. In this talk, I will examine new opportunities that the enormous scale and diversity of data has created.

Biography



Rosni Abdullah is a Professor in Computer Science at the School of Computer Sciences, Universiti Sains Malaysia in Penang, Malaysia. She received her Bachelor degree in Computer Science and Applied Mathematics and Master degree in Computer Science from Western Michigan University, Kalamazoo, Michigan, U.S.A. in 1984 and 1986 respectively. She obtained her Ph.D. in 1997 from Loughborough University, United Kingdom in the area Parallel Algorithms. She has led more than 20 research grants, and published more than 100 papers in journals and conference proceedings. She is currently the Director of the National Advanced IPv6 Centre (NAv6) and also Head of the Parallel and Distributed Processing Research Group. Her current research work is in the area of parallel algorithms on multicore and GPGPU architectures for bioinformatics applications.

7. List of Abstracts

Oct. 15th (Thursday)

| | | | |
|------------|---------------|----------------|-------------------------------------|
| 7.1 | 10:20 - 12:10 | Main Session 1 | Best Paper Candidate |
| 7.2 | 13:30 - 15:20 | Main Session 2 | System and Software |
| 7.3 | 15:40 - 17:30 | Main Session 3 | Data Mining and Pattern Recognition |

Oct. 16th (Friday)

| | | | |
|------------|---------------|----------------|------------------------------|
| 7.4 | 10:20 - 12:10 | Main Session 4 | Knowledge |
| 7.5 | 10:20 - 12:10 | Main Session 5 | Security |
| 7.6 | 13:30 - 15:20 | Poster Session | |
| 7.7 | 15:40 - 17:30 | Main Session 6 | Data and Storage |
| 7.8 | 15:40 - 17:30 | Main Session 7 | Data Mining and Optimization |

Oct. 15th (Thursday)

| | | | |
|-------------|---------------|---------------------------|--|
| 7.9 | 10:20 - 12:10 | Service Science Session 1 | Service System Design, Evaluation Methodology (1) |
| 7.10 | 13:30 - 15:20 | Service Science Session 2 | Service System Design, Evaluation Methodology (2) |
| 7.11 | 15:40 - 17:30 | Service Science Session 3 | Case Study |

7.1 Oct. 15th (Thursday) 10:20 - 12:10
Main Session 1 Best Paper Candidate

**Preliminary Study on Open Source Software Implementation in the
Malaysian Public Sector**

Adnan Hamid Nasuha Lee Abdullah Rosnah Idrus

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This paper is a preliminary study on Open Source Software (OSS) implementation in the Malaysian Public Sector. The objective of the study is to explore the state of OSS implementation among government agencies since the launch of the Malaysian Public Sector OSS Master Plan by the Government of Malaysia on July 16, 2004. Semi-structured face-to-face interviews using open-ended questions were conducted in April 2015 with ICT managers/ICT officers among the selected six government agencies in the Northern Region of Peninsular Malaysia. This study aims at investigating the usage of OSS and proprietary software, the level of OSS utilisation, the level of OSS knowledge and training of ICT and non ICT staff, software development and acquisition model, internal OSS manpower capabilities and skills, user's perception on the advantages of OSS, user's perception on the risks of OSS, and the problems or barriers in OSS implementation. The results of interviews show that there are many problems or barriers in OSS implementation e.g. lack of internal OSS expertise, lack of OSS policy, and lack of top management support.

**Multi-objective EDA for Multi-mode Project Scheduling with Resource
Constraint**

Jing Tian Xinchang Hao Tomohiro Murata

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The multi-mode resource constrained project scheduling problem (MRCPSP) is an extension of the project scheduling problem (PSP), which is one of well-known NP-hard problems where activities of a project must be scheduled under the resource constraints and precedence constraints, as well as the mode selection. This paper presents an effective multi-objective EDA with a problem-specific local search, solving the project scheduling problem as multi-objective of both make span and load balancing. In order to increase the searching performance while keeping the distribution of Pareto solutions, two kinds of fitness assignment functions are integrated. Experiment based on benchmark problems and comparisons with other methods demonstrate that our approach is highly effective and well distribution performance.

Exploratory Searches for Sound Effects: Verification of Similarity based on the Acoustic Features of Sound Effects

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The goal of this study is to develop an exploratory search system for sound effects (SEs). SEs appreciably influence viewers' impressions of a movie; thus, SE editors must skillfully select the most appropriate SEs for a given scene. However, existing SE search methods have three main difficulties, involving the diversity of SE purposes, the representation of sound using text, and the conceptualization of SEs for a given scene. These difficulties lead to inefficient SE searches, because the SE editor must perform repeated searches. To solve the problems, this paper proposes a framework to define similarities among SEs with three types of features: context, acoustic features, and symbols of onomatopoeia. As the first step in this study, SEs were clustered based on their acoustic features. The relationships between the clustered SEs and their onomatopoeia characteristics are acquired through subjective evaluation experiments. As a result, it was confirmed that the classifications could help determine the content of the SE.

Paraphrase Detection using String Similarity with Synonyms

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This paper presents an approach to enhance text similarity using synonyms for paraphrase detection. Paraphrase detection detects sentences or texts with similar meaning. Synonym of words can help in paraphrase detection. However, considering synonyms for all the text in the comparison posted extra computational task in the process. This study introduces a simpler approach in considering synonyms in text similarity. The proposed approach is able to be adopted in any term-based text similarity metrics for paraphrase detection. The proposed approach is evaluated using the Microsoft Research Paraphrase Corpus. The evaluation show better result compares to original similarity metrics and reasonable result compares to other selected paraphrase detection approaches in previous studies.

7.2 Oct. 15th (Thursday) 13:30 - 15:20
Main Session 2 System and Software

Test and Defect-based Assessment of Software Test Adequacy

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Software testing is an essential activity in software development process that has been widely used as a means of achieving software reliability and quality. Software developers rely on test coverage to decide whether software under test's reliability has achieved an acceptable level and can be released. Test and defect-based information are among widely used adequacy criteria in the literature. However, little work has been conducted into integrating the two important indicators from the analytics perspective. Therefore, in this paper, Test and Defect Coverage Analytics Model (TDCAM) is proposed. TDCAM provides an analytical capability for software practitioners to judge about their testing results. A case study has been conducted to reveal the practical implications of the proposed model. Based on the case study results, it is evident that TDCAM supports practitioners to assess the adequacy of their tests.

Concept, Implementation and Service Category of Smart Homes

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Smart homes have been vigorously explored for nearly a couple of decades to introduce the concept of networking devices and appliances in the house. In this paper, we present a concept of smart homes in the ubiquitous system viewpoint. We introduce the implementation of smart homes, i.e., iHouse, which uses the ECHONET Lite specification. The paper also gives overall discussion on service categories and research challenges of smart homes.

Prototyping and Trial Experiment of Lecture and Learning Support System that uses Students' Action History

Takayuki Suzuki Tomohiro Takahashi
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Large lectures present serious problems, including the difficulty of measuring students' understanding, their hesitancy to ask questions, and inattention because they cannot concentrate on the lecture while they are taking notes. To improve students' learning efficiency and the utility of lecture-style teaching, we previously proposed a lecture and learning support system that uses students' action history and runs on a browser. With this system, a teacher will be made aware of student responses by the real-time collection and analysis of data, such as student page-turning and marking of pages, and can use this information to improve the lecture. The student benefits by being able to notify the teacher of a question or opinion with a simple operation such as click-and-drag. This can reduce distractions due to note-taking and the problem of forgetting questions. We used a prototype of the system in a trial lesson with a small number of students. The operation behaviors of the students were successfully recorded, to be able to understand / or don't understand each page and each word in the teaching material. With this system, students are likely to ask questions to teachers. Questionnaire results show that the psychological barriers that students are unlikely to question became lowered. An experiment with a large number of students is necessary for future work.

Accommodation of Multiple Users in High-accuracy Indoor Positioning System using Smartphones

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This paper presents a method of accommodating multiple users in an indoor positioning system through the use of spreading sequences. Each user has a smartphone and the proposed method is to insert a discrimination code in the sound transmitted from the smartphone. Numerical simulation results indicate that the proposed method of using M-sequence codes can accommodate multiple users and realize highly accurate positioning.

Alternative Rotation Matrix for Human Motion Tracking

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Putra Sumari Muhammad Rafie Mohd Arshad**

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In this paper, a novel efficient rotation matrix is designed to yield the orientation and position of motion, to be integrated within a Human Capture Motion System such to improve performance. In addition, a linear Kalman filter is used to remove noise from signals captured by adopted motion sensors. Experimental results validate the efficiency and effectiveness of the proposed algorithm.

7.3 Oct. 15th (Thursday) 15:40 - 17:30

Main Session 3

Data Mining and Pattern Recognition

A Method for Cooking Motion Detection from Video

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In this paper, we propose a novel method for detecting cooking motion from video in which a cook is cooking. Firstly we try to extract certain feature areas which are important for detecting cooking motion from video, such as cooking materials and arms of cooks. In the second step, cooking operation area can be detected, and finally we identify cooking operations such as ‘mixing’, ‘heating’, and ‘cutting’. With experiences, we show the ability of our proposed method.

Review Summarization using Feature-based Sentence Categorization

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When reading reviews, situation like too many comments often prevents a user from digesting the information efficiently. Hence, this research is motivated by the importance of improving the readability of large amount of review data based on common features related to entities like hotel, hand phone etc. With respect to this motivation, a feature-based sentence categorization approach is proposed. This approach incorporates three methods in processing (summarizing) reviews, i.e. entity detection, sentiment extraction and prediction rating. Entity detection focuses on the ways of detecting feature’s keywords using domain specific dictionary while sentiment extraction provides basic rating data for prediction rating identification of adjective terms and assignment of sentiment value based on the nature of the adjective terms. As for prediction rating, a review-dependent approach is used by aggregating the rating based on each feature. In conclusion, the readability of reviews is improved by allowing user to select specific feature of an entity and thus minimizes the time needed to read reviews.

Research on Motivation Management for Project Members

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In recent years, the success rate of enterprise IT projects has been said to be about 30% to 40%. IT projects tend to change dynamically during the project period, and project managers (PMs) must maintain a high level of motivation among the project members during that period. However PMs currently identify the motivation levels of project members in a vague manner relying on experience and intuition. Therefore, it is difficult for PMs to obtain a clear picture of the motivation levels of the members. It is thus important to create or identify a mechanism by which project managers can understand the motivation levels of members, and in this paper we propose such a mechanism. In the proposed method, the motivation of project members is first classified into two categories. Next, we measure the motivation in a manner suited to the characteristics of each classification category. Then, we propose a method for visualizing the motivation of members. Finally, we verify the effectiveness of the proposed method through an experiment where the proposed method is applied to actual enterprise projects.

A Framework for Aspect and Sentiment Extraction for Online Review

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Proliferation of Internet and Web 2.0 social media ease millions of people to express opinions globally. To guide people to decide about product purchases, reviews on internet sites are often referred. However, as days goes on, amounts of reviews increases. It is laborious to manually analyze every review to extract opinions. Thus, there is a need to extract useful information from it to enhance decision making. Since reviews are written in natural language, the opinions about the aspects of a product or service can be expressed in different ways. Hence, the detection of opinion may not be straightforward, e.g. mixture of aspects and opinions within a single sentence. In this work, our objective is to improve the extraction of aspect and its sentiments by detecting correct association between them. We propose a framework to capture common sentence structure on how aspect and its sentiments are associated. The framework will be evaluated using benchmarked data by domain experts in review analysis.

Internal Control Proposals Monitoring System using SAC Model

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Many organizations had a system that it had a goals to improve of the organizations itself. A Fund Management Institution had a Proposals Monitoring System that serves as a means of intermediary between this organization with business partners. This Institution want to ensure a Proposals Monitoring System can works with the maximum. This Institution done internal audit for this system. The audit purposed to check up management of IT resources. IS audit is a means for controlling can be employed as a standard for IS auditing. The standard uses business and information technology perspectives in SAC (Systems Assurances and Control) model. This audit is intended to make the mapping of maturity level of control. Maturity level of control is tools to measure how good development of the processes of information system. It also can measure the position of recent information system and evaluate the needed to increase. Pursuant to result of data and review management, the result is application of Proposals Monitoring System are included in the category of immature so it needs to be improved according to the results and recommendations need to improve controls on resources.

7.4 Oct. 16th (Friday) 10:20 - 12:10
Main Session 4 Knowledge

**The Effect of Intervention on Landslide Knowledge among Students in
Higher Institution, Malaysia: A Case Study**

Chan Huah Yong† Habibah Lateh‡ Mohd. Razha Abd. Rashid‡
Anton Abdulbasah‡ Jainambu M.D. Mohd. Sultan†

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Knowledge is an important indicator in an effective landslide mitigation strategy. Knowledge has to be acquired by people living in high risk areas for landslide occurrence such that they will be able to identify early signs of landslides. The students of USM communities living along the slope area are the focus of this study. The result supports the alternative hypotheses stated in the study. Knowledge has improved with the intervention which affects positively the willingness to practice along with right attitude among students. Willingness to practice outscored the attitude and knowledge acquired by students after the intervention where 40% of the students strongly agreed to report any early warning signs encountered before landslide strikes. Also, male students portrayed positive changes in attitude as compared to female who showed none. Those who were “strongly disagreed” or “disagreed” prior to intervention has changed their notion towards either ‘agreed’ or ‘strongly agreed’. This shows that the intervention facilitates support for collaborative effort with tools such as the e-participatory platform and enables them to interact with its environment.

**A Triad-based Contextualisation Approach for Better Understanding a
Critical Issue**

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The ability to correctly understand the requirements and deliver the exact solutions for a critical issue as expected by the stakeholders has been a long-standing problem. This research is motivated to better understand a critical issue by looking into the contextualisation aspects. The proposed contextualisation approach comprises three (3) processes namely the context characterisation, context representation, and context interpretation. At the end of a contextualisation process cycle, a set of consistent triad relationships would be derived to represent the current context of a critical issue. This proposed approach has proven to be able to help the stakeholders to determine the right context for better understanding a critical issue before making any important decisions for the critical issue. It is believed that once the proposed approach is conducted in many contextualisation process cycles with the help of machine learning systems and advance analytics tools in the future, it could produce a useful set of contexts for any critical issue in making better decision deliberations and insights.

Interpretation of BASE Business Games upon i-system

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In modern society, innovation, which is derived from potential demand and knowledge creation, is one requirement for business success. However, innovation seldom occurs in real society. Potential demand might be found in detailed market research. However, knowledge creation does not occur incidentally. It also arises from a fusion of knowledge and skill. The authors assume that a methodical system of some kind might help knowledge creation. A systemic method is the i-system [1]. Many applications of knowledge creation are explained by i-systems. At the university level, professors can teach them and the way of thinking of an i-system as a lecture. Students can study them as knowledge, but they cannot understand them as experience. The authors have developed BASE business games: a participation-type education technique using analogue games. As described herein, the authors attempt to interpret an i-system using teaching methods with BASE business games. Then the authors used the SCC game and the SCC2 game, BASE business games, at the School of Management Technology (MT) of Sirindhorn International Institute of Technology (SIIT), Thammasat University in 2014 and attempted to consider comparison of the answer of questionnaire for students from the knowledge creation's perspective. Results show that this teaching method unites their knowledge into meaningful experiences and facilitates understanding of knowledge creation as an experience.

Bibliographical-based Facets for Expertise Search

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This paper presents a framework for faceted search in the domain of bibliography. The purpose of faceted search is to help users in identifying the information they want via filtering process using facets. In existing faceted search system, the facets used for filtering is linked to fixed values like year, venue, author etc. In order to support better filtering based on domain oriented needs, the focus of this research is to construct the facets with values that are extracted dynamically from the text.

7.5 Oct. 16th (Friday) 10:20 - 12:10
Main Session 5 Security

Improving Computer Security Warning: A Mental Model Approach

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Computer security warnings are a form of communication and became important aspect with development and deployment of any application. Besides their importance in protecting computer systems from harm, people are still not paying attention to security warnings. In order to completely understand the factors that would drive user's attention to security warnings and provide developers an ease to design effective security warnings, a mental model approach is used in this research to further understand users' reaction towards warnings. The mental model provides common lines of reasoning on how people understand and perceive warnings. A focused group of thirty participants from Universiti Sains Malaysia was used for the survey. A mental model was generated based on the survey findings and it highlights the warning response behavior of end-users.

On-The-Fly Abstract Interpretation to Handle Obfuscated Polymorphic Virus with HOPE

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Polymorphic virus, which is able to mutate itself into an infinite number of instances, causes existing signature-based commercial anti-virus programs become insufficient to detect. This problem motivated various logic-based approaches proposed within research community to capture malicious behaviors. Nevertheless, viruses frequently use the obfuscation techniques, makes it uneasy to form a one-size-fits-all logic for obfuscated viruses. Moreover, these methodologies are developed under a common assumption that there is an oracle that can build a complete Control Flow Graph (CFG) for binary code. This is not assuredly achieved in reality. Those difficulties thwart logic-based approaches from being precision. In this work, we propose a framework, known as HOPE (Handling Obfuscated Polymorphic malwarE) to tackle those problems. The novel part of our work is that we make an empirical assumption that popular obfuscations are free from dynamic jump. This assumption allows us to isolate possible obfuscated code segments and efficiently handle them. We had conducted initial experiment with a data set of real viruses, and achieved some promising results, especially as compared to a number of state-of-the-art tools in this field.

E-Key Management System: Web Application

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Key management in a large organization is an issue when it has many rooms with many people using the rooms. They need to ensure only authorized person is able to enter and use specific rooms, which lead to the process of tracking key movement. E-Key Management System, a web based system is design to keep track key movement, automate the process of making key request, generate report and produce graph for decision making. Our main objective is to develop a flexible, easy to use and customizable web based application to solve the problem of tracking the movement of keys in any organization. There are several technique use and implement in E-Key Management System such as Trust Statistic, Probability, report generating and online graph technique. Comparison with other similar systems on features such as key tracking, key request/return, reminder and report shows promising results. According to local users, 80% feel that E-Key Management is very flexible and easy to use and 85% agree the system do solve the key tracking problem compare to the existing manual system. In conclusion, E-Key Management System is a potential web based online key management system that can be used to solve key management problem such as key tracking, request key process and year end audit process.

Addressing SOSE Security Challenge

Musa Midila Ahmed Sukumar Letchmunan

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Sequel to identification of security as the main SOSE challenge, the first move to solving the SOSE security challenge is the identification of the SOSE security goals and taking appropriate measures to address these challenges. First, collaboration between independent trust domain, complexities, and facilitation for protocol and format independent communication between parties are identified as the reasons for the security challenges in SOSE. Second, the SOSE security goals are identified as; Confidentiality, Integrity, Non-repudiation, Message and User authentication. Finally, measures proposed to appropriately achieve these goals are to use secret key encryption to encrypt the message so that public key encryption is used to encrypt the secret key to achieve confidentiality. Digital signature ensures data integrity, message authentication and non-repudiation, and Kerberos will be used to achieve user authentication.

7.6 Oct. 16th (Friday) 13:30 - 15:20
Poster Session

**Preliminary Investigation of Low-cost Device-free Passive Indoor
Positioning using Model Transfer**

**Kazuya Ohara† Takuya Maekawa† Yasue Kishino‡ Yoshinari Shirai‡
Futoshi Naya‡**

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‡NTT Communication Science Laboratories

Recently, Wi-Fi based device-free indoor positioning techniques have been attracting attention, which enable us to locate an end user who does not possess a smartphone based on Received Signal Strength Indication (RSSI) attenuation caused by human body. However, device-free indoor positioning techniques require large quantities of training data in a target environment. In this study, we propose a device-free positioning method that transfers training data collected in other environments to a target environment in order to reduce an training cost of positioning systems.

**Evaluating Toothbrushing Performance using GMM-based Sound
Recognition and Regression Analysis**

**Joseph Korpela Ryosuke Miyaji Takuya Maekawa
Kazunori Nozaki Hiroo Tamagawa**

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This paper presents a method for evaluating toothbrushing performance using audio data collected from a smartphone. In our method, we recognize several classes of toothbrushing activities in audio data using an environmental sound recognition technique based on hidden Markov models. These recognition results are used to generate several independent variables, which are then used to train regression models for estimating evaluation scores for sessions of toothbrushing audio. The dependent variables used to train these regression models are derived from evaluation scores assigned to sessions of data by a dentist. Using these independent and dependent variables, the resulting regression models are able to estimate evaluation scores for toothbrushing audio that represent a dentist's evaluation of toothbrushing performance. We evaluated our method on 94 sessions of toothbrushing audio, achieving 83.1% accuracy when comparing our estimated overall performance scores with those assigned by the dentist.

Towards Personal Identification using Eye Tracking Patterns

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This paper invents a new approach to identifying a person use data of eye tracking. The problem of personal identification is the first step of the authentication process, and has many possible applications in information technologies. The cost of collecting eye tracking data is decreasing recently, and the data can be obtained without a burden of a living body. Experiments in this paper use simple triangle or square, and we collect eye tracking data during testers are gazing there corners one after another. The data are records of point in the two dimensional space. A direct approach over these data becomes complicated, we then in this paper retrieve 4 gaze point data from them under the assumption of gaze data close to the target suffice identity of person. After selecting features from the 4 gaze point data, we apply a data mining method. As a first report of this study, we explain outlines and results of the experiments.

Cuckoo Search Algorithm for Stochastic White Matter Fiber Tracking

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Diffusion Tensor Imaging (DTI) is a Magnetic resonance imaging (MRI) technique used to determine the orientation of white matter fiber in the human brain in vivo. White matter fiber tracking or tractography can estimate the possible fiber paths by tracing principal diffusion directions of local tensor orientations. In tractography, the integrity of connections between different regions in the brain is determined. In this research, a novel and fast probabilistic fiber tracking method is proposed using Cuckoo Search (CS) algorithm. CS algorithm integrated with multi-tensor models solves crossing fiber to find optimal solutions of tractography. Also, increase accuracy and reduce computing time by using a multi-tensor model with Bayesian method of uncertainty.

Performance and Reliability Awareness Scheme for Flash Memory-based Solid State Disk

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By 2020, all the data are expected to redouble every two years, which means 5 terabytes of data for every person on Earth. The difficulty of storing and fetching required data from data centers and servers will consequently increase. As a result, significant attention has been paid to the flash memory-based Solid State Drive (SSD) which made replacing the existing Hard Disk Drive (HDD), used as a storage unit across the world, very possible. Flash memory the basic unit of SSD, has many distinctive characteristics that lead to various challenges. Flash memory doesn't support update in place method. A write operation can only be performed on an empty or erased unit which makes it more time-consuming. Moreover, each storage unit has limited number of erase cycles. In this research, a new scheme called Performance and Reliability Awareness (PRA) proposed to increase the reliability and performance of SSDs.

Construct of Senior Watching Room using Single Board Computer

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This study proposes a system which can acquire object's position information in real time, and which doesn't require object's operation using laser range scanner, infrared array sensor and single board computer for senior citizen's watching.

Proposal of Indoor Positioning System based on Sound Waves with Band-pass Filter

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A high positioning accuracy is required more for indoors than for outdoors. However, currently, positioning methods that use radio waves are often used in indoor positioning, and the accuracy is between 3 to 10 m. Therefore, we propose an indoor positioning method that uses high frequency sound waves. The proposed system uses four or more speakers. The frequencies of the sound issued from the speakers are different and are determined in advance. These speakers put out momentary sound at the same time. A smartphone used as a client (hereafter, client) records the sound with a built-in microphone. The client decomposes the recorded sound by using a band pass filter and obtains the difference between the sounds of the reception time of each frequency. Then, the client calculates its current location by using the speaker position and the difference between the arrival times of sound. The user of this system does not need to provide any special equipment and can use this positioning system with his or her own smartphone. This system does not communicate with servers since the client calculates its own position. Therefore, it can also be used in places that forbid the use of radio waves. In the results of an experiment, the distance accuracy error was 1.84 cm (standard deviation of 0.36 cm), and the positioning accuracy had an error of 10.60 cm.

Feature Words to Predict Long Post-operatively Stay in Semi-structured Medical Records

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The number of medical records is increasing for the quantitative evaluation and improvement of medical process. The records are written in POMR (Problem Oriented Medical Record) format record consists of patients' subjective observation (S), objective items of test results (O), assessment, evaluation and judgement (A), future's treatment policy (P) and free description (F). The present paper applied SVM (support vector machine) to extract characteristic words to predict the patients of long post-operatively stay. Analysis of 3,840 medical records of Saiseikai Kumamoto Hospital revealed that the objective component contains the most crucial words.

Construction of Weather Information System for Sustainable Agriculture Support

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We propose weather information system for sustainable agriculture using single board computer and various sensors. And our system use photovoltaic power generation device. We consider a comparison of the introduction and running cost of commercial system and our system.

An Investigation on Currents Works of Hybrid Data Mining Techniques in Predicting Student Performance

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Predicting student performance becomes more challenging due to the large volume of data in educational database. Currently in Malaysia there are still lack of effective tools to analyze and monitor the student progress and performance. Our aim in this study is to identify hybrid data mining techniques to mine patterns of student data.

Personalized Assistance to E-learning Students using Hybrid Student Modeling Techniques

Nor Rahayu Ngatirin Zurinahni Zainol Nur'Aini Abdul Rashid

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Traditional method only provides one-way communication between educators and students. However, student nowadays need different approach to learn to support their learning styles such as blended learning and adaptive learning. An adaptive learning system offers one-to-one tutoring by making adjustments its interaction with students according to the needs of each particular student. Although it provides personalized learning and customized feedback, the accuracy in inferring and assisting students should be improved. This work proposed a student behavior model that improve the precision in suggesting practices and providing personalized assistance to e-learning students. To achieve the above objective, we review all available models and hybrid the best two algorithms to model the behavior and students' learning styles mainly for e-learning course. This model will be used to build students' profile based on their learning styles and educational background. The model is expected to assist student by suggesting him/her individualized courses of action in order to maximize learning effectiveness and efficiency and enhances the way educators support students' learning process by playing a role as a designer, coordinator, and supporter rather than spoon feeder.

Data Mining Method for Health Data: A Preliminary Study

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This paper present our preliminary study on data mining methods for health data. We study various data mining methods works from 2005 until 2015. The data mining techniques for predictive models will be studied thoroughly to identify the most suitable prediction method and algorithm using the health data. The identified prediction algorithm will be enhanced and hybrid to obtain the best accuracy on the dataset. The constructed prediction algorithm will then be benchmarked against standard data mining algorithms.

7.7 Oct. 16th (Friday) 15:40 - 17:30
Main Session 6 Data and Storage

Emergent System-control Scheme for Age of Big Data

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An age of big data is coming. Everything in the world may soon be connected to the Internet and be able to communicate with each other. Such a situation has given us the opportunity to create a system-control scheme for large-scale infrastructures of which effective control is difficult with current control schemes. We propose an emergent system-control scheme with which statistical analysis on big data gathered from past control experiences of a system will have a large role. The inherent nature on autonomous distributed control of this scheme will provide robustness to the system. We also discuss the analysis of the requirements necessary for practical implementation of our emergent system-control scheme.

Proposal and Evaluation of Volume Tiering Method Cooperating with Server SSD Cache

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In a system using server SSD (Solid State Drive) cache and volume tiering functions, it is difficult to determine which data are to be placed on SSD tier on the basis of the number of I/Os. In this paper, we propose a volume tiering method cooperating with server SSD cache, which allocates storage SSD to read-intensive areas. We conduct an I/O simulation experiment using various I/O logs traced in a real environment to validate the proposed method. We show that the proposed method reduces the I/O average response time by up to 10% compared with the existing method.

Utility-controlled VMs Placement in Virtualized Data Centers

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Although, the problem of VMs placement is widely discussed in the literature in terms of power-performance trade-off, most of the proposed techniques adapt on-demand resource over-provision strategy to satisfy resource requirements. Cloud providers aim to reduce power consumption for the purpose of decreasing the operational costs as well as increasing their profit. In this paper, we adapt minimum SLA resource requirement strategy to perform initial VMs placement, moreover, we introduce an algorithm that maximizes the cloud providers' profit as well as system stability. The simulation results show that our algorithm achieves maximum energy saving and increases the stability of the systems.

Comparison between State of the Art Garbage Collection Schemes of Flash Memory-based Solid State Disk

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Flash memory-based Solid State Disk (SSD) is a nonvolatile semiconductor memory which has several advantages over Hard Disk Drives (HDD) such as high energy efficiency, low access latency, less noise, reliability, no moving parts, lighter weight, small size and higher resilience to external shocks. However, the limited number of erase cycles for each storage unit (block) is considered one of SSD shortcomings. After certain cycles of erase operations, flash memory blocks become invalid. This physical limitation brings about the need for a new scheme to distribute the erase cycles evenly among all the blocks to prevent any block from worn before other blocks. This procedure is called Wear Leveling (WL). In this research, we compare the performance and reliability for some of leading schemes such as the Greedy (GR), Cost Benefit (CB), Cost Age Time (CAT), Kim & Lee scheme, and efficient garbage collection (FeGC). To demonstrate the efficiency of previous schemes, Eagle Tree simulator is used. The experimental results show that GR and Kim & Lee scheme performs better than the others in terms of number of erase operations, number of migration pages, average of write latency, and time taken during garbage collection.

Optimizing Resource Management for Database-as-a-Service in the Cloud

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With the emergence of cloud computing, comes a new kind of cloud service namely Database-as-a-Service that removes users the hassle to own their own database server. The responsibility of maintaining and monitoring the database workloads thus transferred to the Database-as-a-Service cloud operator. Service operator generates income through the database service they have provided by meeting the SLA. In order to maximize the income generated, a cloud service operator needs to utilize the least amount of machines to host the maximum amount of database workloads. In this regards, this paper propose a model which monitors the database workloads performance and server resources utilization. Database workloads migration will be triggered when the model detects any database workloads that have failed to meet SLA agreement. The model is able to choose a server which serves the database workload better based on the workload profile and server profile generated by the monitoring module. Experimental results proof that the algorithm able to detect workloads that violated SLA and migrate the affected workloads. The efficiency of decision making in workload placement is proofed to balance the resource utilization and reduce pending jobs during peak hour.

7.8 Oct. 16th (Friday) 15:40 - 17:30

Main Session 7

Data Mining and Optimization

Understanding Customer Characteristic of the Payment Trends in the Mail Order Industry

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This paper presents investigating the customer characteristics of mail order industry, especially the effect measurements of credit reminder. These kinds of research have not made intensively, focusing on the credit reminder so far. The conventional credit reminder is one of the bad debt collection work in the mail order company, so that they could not leave them as it is. Therefore, they could not capture the original condition of the remittance while most of the Japanese mail order company adopts the postpaid systems in their transaction system. For these backgrounds, we observed the bad debt list gathered from a mail order company and analyzed. From the results of the observation, we characterize the effect of the credit reminder. Intensive research revealed that the effect of credit reminder. From the result of study, Classification of customer from the payment trends are succeeded. As a result, Payment methods have some patterns are found. Classification of customer are classified with this knowledge. For mail order company, it will manage the effective credit to perform demand management to the characteristic of the customer. In addition, it becomes the useful information in performing ONE to ONE marketing.

Football Player Selection Using Fuzzy Logic

Muhammad Bukhari Burhanuddin Muhammad Syazwan Suhaimi
Muhammad Thaqif Isa Umi Kalsom Yusof Mohd Nor Akmal Khalid

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In sports, a variety of players characteristics contributed to the main reason the player is recruited into a team. This includes body composition, flexibility, visual test, TAIS (Test of Attentional and Interpersonal Style), psycho-motor test assessment personal attributes as well as aerobic and anaerobic to make the best sports team. The problem arises when one needs to evaluate all these different factors in order to select a player to form an efficient sports team with high coordination among team members. It is a tedious task and time consuming for coaches to analyse players individually in order to recruit a few players showing desirable performance. In addition, as human has its limitation, there is a high degree of error in judgment in decision making. With the aim of bridging this gap, fuzzy logic is applied to imitate human analytic thinking ability making decision in player selection process. Thus, the system is able to assist coach in decision making process of recruiting football players with minimal time and error. Furthermore, user could dynamically change the input based on the traits that have been set by the system. Fuzzy logic is chosen as it is a powerful mathematical tool involving ambiguous and incomplete information supported by the experience and judgment of coach combining with this cognitive ability in order to reach a verdict. Therefore, the outputs from the experiment conducted shows that the system provides robust output and information to user regarding players aptitude and ultimately aim to effectively predict human judgment.

Using New Selections to Improve Particle Swarm Optimization

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In Particle Swarm Optimization (PSO) there is only one place employed the idea of selection scheme in global best operator in which the components of best solution have been selected in the process of deriving the search and used them in generation the upcoming solutions. However, this selection process might be affecting the diversity aspect of PSO since the search infer into the best solution rather than the whole search. In this paper, new selection schemes which replace the global best selection schemes are investigated, comprising fitness-proportional and tournament. The proposed selection schemes are individually altered and incorporated in the process of PSO and each adoption is realized as a new PSO variation. The performance of the proposed PSO variations is evaluated. The experimental results using benchmark functions show that the selection schemes directly affect the performance of PSO algorithm. Finally, a parameter sensitivity analysis of the new PSO variations is analyzed.

3-SAT Using Island-based Genetic Algorithm

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The Boolean Satisfiability Problem (SAT), which is known as a three-conjunctive normal form, is an expression where every clause consists of three literals but with an unrestricted number of literals and clauses. This study implemented the island model genetic algorithm (Island-based GA) to solve the 3-SAT problem. The benchmark SAT problems of four suits (URSAT1, URSAT2, URSAT3, and URSAT4) in SATLIB were used to test the performance of the Island-based GA and were compared with MAEA-SAT and Standard GA (SGA). The Island-based GA obtained good results and performance in solving large-scale SAT problems.

Play Analysis of American Football from Video

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In this paper, we try to discriminate American football plays into two types, run-play and pass-play. In the first step, each frame of video is projected into football field model by using projection transfer matrices from video coordinates into football field coordinates. Next we extract players' regions by using color information. Thirdly, 'scrimmage line' is extracted from filed model. And finally, we discriminate each play into two types of plays, run-play and pass-play. Experimental results show the ability of our proposed method.

7.9 Oct. 15th (Thursday) 10:20 - 12:10
Service Science Session 1
Service System Design, Evaluation Methodology (1)

A Framework for Service System Research based on System's Approach

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This paper discusses a framework for service system research which maximizes co-created service values. Recently, there are many service researches which discuss value co-creation with customers. Service is considered as a system including providers, customers, information systems, and so on. However, there is no research framework which clearly explains how to organize a service system to create service values. In this paper, we discuss about a service system framework and how to create customers' values in a service system.

Key Research Topics in Developing Service Systems for Vitalizing Local Communities

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The present paper proposes key research topics in developing service systems for vitalizing local communities. In order to stop decline of population, an idea vitalizing local communities is coined and local governments are requested to make plans vitalizing their regions in Japan. The planning calls for developing public service systems based on the model of community activities including service receivers such as residents and industries. The present paper derives a fundamental model of regional service activities and based on the derived model the paper identifies two key research topics. One is development of a new comprehensive model integrating multi-agent and general equilibrium models in order to cope with micro and macro loop problems. The other is formation of service systems based on systems of systems (SoS) engineering approaches in order to cope with complexity of the objective systems.

Service Dominant Logic: A Promise of a Requirements Elicitation Approach for Innovative E-services

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E-services are services delivered via electronic means. With the ubiquity of the Internet and the proliferation of smart phones and tablets, it is projected that e-services will grow at an exponential rate in the years to come and contribute substantially to the economy. However, traditional e-service design methods have some limitations. They predominantly focus on provider processes and they also approach e-service design by using the goods or production perspective. This resulted in e-services that are of limited value to the users and hence limit the uptake of e-services. In this paper, we motivate the need for a new requirements elicitation approach for systematically helping in the design of e-services. The proposed approach is grounded in the service dominant logic as proposed by the service science community. It is argued that the service dominant logic via its foundational premises embodied several factors that are important to ensure value in use of the proposed e-services. These factors are construed as generic and flexible statements of users' requirements, which could be refined, elaborated, analyzed and subsequently moulded into a requirements elicitation approach for e-service design.

Consumer Cognition of Customization Service based on Event-Related Potentials

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Successful service can satisfy customers and attract new customers, increasing the competitive of manufacture. It is important to know the service demand of customer. In this study, we required 20 participants to decide whether to buy the combination of products and services provided in the stimulus and to respond as soon as possible. According to their reports of expectations after the experiment, we subdivided the service stimuli into two conditions. Condition 1 contains the customization service that fit individual preferences, while Condition 2 contains the general services. An essential component of event-related potentials (ERPs), the P300, was elicited in the two conditions and distributed over almost all parietal and occipital regions. Customization service evoked a higher P300 amplitude than those general services. The results show that evaluating service is a cognitive process that modulates attention in the occipital region. When developing a product related service, a business should also take into account the affective service design. This paper provides neural mechanisms for research on the consumer behavior and on the evaluation of providing services in product and service offerings.

Building Customer Self-service Platform: The Next Generation of Servitization in Manufacturing

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Servitization is argued as a differentiation strategy for manufacturers to achieve competitive advantage. However, there are two critical issues to be solved. First, most of research focused on how manufacturers make corporate transformation and business process reengineering to adapt the distinction of service design and delivery. However, even manufactures complete the transformation, their added services still belong to firm-based solutions. Customers mostly wait for the offerings' delivery and their tacit needs are hard to satisfy. Second, it seems that utilizing the thought of value co-creation can solve the above problem. But, are customers willing to accept the invitation to create value together with manufacturers? How can they participate in the process? Based on the analysis of key successful factors in the evolvement of servitization, the authors discuss that building Customer Self-Service Platform (CSSP) is an effective way to meet customer autonomy and utilize their knowledge to create added value. This happens when customers make voluntary efforts to satisfy their own interests, purpose or goals. Then five key features of CSSP are defined: inspired by a vision, advanced-customer-driven innovation, customer autonomy, social and mobile, and product as a service platform. Standing on the perspective of the customer's digital engagement, knowledgeable engagement, and social engagement, the paper concludes with a CSSP frame-work.

7.10 Oct. 15th (Thursday) 13:30 - 15:20
Service Science Session 2
Service System Design, Evaluation Methodology (2)

**Co-creating and Implementing Service Values into New Products:
- A Proposal for SDL based Product Planning Process -**

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All product planners always dream of launching an attractive new product into the marketplace successfully though only a few of them can actually enjoy such a sweet dream. Why? Now, in order to approach this dream, unless you are a gifted product planner like Steve Jobs, you might have already made careful market researches, conducted intensive interviews with your target customers, and even implemented some leading edge technologies into the new product to attract your target customers. Yet, still, many of such new products might not be well accepted. Why not? We now conclude “service” is a keyword to answer this question even for “hardware-centric” products either they are targeted for BtoB or BtoC market. Further, the Service Dominant Logic (SDL) can be a prominent clue to clarify this longstanding Q&A with a possible solution.

**Factor analysis of investment judgment in crowdfunding
using structural equation modeling**

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This study describes the factor analysis of investment judgment in crowdfunding. Crowdfunding is a web service used by founders and funders. By using this service, a founder can gather small amounts of money, much like in micro-financing, from people who are interested in donating. Crowdfunding is suitable for startup and small businesses that cannot borrow large amounts of money from venture capitals and banks. However, what the important elements are and what factors dictate the investment remain unclear. Therefore, this study analyzes crowdfunding using the structural equation modeling and the text mining technique. We assume that the crowd decides to invest in the content and externality of the project. Specifically, the content element is built from not only from observed variables but also from words extracted by hierarchical latent dirichlet allocation. The experiment that used 754 data from Kickstarter.com shows that the external social relationship influences the decision to invest in a project.

Effectiveness of “Design Office” in Service Value Co-creation

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Service value co-creation is an important issue in service science. In this paper, we reveal the importance of creating an environment “ba” for collaboration and bird-eye view for grasping entirety. For creating “ba” as a practical value co-creation environment applying KIKI model, “design office” performs significant role. In KIKI model, the purpose of value co-creation is divided into two issues; first one is to clarify the service value which is provided by the enterprise to its end customer, and the second is to create and implement new service value. Focusing on first issue, we discuss the role of “design office” in creating collaboration environment “ba” and identifying the service field using MUSE method. Then by introducing business value creation project of a utility safety service company as a case study, effectiveness of service value co-creation facilitated by “design office” is verified.

Measuring Perceived E-service Quality

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The quality of online services is playing an increasingly important role in determining customer satisfaction. If customers are satisfied with the services received through the online system, it is likely they will keep using the system. The purpose of this study is to assess the perceived service quality of airline websites attributes in Malaysia and to determine the perception between males and female towards e-service quality. A modified servqual and Nusair and Kandampully’ model scale was used to assess service quality perceptions from the perspective of airlines customers in Malaysia. Data were collected through an online survey. Descriptive statistical analysis and independent t-test were conducted. The study results indicate the rather high expectations of airline websites users regarding service quality. Personalization, information quality, tangibility, responsiveness and trust are the key factors that best explained customers’ expectations of airline e-service quality.

ICT Entrepreneur Development Model based on T-shaped Skills

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Entrepreneurship has become a source of economic transition from low productivity areas to high productivity. It is thus necessary for any nation to develop the capacity of their entrepreneurs in order to remain competitive in this challenging millennium. Research in entrepreneurship has underlined the importance of education and training in developing the capacity of entrepreneurs. Existing training programs are emphasizing on basic entrepreneurship skills and product innovation. These types of training approaches has limited successes and there is a need to reexamine the education and training modules for entrepreneurs in order to prepare them better for the global challenges. Focusing on the ICT entrepreneurs in Malaysia, this paper proposed a model that combines elements that are deemed important to the development of an entrepreneur. In the proposed model, characteristics of the T-shaped skill set, necessary entrepreneurship skills and learning theory are identified as important elements that should be incorporated into the curriculum of ICT entrepreneur development programs in order to produce successful entrepreneurs.

7.11 Oct. 15th (Thursday) 15:40 - 17:30

Service Science Session 3

Case Study

Value Co-creation in Higher Education from the Viewpoint of Service Marketing: Case Study of JAIST iMOST Course

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Co-creation and knowledge transfer are currently dominant in service marketing as a key factor to create value for both providers and customers. In the context of service and knowledge society, higher education is considered as service, and it is potential to apply service-marketing concepts in this sector in order to provide higher quality and adaptive employees for industries and societies. In this paper, based on a successful case study of co-creation in high education, we propose frameworks of value co-creation and knowledge transfer process in higher education in the boundary of niche market.

Employees' Proficiency in Service Sector: A Case Study in Myanmar

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As the nature of developing country, family service businesses in Myanmar have so many challenges to survive within the local market because they have lacked in managing the business processes, financial and ownership problems. Therefore, family businesses are hiring the good consultants and managers for solving, to overcome such kind of challenges. Otherwise, hiring the consultants is not only the solution for their businesses. In fact, businesses need to enhance the internal quality or employees' proficiency which is the most important quality of the business operating process. Through this concept, we analyzed a case study with 40 employees that intend to investigate the working proficiency of workers at the family business in order to enhance the quality of service. We found that three items of working behaviors were significantly associating with the working proficiency of employees. According to the research findings, we suggest that if employees have satisfaction in their working environment, the employees' working behaviors and proficiency will be increased significantly and this research has implication for service sectors of family businesses in Myanmar.

Social Commerce User Purchase Intention Study: What Factors are Taking Effect?

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With the emerging of user numbers in online social networking, the social commerce has been paid attention by both academic and business fields. As a new type of communication tools, research findings have reported that the user produced contents (UGC) in social networks are affecting user feeling, shopping efficiency and purchase intention, etc. However, as a new kind of e-business pattern, related theory in social commerce is not fully developed in lots of perspectives. Among all the to-be-discovered topics, what factors are affecting the consumer's intention in social commerce is one of the most interesting and urgent topic. This paper proposed an empirical model, whereas the consumer knowledge, user's social commerce cognition and social support are related with users' purchase intention. Data is collected via online questionnaire and the models are tested using structural equation model (SEM). The test results find that social commerce cognition and social support are positively related with social commerce purchase intention. Different from what is hypothesized in previous literature report, the consumer knowledge has a negative effect on social commerce purchase intention. The reasons of this phenomenon is explained that the social commerce development is still in an early stage, consumers has higher expected value compared with that of the e-commerce, but with the knowledge increase or cumulated about the social commerce, they are disappointed. That leads to the negative effect on purchase intention. Companies can make up this shortfall by developing market strategies more on social support factors since social support has more impact on users' purchase intention. In the future, what lead to the consumer knowledge.

Supply Chain Innovation in Thai Hotel Industry

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Collaborative advantage is one of the main sources for sustaining competition in hotel businesses. Firms that have more collaboration can gain more innovativeness. This concept is highly necessary in service-based industries. However, there is a lack of research empirically investigating such issues especially in hospitality sectors. This study therefore focuses on the influences of supply chain collaboration on internal and service innovation, and firm performance in hotel industry. Data were collected from a stratified sample of 84 hotel firms in Bangkok, Thailand using cross-sectional survey in 2012. The statistical methods include confirmatory factor analysis and two-stage least square regression are applied and robust the statistical results. The findings indicate that collaboration has positively impact on internal and service innovation and also firm performance by mediatory enhancing on service innovation in Thai hotel industry. However, service innovation does not influence performance. The results provide the significantly understanding on service supply chain collaboration and innovation performance in the hotel industry.

Shariah Compliant Online Services: the Case of Online Auction

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Muslims present a promising market segment since the Muslim population stand at 28.2% of the total world population with most of them residing in developing countries. Gaining access and success in the Muslim market segment could not be achieved unless services and products offered are in compliance with Sharia principles. The proliferation of the Internet and smart devices has presented an unprecedented opportunity for online services to flourish. In order to cater for the Muslim users it becomes necessary that these services are in accordance with their needs and requirements, in particular Sharia compliance. Consequently, this research pro-posed a reference model that prescribes the infrastructure required for the Sharia compliant online services. The model forms a tight relation between ICT, Business, and Shariah in a way that business makes use of ICT whilst governed by Shariah acts. In order to gain the initial approbation for the model, we survey several experts from professionals in Shariah, business, and technology to evaluate and validate the extent of acceptability the model. The results obtained show a promising acceptance of the proposed model. The overall average score of all experts' evaluation, out of a maximum score of 5, is 3.95. Also, the average rating of the Sharia expert, Business expert, and IT expert are 3.75, 3.85, and 4.25 respectively.

The Process of Maximizing the Co-created Service Value based on the Service Field Concept

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This research proposes a new methodology of maximizing the co-created service value based on the service field concept, which provides the process to evaluate the service value dependent on situations mathematically. The service value is evaluated by an inner product of service attribute vectors. It is applied to the service value co-creation process – KIKI model. In order to show the effectiveness of the proposed methodology, HDRIVE case is investigated.

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