

CONFERENCE ABSTRACTS

**2018 2nd International Conference on Algorithms, Computing
and Systems (ICACS 2018)**

2018 年第二届算法、计算与系统国际会议

Workshop

**2018 2nd International Conference on Communications and
Future Internet (ICCFI 2018)**

2018 年第二届通信与未来互联网国际会议

July 27-29, 2018 Beijing, China

2018 年 7 月 27-29 日 北京



Venue: BUPT Hotel

Add: Beijing University of Posts and Telecommunications, 10 Xitucheng Rd, Haidian, Beijing
地址：北京海淀区西土城路 10 号

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WELCOME

Dear professors and distinguished delegates,

Welcome to 2018 2nd International Conference on Algorithms, Computing and Systems and 2018 2nd International Conference on Communications and Future Internet in Beijing, China!

We wish to express our sincere appreciation to all individuals and organizations who have contributed to the conference. Special thanks are extended to our colleagues in the technical program committee for their thorough review of all the submissions, which is vital to the success of the conference, and also to the members in the organizing committee who had dedicated their time and efforts in planning, promoting, organizing and helping the conference. Our special thanks also go to the invited speakers as well as all the authors for contributing their latest research to the conference.

This conference program is highlighted by four keynote speakers: Prof. Tok Wang Ling, National University of Singapore, Singapore; Prof. Chin-Chen Chang, Feng Chia University, Taiwan; Prof. Sheng-Uei Guan, Xi'an Jiaotong-Liverpool University, China; Prof. Jun Xu, Chinese Academy of Sciences, China.

Oral presentations are divided into four parallel sessions. One best presentation will be selected from each session, evaluated for: Originality, Applicability, Technical Merit, Visual Aids, and English Delivery. We wish you all the best of luck with your presentations!

We believe that by this excellent conference, you can get more opportunity for further communication with researchers and practitioners with the common interest in Algorithms, Computing and Systems, Communications and Future Internet.

We wish you a pleasant and memorable experience in this conference as well as in Beijing.



Yours sincerely,

Conference Organizing Committee
Beijing, China

NOTES & TIPS

Notes:


- ✧ You are welcome to register at any working time during the conference.
- ✧ Please kindly keep your Paper ID in mind so that the staff can quickly locate your registration information onsite.
- ✧ Certificate of Listener can be collected in front of the registration counter. Certificate of Presentation will be awarded after your presentation by the session chair.
- ✧ One *Best Presentation* will be selected from each parallel session and the author of best presentation will be announced and awarded when the session is over.
- ✧ Your punctual arrival and active involvement in each session will be highly appreciated.
- ✧ Please kindly make your own arrangements for accommodations.
- ✧ Please keep all your belongings (laptop and camera etc.) with you in the public places, buses, metro.

Warm Tips for Oral Presentation:


- ✧ Get your presentation PPT or PDF files prepared.
- ✧ Regular oral presentation: 15 minutes (including Q&A).
- ✧ Laptop (with MS-Office & Adobe Reader), projector & screen, laser sticks will be provided by the conference organizer.

AGENDA

< July 27, 2018 >

 Lobby	
10:00-17:00	Registration & Materials Collection

Morning < July 28, 2018 >

 Function Hall (2nd floor)		
09:00-09:10	Opening Remarks	
	Prof. Sheng-Uei Guan , Xi'an Jiaotong-Liverpool University, China	
09:10-10:10	Keynote Speech I	Prof. Tok Wang Ling National University of Singapore, Singapore Speech Title: <i>Conceptual Modeling Views on SQL and NoSQL</i>
10:10-10:30	Coffee Break & Group Photo	
10:30-11:10	Keynote Speech II	Prof. Chin-Chen Chang Feng Chia University, Taiwan Speech Title: <i>Applying De-clustering Concept to Information Hiding</i>
11:10-11:50	Keynote Speech III	Prof. Sheng-Uei Guan Xi'an Jiaotong-Liverpool University, China Speech Title: <i>Opportunities and Challenges in Information Communications Technology</i>
11:50-12:30	Plenary Speech	Prof. Jun Xu Chinese Academy of Sciences, China Speech Title: <i>Reinforcement Learning to Rank for Search Result Diversification</i>





Lunch Time <12:30-14:00> Location: Restaurant (2nd floor)

Note: lunch coupon is needed for entering the restaurant.



AGENDA

Afternoon< July 28, 2018>

14:00-15:45	Session I-Image and Signal Processing-7 presentations	 Function Hall 1 (2nd floor)
	AC011, AC024, AC028, FP012, FP022, AC002, AC206	
14:00-16:00	Session II-Algorithm Design and System Modeling-8 presentations	 Function Hall 2 (2nd floor)
	AC008, AC023, AC026, AC036, AC039, AC042, AC202, AC031	



Coffee Break <16:00---16:15>

16:15-18:45	Session III-Communication Engineering and Information Network-10 presentations	 Function Hall 1 (2nd floor)
	FP004, FP005, FP009, FP013, FP025, FP029, FP028, AC027, AC043, FP026	
16:15-18:30	Session IV-Computer Science and Engineering-9 presentations	 Function Hall 2 (2nd floor)
	FP003, AC010, AC019, AC022, AC037, AC051, AC207, AC046, AC049	


Poster Session	AC006, AC016, AC205, AC050, AC204, FP019
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Dinner <18:45-20:30> Location: Restaurant (2nd floor)

Note: dinner coupon is needed for entering the restaurant.

< July 29, 2018>

 Beijing	
08:00-17:00	Social Networking Event

The Event is optional and will charge an additional 80 USD/500 RMB. Participants should apply for it in advance before July 10.

The Routes are:

Tian' an men Square, Forbidden City, Summer Place and Wangfujing.

It includes transport to Tian' an men square, the first tickets of the Palace Museum and the Summer Place, and lunch.

KEYNOTE



Prof. Tok Wang Ling
IEEE Senior Life Member
National University of Singapore, Singapore

Dr. Tok Wang LING is a professor in Computer Science Department at the National University of Singapore. He was Head of IT Division, Deputy Head of the Department of Information Systems and Computer Science, and Vice Dean of the School of Computing of the University.

He received his PhD and M.Math, both in computer science, from University of Waterloo (Canada) and B.Sc. (1st class Hons) in Mathematics from Nanyang University (Singapore).

His current research interests include Database Modeling, Entity-Relationship Approach, Object-Oriented Data Model, Normalization Theory, Semi-Structured Data Model, XML Twig Pattern Query Processing, XML and Relational Database Keyword Query Processing, Temporal Database keyword Query Processing.

He serves/served on the steering committees of 5 international conferences, was the SC Chair of both ER and DASFAA, and currently is the SC Chair of BigComp. He served as Conference Co-chair of 12 international conferences, including ER 2004, DASFAA 2005, SIGMOD 2007, VLDB 2010, BigComp 2015, and ER 2018. He served as Program Committee Co-chair of 6 international conferences, including DASFAA 1995, ER 1998, ER 2003, and ER 2011.

He received the ACM Recognition of Service Award in 2007, the DASFAA Outstanding Contributions Award in 2010, and the Peter P. Chen Award in 2011.

KEYNOTE



Prof. Chin-Chen Chang
IEEE and IET Fellow
Feng Chia University, Taiwan

Professor Chin-Chen Chang obtained his Ph.D. degree in computer engineering from National Chiao Tung University. His first degree is Bachelor of Science in Applied Mathematics and master degree is Master of Science in computer and decision sciences. Both were awarded in National TsingHua University. Dr. Chang served in National Chung Cheng University from 1989 to 2005. His current title is Chair Professor in Department of Information Engineering and Computer Science, Feng Chia University, from Feb. 2005. Prior to joining Feng Chia University, Professor Chang was an associate professor in Chiao Tung University, professor in National Chung Hsing University, chair professor in National Chung Cheng University. He had also been Visiting Researcher and Visiting Scientist to Tokyo University and Kyoto University, Japan. During his service in Chung Cheng, Professor Chang served as Chairman of the Institute of Computer Science and Information Engineering, Dean of College of Engineering, Provost and then Acting President of Chung Cheng University and Director of Advisory Office in Ministry of Education, Taiwan.

Professor Chang's specialties include, but not limited to, data engineering, database systems, computer cryptography and information security. A researcher of acclaimed and distinguished services and contributions to his country and advancing human knowledge in the field of information science, Professor Chang has won many research awards and honorary positions by and in prestigious organizations both nationally and internationally. He is currently a Fellow of IEEE and a Fellow of IEE, UK. And since his early years of career development, he consecutively won Institute of Information & Computing Machinery Medal of Honor, Outstanding Youth Award of Taiwan, Outstanding Talent in Information Sciences of Taiwan, AceR Dragon Award of the Ten Most Outstanding Talents, Outstanding Scholar Award of Taiwan, Outstanding Engineering Professor Award of Taiwan, Chung-Shan Academic Publication Awards, Distinguished Research Awards of National Science Council of Taiwan, Outstanding Scholarly Contribution Award of the International Institute for Advanced Studies in Systems Research and Cybernetics, Top Fifteen Scholars in Systems and Software Engineering of the Journal of Systems and Software, Top Cited Paper Award of Pattern Recognition Letters, and so on. On numerous occasions, he was invited to serve as Visiting Professor, Chair Professor, Honorary Professor, Honorary Director, Honorary Chairman, Distinguished Alumnus, Distinguished Researcher, Research Fellow by universities and research institutes. He also published over hundreds papers in Information Sciences. In the meantime, he participates actively in international academic organizations and performs advisory work to government agencies and academic organizations.

KEYNOTE



Prof. Sheng-Uei Guan
Xi'an Jiaotong-Liverpool University, China

Steven Guan received his BSc. from Tsinghua University (1979) and M.Sc. (1987) & Ph.D. (1989) from the University of North Carolina at Chapel Hill. He is currently a Professor and the Director for Research Institute of Big Data Analytics at Xi'an Jiaotong-Liverpool University (XJTLU). He served the head of department position at XJTLU for 4.5 years, creating the department from scratch and now in shape. Before joining XJTLU, he was a tenured professor and chair in intelligent systems at Brunel University, UK.

Prof. Guan has worked in a prestigious R&D organization for several years, serving as a design engineer, project leader, and department manager. After leaving the industry, he joined the academia for three and half years. He served as deputy director for the Computing Center and the chairman for the Department of Information & Communication Technology. Later he joined the Electrical & Computer Engineering Department at National University of Singapore as an associate professor for 8 years.

Prof. Guan's research interests include: machine learning, computational intelligence, big data analytics, mobile commerce, modeling, networking, personalization, security, coding theory, and pseudorandom number generation. He has published extensively in these areas, with 130+ journal papers and 180+ book chapters or conference papers. He has chaired, delivered keynote speech for 80+ international conferences and served in 180+ international conference committees and 20+ editorial boards. There are quite a few inventions from Prof. Guan including Generalized Minimum Distance Decoding for Majority Logic Decodable Codes, Prioritized Petri Nets, Self-Modifiable Color Petri Nets, Dynamic Petri Net Model for Iterative and Interactive Distributed Multimedia Presentation, Incremental Feature Learning, Ordered Incremental Input/Output Feature Learning, Input/Output Space Partitioning for Machine Learning, Recursive Supervised Learning, Reduced Pattern Training using Pattern Distributor, Contribution Based Feature Selection, Incremental Genetic Algorithms, Incremental Multi-Objective Genetic Algorithms, Decremental Multi-objective Optimization, Multi-objective Optimization with Objective Replacement, Incremental Hyperplane Partitioning for Classification, Incremental Hyper-sphere Partitioning for Classification, Controllable Cellular Automata for Pseudorandom Number Generation, Self Programmable Cellular Automata, Configurable Cellular Automata, Layered Cellular Automata, Transformation Sequencing of Cellular Automata for Pseudorandom Number Generation, Open Communication with Self-Modifying Protocols, etc.

PLENARY




Prof. Jun Xu

Chinese Academy of Sciences, China

Prof. Jun Xu received his B.E. and Ph.D. in Computer Science from Nankai University, in 2001 and 2006, respectively. He worked as an associate researcher, researcher, and senior researcher at Microsoft Research Asia and Huawei Noah's Ark Lab. In 2014, he joined Institute of Computing Technology, Chinese Academy of Sciences. His research interests are in information retrieval, machine learning, and big data analysis. I have worked on (i) learning to rank for information retrieval; (ii) large scale topic modeling; and (iii) semantic matching in search.

ABSTRACT

July 28, 2018

Opening & Speeches Time: 09:00-12:30 📍 Function Hall (2nd floor)	
09:00-09:10	Opening Remarks Prof. Sheng-Wei Guan , Xi'an Jiaotong-Liverpool University, China
09:10-10:10	<i>Conceptual Modeling Views on SQL and NoSQL</i> Prof. Tok Wang Ling National University of Singapore, Singapore Abstract: The three basic concepts in the Entity Relationship Model are: object class, relationship type, and attribute of object class and relationship type. They are termed ORA-semantics. Without knowing the ORA-semantics in the databases, the quality of some databases are low. The Relational Model does not capture ORA-semantics. We first present some restrictions in the relational model such as limitations of normalization theory and limitations of Relational Model using the Universal Relation Assumption. We then discuss the requirements for traditional database applications in RDBMS using SQL and the performance issues, review some of the existing methods which can be used to improve the performances of certain database applications, such as materialized view design, horizontal and vertical partitioning of data, the concepts of strong FD/MVD and weak FD in physical database design, etc. We further present some rarely-mentioned but very important issues in data and schema integration, such as entity resolution vs relationship resolution, primary key vs object identifier (OID), local OID vs global OID, local FD/MVD vs global FD/MVD, semantic dependency vs FD/MVD, etc. All these concepts are related to ORA-semantics and they have significant impact on the quality of the integrated database and schema. We briefly present the basic data models of the 4 major categories of NoSQL databases, i.e. key-value store, wide-column store, document store, and graph database. We then give a conceptual modeling view on SQL vs NoSQL using a set of characteristics and requirements of database applications. We finally present a set of criteria to aid decision-making regarding when to use SQL or NoSQL for database applications.
 Coffee break & group photo 10:10---10:30	
10:30-11:10	<i>Applying De-clustering Concept to Information Hiding</i> Prof. Chin-Chen Chang Feng Chia University, Taiwan

ABSTRACT

	<p>Abstract: Reversible steganography allows an original image to be completely restored after the extraction of hidden data embedded in a cover image. In this talk, I will talk about a reversible scheme based on declustering strategy for VQ compressed images. The declustering can be regarded as a preprocessing step to make the proposed steganographic method more efficient. Our experimental results show that the time required for the embedding process in the proposed method is few. In addition, the reversible steganography allows an original image to be completely restored after the extraction of hidden data embedded in a cover image. In this talk, I will introduce a reversible scheme for VQ-compressed images that is based on a declustering strategy and takes advantage of the local spatial characteristics of the image. The main advantages of our method are ease of implementation, low computational demands, and no requirement for auxiliary data.</p>
11:10-11:50	<p><i>Opportunities and Challenges in Information Communications Technology</i> Prof. Sheng-Uei Guan Xi'an Jiaotong-Liverpool University, China</p> <p>Abstract: This talk introduces the overall trends of Information Communications Technology (ICT) and presents an overview for opportunities and challenges in ICT. Critical issues, research problems and developments of ICT in various areas are addressed, such as green computing, Internet computing, mobile computing, and intelligent computing. Opportunities and challenges in relevant areas are also covered, for example, Internet of Things, cloud computing, big data analytics. Critical development of ICT in various aspects are proposed thereafter. Finally, the challenges faced by the higher education sector are also discussed.</p>
11:50-12:30	<p><i>Reinforcement Learning to Rank for Search Result Diversification</i> Prof. Jun Xu Chinese Academy of Sciences, China</p> <p>Abstract: The goal of search result diversification is to construct a document ranking for satisfying as many different query subtopics as possible. Typically, the diverse ranking process can be formalized as greedy sequential document selection. At each position, the document that can provide the largest amount of additional information to the users is selected. Since the utility of a document depends on its preceding documents in search result diversification, constructing an optimal document ranking is NP-hard. The traditional greedy document selection usually leads to suboptimal solutions. In the talk, I will show that the problem can be alleviated with a Monte Carlo tree search (MCTS) enhanced Markov decision process (MDP) model. Specifically, the sequential document selection process is fit into an MDP. At each time step the greedy action is further improved through the exploratory tree search by MCTS. Reinforcement learning algorithm was developed to learn the model parameters.</p>

ABSTRACT

Empirical evaluation clearly indicated the effectiveness of the approach. The MCTS enhanced MDP can also be applied to variant applications, including sequence tagging, text matching etc.



Lunch Time <12:30-14:00> Location: Restaurant (2nd floor)

Note: lunch coupon is needed for entering the restaurant.

Session I: Image and Signal Processing

Time: 14:00-15:45

📍 Function Hall 1 (2nd floor)

Chair: Prof. Kwan Hyeong Lee, University of Daejin, South Korea

Optimized Software-Based Hardening Strategies for Matrix Multiplication and Fast Fourier Transform

Zhijian Hui, Yangsheng Wang, Honghui Tang, Tao Qin and Haibin Wang
Hohai University, China

AC011
14:00-14:15

Abstract—Nowadays, Graphics Processing Unit (GPU) has shown great potential in High-Performance Computing applications for its parallel computing structures, which can greatly accelerate the computing process. However, GPU reliability is critical in some applications like satellite or auto-driving. Thus, many researches have been carried out to improve its reliability using both hardware and software schemes. In this paper, we mainly focus on designing schemes to protect devices from soft errors. We analyze the performance of available algorithm-based fault tolerance (ABFT) schemes for two commonly used mathematical operations: Matrix Multiplication and Fast Fourier Transform (FFT). We developed optimized schemes to reduce the overhead of the available ones. The proposed schemes are based on two insights. First, in matrix multiplication, the scheme may classify some correct results as potential errors when there are multiple errors, introducing unnecessary overhead. Second, in FFTs, the overhead of the ABFT scheme depends on its size, so we can use butterfly module to detect errors and correct them. Finally, we use fault-injection simulation to evaluate the proposed schemes and they are proved to perform quite well in any error distributions.

AC024
14:15-14:30

Human tracking using TLD with Automatic Initiation

Jiawei Shi, Xianmei Wang and Huer Xiao
University of Science and Technology Beijing, China

Abstract—To realize human tracking, a framework by TLD tracking algorithm and

ABSTRACT


	dynamic average background modeling is shown in this paper. First, totally automatically human initiation module is given by background modeling algorithm and classification, which output candidate and confirmed human patches. Then TLD framework is employed to track each human object until it disappear. Both of the output of tracking and initializer are used together to decide how to further update the tracking list. Experiments results on PETS show the performance of our solution.
AC028 14:30-14:45	<p>Multi-Steps Weighted ARMA Identification Algorithm for the Multi-sensors System with Unknown Parameter</p> <p>Li Heng, Hang Yan-Yan, Zhang Chen-Chen, Yin Jia-Lai, Guan Biao And Sun Hui-Fen Fuyang Normal University, China</p> <p>Abstract—For the multi-focus image fusion, determining which pixels or regions are located in focus is one of the difficulties. In the field of image fusion, wavelet analysis is becoming a hot research topic. Fusion rules of low frequency sub-band and high frequency sub-band are becoming the focus and difficulty. At present, the traditional fusion rules are not perfect. With no thought for a relationship between low frequency and high frequency sub-band coefficients, it is likely to choose the wrong coefficients. Aiming at the existing problems, after comparing several traditional fusion rules, a new fusion rule is proposed. Experimental results indicate that the algorithm is of low complexity, and the quality of the fused image is better.</p>
FP012 14:45-15:00	<p>Data Visualization of Abaca Production in Catanduanes</p> <p>Belen M. Tapado and Thelma D. Palaoag Catanduanes State University, Philippines</p> <p>Abstract—This research draws inspiration from the desire to help sustain and boost the production of abaca in Catanduanes being the topmost abaca producing province in the Philippines through an information campaign in a website with the application of data visualization tools and techniques. Result of this research will draw attention about the usefulness and benefits that could be derived through the production of abaca in uplifting the socio-economic status and standard of living of farmers. Likewise, this research would also support the rural development program of the government on embracing climate-resilient ecological farming practices to adjust to climate change. Sustainability of the abaca production in the province means ensuring vibrancy of economy especially for the abaca farmers. Demographic data about abaca production were obtained from the abaca concerned government offices in Catanduanes. Documentary analysis, Interview, Website development and evaluation were the methodologies employed in this investigation. Likewise, a survey questionnaire was utilized to gather data about the usability of the website from the persons from government agencies that are concerned on abaca and website development. Three (3) criteria were used to evaluate the usability of the website – usefulness, ease of use and satisfaction. Frequency count and weighted mean were the statistics used in analyzing the responses and the respondents have generally evaluated the developed website as</p>

ABSTRACT

	“Strongly Agree”.
FP022 15:00-15:15	<p>Speech Enhancement Using Successive State Estimation under Industrial Noise Environment</p> <p>Qinghe Wu, Haifeng Wu and Yu Zeng Yunnan Minzu University, China</p> <p>Abstract—Speech communication under an industrial noise environment can seriously affect an operator's hearing and collaboration. For this environment, we use a successive state estimation method to perform speech enhancement to eliminate the effect of noise on speech. The successive state estimation uses Kalman filter algorithm. Compared with traditional Kalman speech-enhancement methods, we use a simpler difference form for a state equation to reduce the number of equation parameters. In experiments, we adopt a noise signal in a public database and add it to an actual speech signal as a noisy speech signal to be processed. Compared with Fast ICA (Independent Component Analysis) algorithm, this speech enhancement algorithm has better real-time performance.</p>
AC002 15:15-15:30	<p>Differences Analysis of HRV in Time and Meridians Based on Multi-lead ECG Signals,</p> <p>Jihong Liu, Xinyu Xu, Guangwei Zhang, Simeng Wu, Mingzhen Liu and Yuning Zhou Northeastern University, China</p> <p>Abstract—In Traditional Chinese Medicine theory, meridian is a connection, regulation and reaction system of human functional activities. The Qi-Blood Circulation of the veins has its ups and downs, one day is divided into 12 two-hour periods, and one two-hour period is distributed one meridian. HRV analysis index has a wide range of applications, including in physiology, cardiology, sports, health, mortality prediction, sleep and pain, and used in the study of medicine and exercise routine. Based on multi-lead ECG signals, the differences of heart rate variability (HRV) indexes between heart meridian of Hand-Shaoyin and pericardium meridian are analyzed in this paper. In different meridians and time, the differences of SDNN, PNN50, rMSSD and other HRV indexes are discussed. The experimental system is designed in MATLAB platform.</p>
AC206 15:30-15:45	<p>Text Prompted Speaker Verification Based on Phoneme Clustering with Earth Mover's Distance and Cauchy-Schwarz Divergence</p> <p>Zhuji Chen, Yi Liu and Jia Liu Tsinghua University, China</p> <p>Abstract—For short duration text prompted speaker verification where the amount of enrollment data is limited for each speaker model, it is hard to obtain a robust speaker representation. In these situations of short utterance speaker verification I-vector/GMM approaches work even worse than traditional GMM-MAP modeling method. GMM/HMM framework content matching is the state-of-the-art paradigm for short duration text-dependent speaker verification, in which models for individual lexical such as words, syllables, or phonemes are established for the background and</p>

ABSTRACT

	<p>speaker to make up mismatch. However, some of the phonemes do not occur in enrollment but happen in the testing recordings, and most of the phonemes have different preceding and succeeding phonemes, both of which leads to coarticulation difference. These are called lexical and context mismatch. In this work, to overcome the data sparseness caused lexical mismatch and context mismatch, phoneme states are clustered applying Earth Mover's Distance and Cauchy-Schwarz divergence as metrics. Performance improved as EER lowered by 6.2%, minDCF08 lowered by 1.9% for Earth Mover's Distance metric, and EER lowered by 3.7%, minDCF08 raised 1.9% for Cauchy-Schwarz divergence metric.</p>
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Session II: Algorithm Design and System Modeling Time: 14:00-16:00  Function Hall 2 (2 nd floor) Chair: Prof. Tok Wang Ling, National University of Singapore, Singapore	
AC008 14:00-14:15	<p>An Extended Model for Simulation of Mexican Wave Libi Fu, Shuchao Cao and Jie Fang Fuzhou University, China</p> <p>Abstract—"Mexican wave" is an interesting phenomenon in a stadium, and has attracted much attention. Some researchers have established models to reproduce it, and related mechanisms have been understood. However, the influence of some factors such as density and individuals' visual field on this process has not been well investigated. Hence, this paper aims to simulate wave propagation by modifying a model introduced by Farkas et al. Detailed rules are given. After involving the effect of average density, it is observed that there will be a decrease in activation threshold if the average density decreases. This result is reasonable, and can be analyzed by calculations. Then, spectators' visual field is considered in the model. The influence of initial locations of triggering group members on activation thresholds is discussed. Results demonstrate that it is easier to generate a wave at a relatively large average density if the location is in front rows of a stadium. It is hoped that this study will be helpful in a deep understand of the propagation mechanisms of Mexican waves and in crowd management.</p>
AC023 14:15-14:30	<p>A Cooperative Artificial Bee Colony Algorithm and its application to Fashion Color Forecast in Clothing Li Zhao, Yang Lianhe, Zhang Shaoqiang and Zhang Shaoqiang Tianjin Normal University, China</p> <p>Abstract—This paper presents a hierarchical cooperative artificial bee colony algorithm based on divide-and-conquer decomposition strategy (HCABC-D), for fashion color</p>

ABSTRACT

	<p>forecast in clothing. In the proposed algorithm, classical artificial bee colony is extended to cooperative and hierarchical structure. The top level is responsible for information aggregation from lower level and information exchange based on crossover operator. In the bottom level, each sub-population also adopts the canonical ABC algorithm to search the part-dimensional landscape. Furthermore, HCABC-D and ABC are applied in forecasting fashion color in clothing. The results show that HCABC-D provides extremely competitive performance. The comparison between forecasting results and ones issued by PANTONE Inc. demonstrates its performance superiority.</p>
<p>AC026 14:30-14:45</p>	<p style="text-align: center;">Airfoil Optimization based on Isogeometric DG Kun Wang, Shengjiao Yu and Tiegang Liu Beihang University, China</p> <p>Abstract—In this paper, an adjoint-based airfoil optimization algorithm is developed based on isogeometric discontinuous Galerkin (IDG) method for compressible Euler equations. We first parameterize the airfoil by B-spline curve approximation with some control points viewed as design variables, and build the B-spline representation of the flow field with the curve to apply global refined IDG method for flow solution. With the isogeometric nature, not only all the geometrical cells but also the numerical basis functions can be analytically expressed by the design variables. Consequently, the gradient involved in SQP optimization algorithm is totally estimated in an accurate approach indicating that the numerical solutions and objective could be differentiable with respect to those variables. The proposed algorithm is demonstrated on RAE2822 airfoil with inviscid transonic flow.</p>
<p>AC036 14:45-15:00</p>	<p style="text-align: center;">Equivalent State of Finite Automata and Its Judgment Theorem Xingyan Yue, Peifeng Hao and Zhao Lin Northeastern University, China</p> <p>Abstract—Automata theory is an important tool in modern computer science, playing a role in compiler and many other engineering fields. This paper first analyzes the automata theory. For sake of enhancing the mathematical logicity of automata theory and to carry out the further research on the equivalent state of finite automata, we modify and optimize the basic concept of automata theory. Next, this paper defines the string set of state, in order to formalize the concept of equivalent state. According to these basic concepts, we advance several judgment theorems of equivalent state, which can explain the effectiveness of the simplification algorithms of finite automata, and complete their proofs. Finally, we also introduce a merging based simplification algorithm for finite automata, which is the direct application of one of the judgment theorems above.</p>
<p>AC039 15:00-15:15</p>	<p style="text-align: center;">On-line Optimization of Energy-saving Train Control using Bacteria Foraging Algorithm Xiao Siyu, Liu Jiang and Cai Baigen Beijing Jiaotong University, China</p>

ABSTRACT

	<p>Abstract—Reducing the energy consumption has been a significant issue in urban transit operations. Considering the prior constraint from the operational schedule, the online optimization of the speed curve between successive stations is capable of improving the energy saving capability and enhancing cost-efficiency of the whole rail transit system. To fulfill the requirements of schedule adherence, an on-line optimization method for reducing energy consumption the train traction control operation is presented in this paper. In this method, the bacteria foraging algorithm is adopted to achieve an optimal solution of an objective function concerning the energy consumption and other related factors, with which the speed curve for the following rail section can be updated and adjusted in-time to cope with the possible deviation between time schedule and the practical operation. With the integration of the rail dispatching and train operation control, the control strategy of the train can be updated according to specifically modified trip plan, which means that the changed schedule for the following rail section still can be fulfilled by re-calculating the optimized speed curve of the train within the standing time in a station. The optimization is achieved under a multi-objective optimization framework, where the energy consumption and passenger comfort degree are concerned under a time-domain constraint that might be adjusted based on the latest schedule. Results from simulation demonstrate the effectiveness and feasibility of the proposed method, which illustrate the great potentials in safer and greener urban transit systems in the future.</p>
<p>AC042 15:15-15:30</p>	<p>An Adaptive Step Size Based Algorithm for Hybrid Model Reliability Analysis Tao Qiu, Jianguo Zhang, Juan Wei and Lingfei You Beihang University, China</p> <p>Abstract—Focusing on the mixed conditions of both random variables and interval variables, this paper constructs a hybrid reliability analysis algorithm based on adaptive step size. First, the double-loop optimization model is decoupled into a sequence reliability analysis model of probability analysis and interval analysis. In probability analysis, we use the existing iterative information to determine the adaptive step length parameters and find the most probability point (MPP). In interval analysis, quadratic programming is used to find the optimum point in the interval variable space. Finally, the results of two case studies show that the proposed algorithm is compared with Monte Carlo Sampling (MCS). The relative error is within 5%, and the number of iterations can reach convergence within 100 times. In particular, when the performance function has a high degree of nonlinear, the algorithm also has high calculation accuracy, efficiency and convergence stability.</p>
<p>AC202 15:30-15:45</p>	<p>Heuristic Based Scheduling for Tablets Film Coating Process Chutamas Pontrakul and Pisit Jarumaneeroj Chulalongkorn University, Thailand</p> <p>Abstract—In the pharmaceutical industry, Tablets Film Coating Planning concerns a</p>

ABSTRACT

	<p>finding of coating sequences on parallel machines such that both the completion time and number of tardy jobs are minimized. This problem is made more difficult when a wide variety of drugs is produced as changing from one to another drug requires considerably long period of cleaning and setup times – these times also vary depending on the previously coated drug. We show that this problem could be transformed into the Vehicle Routing Problem with Time Window (VRPTW), where a variable arc exchange heuristic – whose concept is based on the Variable Neighborhood Search – is devised to solve such a problem. Our proposed heuristic is a two-phase one, where the initial solutions are constructed from easy-to-implement dispatching heuristics, i.e. Earliest Due Date (EDD) and Longest Processing Time (LPT). The initial solution is then iteratively improved by a series of local-search operators, including 2OPT, RELOCATION, and SWAP. The results from our proposed heuristic is comparatively good, when compared to those of the optimization model in terms of solution quality as the gap is less than 5% for instances of 20 orders; but, it requires much less computation time, which is crucial from a practical point of view.</p>
<p>AC031 15:45-16:00</p>	<p>A Dual Alternating Direction Method of Multipliers for the Constrained Lasso Problems Wang Qingsong Southwest Jiaotong University, China</p> <p>Abstract—In this paper, we developed a dual alternating direction method of multipliers (ADMM) for the constrained lasso problem, which is the standard lasso problem with linear inequality constraints. Under mild conditions, we present the global convergence and local linear convergence rate for the algorithm. Numerical experiments demonstrate the efficiency and robustness of the dual ADMM.</p>



Coffee Break <16:00---16:15>

<p>Session III: Communication Engineering and Information Network Time: 16:15-18:45 📍 Function Hall 1 (2nd floor) Chair: Assoc. Prof. Mischelle A. Esguerra, Lyceum of the Philippines University-Batangas, Philippines</p>	
<p>FP004 16:15-16:30</p>	<p>Virtual Assistant for IoT process management, using a middleware David Chilcañán, Patricio Navas and Milton Escobar Universidad de las Fuerzas Armadas ESPE, Ecuador</p> <p>Abstract—The implementation of virtual assistants, the automation of homes, smart cities, management of remote sensors, among other technologies related to the</p>

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	internet of things (IoT). They allow to improve the control, monitoring and management of your processes. The present research work employs a Message Oriented Middleware (MOM) for interconnecting devices allowing to monitor the domestic energy consumption of a household (KWH, fees to be paid by day, week, month) in real time, using a wizard virtual (chatbot) which facilitates the Administration and control of the connected electrical devices. Through a combination of ubiquitous distributed sensing units. Adding data, reasoning and awareness of the context.
FP005 16:30-16:45	<p>On the spectral efficiency of full-duplex massive MIMO system with low-resolution ADCs/DACs</p> <p>Mo Xiaohao, Xu Kui and Ma Wenfeng The Army Engineering University of PLA, China</p> <p>Abstract—This paper focuses on a full-duplex (FD) massive multi-input multi-output (MIMO) system with low-resolution analog-to-digital (ADC) and digital-to-analog (DAC), where base station (BS) is equipped with large-scale uniform linear antenna array (ULA). Our goal is to evaluate the impact of using low-resolution ADCs/DACs on system performance. We analyze the asymptotic uplink and downlink spectral efficiency (SE) of the receive signal with zero-forcing (ZF) and maximum ratio combination/transmission (MRC/MRT) methods. In simulation part, we know that the spectral efficiency rises with the number of antennas at BS and resolution of ADC and DAC. Most importantly, we found the performance of using 5-bit ADCs and DACs is satisfying compared with perfect ADCs and DACs.</p>
FP009 16:45-17:00	<p>Adaptive Modulations for OFDM-MIMO systems</p> <p>Guowei Lei and Xuefang Xiao Jimei University, China</p> <p>Abstract—Orthogonal frequency division multiplexing (OFDM) is regarded as a popular technique. Moreover, OFDM combined with multiple-input multiple-output systems (MIMO) has drawn many interests. However, OFDM-MIMO systems with various modulations have not been investigated extensively to date. This letter is to draw a comparison among the linear and non-linear modulations. Especially, the random modulation index is introduced into the OFDM-MIMO system with CPM. Meanwhile the OFDM-MIMO system with antenna selection and adaptive modulation is proposed. The performances for the proposed systems are evaluated via simulation.</p>
FP013 17:00-17:15	<p>GIS BASED MANGROVE LOCATION MAPPING AND INFORMATION SYSTEM IN CATANDUANES</p> <p>Gemma Acedo and Thelma Palaoag Catanduanes State University, Philippines</p> <p>Abstract—Catanduanes has a vast home grown mangrove species. Waterfront and mangrove in Catanduanes Island in Luzon, Philippines (Lat 13.67 °, Long 124.12 °) is conceivable along the eastern, western and southern coasts. There are several</p>

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	<p>shorelines and ocean shores that possess marine greenery (marine full scale green growth) and fauna. This paper displays a geographic data framework (GIS) - based multi-criteria basic guidance approach for mangrove species. This assesses the relative needs of mapping and identifying the different kinds of mangrove in light of an arrangement of inclinations, criteria and markers for the province. It determines whether the government should enhance their effort to improve the ecological habitat in mangrove reforestation that shall have a great impact on the province with regards to environment, climate change on the marine nature in a natural way of life. This Creation of geographic information system in the province will help the environment to preserve the habitat for different kinds of marine life and develop mangrove protected areas.</p>
<p>FP025 17:15-17:30</p>	<p>Flow Control and Resource Allocation in Cognitive Radio Networks Jain-Shing Liu and Wan-Ling Chang Providence University, Taiwan</p> <p>Abstract—In this work, we aim to optimize the system throughput of second user (SU), while satisfying the collision constraint of primal user (PU), throughput constraint of second user (SU), and scheduling constraint in interweave cognitive radio networks (CRNs) under time-varying channel and traffic conditions. Our solution to the stochastic optimization problem is realized by a flow control and resource allocation algorithm based on the Lyapunov drift-plus-penalty framework that can resolve the time-varying conditions without a-prior knowledge to obtain the long-term stability of the virtual queues involved. In particular, the scheduling algorithm embedded possesses polynomial time efficiency, which is highly desired for a practical system. Finally, our simulation studies show the performance tradeoff between throughput and delay to be $[O(1/V), O(V)]$ with a system parameter V while satisfying all the requirements and constraints under consideration.</p>
<p>FP029 17:30-17:45</p>	<p>A New Pilot-based Block Low-rank Channel Estimation Algorithm for Massive MIMO Ting Fang and Guigen Zeng Nanjing University of Posts and Telecommunications, China</p> <p>Abstract—A new block low-rank channel estimation algorithm is put forward for the problem that the complexity of the channel estimator matrix inverse computation for the traditional linear minimum mean square error (LMMSE) channel estimator in the massive MIMO system increases as the number of antenna increases. The block partitioning algorithm extracting the key information of the channel autocorrelation matrix taking the relevant bandwidth as a criterion and the low-rank estimation method by use of the frequency domain (and/or time-domain) correlation and singular value decomposition of the channel are employed. The channel autocorrelation matrix is divided into several blocks according to the block size calculated by the channel dependent bandwidth. In the inverse process, only the low frequency diagonal sub-arrays representing the main information amount of the channel are applied, while</p>

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	<p>other sub-arrays that represent the channel high-frequency information have been ignored. Rank estimation, namely the determination of signal subspace dimension, should be considered with the compromise between the computational complexity and the estimation error. Under the slow fading channel with selective frequency, this algorithm compares the performance and computational complexity with the LMMSE and the block LMMSE estimation algorithm. The result shows that the algorithm reduces the computational complexity without loss of its performance.</p>
<p>FP028 17:45-18:00</p>	<p>20Gbps MDM-based Optical Multimode System for Short-haul Communication Sushank Chaudhary, Xuan Tang, Bangjiang Lin and Xian Wei Chinese Academy of Sciences, China</p> <p>Abstract—Mode division multiplexing or MDM is a significant technology that is used for increasing transmission capacity of multimode communication systems. MDM allows the transmission of many channels over multimode link by using the multiplexing of different modes with a single wavelength. This reduces the required bandwidth for optical communication systems. Multimode fiber (MMF) and Few mode Fiber (FMF) are the possible optical fibers used to carry the different modes from one place to another place. The current study aims at designing a high-speed multimode transmission system by using MDM of two modes – Laguarre Gaussian (LG) 00 and 01 modes – for transporting two independent channels each with 10 Gbps data over 6800 multimode link. Furthermore, comparative analyses of performance of few mode fiber (FMF) and multimode fiber (MMF) are carried out in terms of Bit error rate (BER), Quality factor and wye diagrams. Moreover, modal decomposition of LG 00 and 01 modes into linearly polarized (LP) modes is also reported.</p>
<p>AC027 18:00-18:15</p>	<p>A New Fusion Rule of Multi-focus Image Fusion Based on Wavelet Transform Guan Biao, Zhang Chen-Chen and Li Heng Fuyang Normal University, China</p> <p>Abstract—For the multi-sensors time-invariant system with unknown parameters, in order to improve the accuracy of the identification, based on the ARMA model, a kind of multi-steps identification algorithm is presented. Step a: we use recursive extended least squares method to get the local estimates of the unknown parameters, we use arithmetic mean to get the first fusion estimates of the parameters. Step b: we use correlated function method to get the estimates of observation noises of every single sensor. Step c is the key step of our algorithm which differs from the conventional 2-steps algorithm. Step c: we take the related information of the estimates of every single sensor as the weight, we take the weighted fusion of the local estimates as the final estimates of the parameters. Compared to the real values, the final estimates are more accurate than the first estimates. We use Matlab to simulate an typical example, the simulation results show that the final estimates have better convergence than the first estimates, which could show the accuracy advantage of the multi-steps identification algorithm presented in this paper.</p>

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<p>AC043 18:15-18:30</p>	<p>Android-Based Mobile Application for Swine Traceability and Management System using Near Field Communication (NFC)</p> <p>Mischelle A. Esguerra and Aubrey Rose M. Cordero Lyceum of the Philippines University-Batangas, Philippines</p> <p>Abstract—The widespread use of Information and Communications Technology (ICT) in day-to-day life of the people has become common. In recent years, the rapid emergence of Internet and mobile-based technologies were observed in urban and rural communities, providing an easy and rapid delivery of information. For this purpose, the authors developed an Android-Based Mobile Application for Swine Traceability and Management System for a training center on pig husbandry using Near Field Communication (NFC) technology.</p> <p>This mobile application is of great help to the training centers of pig husbandry in keeping tracks of the movement of swine from their farm to the slaughterhouse. By using the mobile application, the training center had an easy way of identifying and recording the pig's information and maintains an organized record management system. The use of Near Field Communication Technology provides the client an innovative way of swine management, and is way cheaper than RFID.</p> <p>This mobile application was developed using Android platform and runs on NFC-compatible handsets with Jellybean 4.2 versions or higher. The application include several features like offline work, personalization options and touch support. To ensure the security of the data, options to backup, restore and export data were included in the settings menu of the application.</p>
<p>FP026 18:30-18:45</p>	<p>Performance of Flight Target Position Estimation in Noise and Interference</p> <p>Kwan Hyeong Lee University of Daejin, South Korea</p> <p>Abstract—This paper studied for direction of arrival estimation to use MUSIC algorithm and optimum adaptive beamforming algorithms in a coherent interference environment. Proposed method of this paper not increase the computational complexity of MUSIC algorithm and adaptive beamforming to compare classical subspace techniques. The proposed method is combined the recently updated weight algorithm with LCMV beamforming algorithm in adaptive array system for direction of arrival estimation of desired signal. It has great potential in case of mobile wireless system where coherent and co-channel multipath interference is a major problem. The proposed method can be used in conjunction with MUSIC algorithm to provide an initialization for the weight value method to get a more accurate direction of arrival estimation. Through simulation, we compare the LCMV method with classical direction of arrival method based on MUSIC algorithm. We show that the propose method has achieve good resolution performance better than classical direction of arrival estimation algorithm.</p>

ABSTRACT

Session IV: Computer Science and Engineering Time: 16:15-18:30  Function Hall 2 (2 nd floor) Chair: Prof. Wei-Mei Chen, National Taiwan University of Science and Technology, Taiwan	
FP003 16:15-16:30	<p>Research on the Security and Guarantee of Computer Communication Network</p> <p>Li HongXia and Chen Lei</p> <p>Xi'an University of Science and Technology, China</p> <p>Abstract—With the continuous development of science and technology, socialist modernization has been gradually implemented. The extensive coverage area of the communication network has made the computer communication network technology in our country well developed and applied. Therefore, computer communication has become a part of people's daily life. Under the background of the ever-increasing scale of communication networks, communication network technology has brought convenience and fun to people's work and life. At the same time, computer communication network security issues have quietly come to people's side. Once there is a problem of communication network security, it will lead to equipment failure, and it will make the communication network system paralyzed. This will cause losses to users and even the entire society. Therefore, it is very important to strengthen the security of computer communication networks. This article mainly introduces the key technologies of computer communication network security, analyzes the development status and problems of communication network security, and discusses the effective ways to ensure the security of communication networks from the three levels of the country, the enterprise, and the user, hoping to strengthen the security of communication networks.</p>
AC010 16:30-16:45	<p>Parallel Implementation of Simultaneous Perturbation Stochastic Approximation with Adaptive Step Sizes</p> <p>Yue Fan and Tiegang Liu</p> <p>Beihang University, China</p> <p>Abstract—The simultaneous perturbation stochastic approximation (SPSA) is an iterative gradient-free optimization algorithm. This algorithm approximates the optimal solution by estimating the gradient of the loss function and uses only 2 values of the loss function to estimate the gradient which is independent of the dimension of the problem. But for the high dimensional problem with large-scale, the convergence of classical SPSA algorithm is slow, even can not converge to the global minimum value. In order to accelerate the convergence of SPSA algorithm and improve the precision of the optimum solution, this paper proposes an improvement of SPSA algorithm based on the adaptive step sizes, which can adjust the step size of each iteration according to the gradient direction. The modified algorithm is implemented by Message Passing</p>

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	<p>Interface (MPI) parallel in each iteration to widen the search scope for the better descending direction in order to accelerate the convergence. Numerical experiments of several classical nonlinear optimization problems shows that the modified SPSA algorithm can accelerate the convergence of nonlinear optimization problems and find the global extremum point of high-dimension for some optimization problems which the SPSA algorithm can not find. It proves that the modified algorithm with adaptive step sizes outperforms the classical SPSA algorithm.</p>
<p>AC019 16:45-17:00</p>	<p>Text Sentiment Polarity Classification Method Based on the Word Embedding Sun Xiaojie, Du Menghao, Shi Hua and Huang Wenming Guilin University of Electronic Technology, China</p> <p>Abstract—Most of the machine learning algorithms for text sentiment analysis use the word embedding obtained by word2vec training as their inputs. However, the word embedding of word2vec training contains only semantic information. An algorithm for text sentiment analysis is proposed solve the problem of text containing semantics, syntax, sentiment and other information. It begins with the learning of original text-multi word embedding in the semantic, syntactic, and sentiment information, followed by proceeding the word embedding fusion. The improved convolution neural network is applied for sentiment analysis. Thus, it solves the problem that the word embedding contains monotonous text information. K-means text clustering is applied by dividing similar text into the same cluster, thus improving the classification accuracy. The application of the Principal Component Analysis (PCA) dimensionality not only extracts the principal component information, but also solves the problem of redundancy embedding and improves the computational performance of classification model. The experiment results show that the presented method has a significant improvement in the accuracy, recall rate and F value of the sentiment polarity analysis of the critical text in comparison with other fusion algorithms.</p>
<p>AC022 17:00-17:15</p>	<p>An Evaluation On Securing Cloud Systems based on Cryptographic Key Algorithms Sam Njuki, Jianbiao Zhang, Edna Too and Richard Rimiru Beijing University of Technology, China</p> <p>Abstract—The need for storage and movement of data in today's ever increasing data usage cannot be overemphasized. As a result, storage and movement of data within the cloud becomes a viable option, even though this is a third party and some of the data may be sensitive. Therefore, the security methods in place have to continually be reviewed so as to get the best method or a combination of methods in this ever changing and demanding field. In this paper, the authors have done a formal assessment and examination of cloud systems key cryptographic algorithms and give a recommendation of the best combination of algorithms as a result of our different parameters of considerations. These parameters include whether they are a stream or block cipher and their key size or the hash value. The authors found out that the most viable cryptographic methods for securing the cloud systems are AES, Blowfish,</p>

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	<p>Diffie-Hellman, RSA and SHA-1 which is from symmetric, asymmetric and hashing cryptographic algorithm respectively. They further noted that a hybrid of the three cryptographic algorithms is more effective than an exclusive use of one cryptographic algorithm. They propose a combination of AES, Diffie-Hellman and SHA-1 algorithm for optimum cloud security.</p>
<p>AC037 17:15-17:30</p>	<p>Optimization of Data Distribution Strategy in Theta-join Process based on Spark Shijiu Cao, Haihong E, Meina Song and Ken Zhang Beijing University of Posts and Telecommunications, China</p> <p>Abstract—The theta-join between tables is a common operation in the data query and statistical analysis. When dealing with large amounts of data, it will produce a great deal of cost. The theta-join inevitably generates huge computing and communication overhead during data processing in the distributed environment. Besides, due to the diversity of data, it also brings about the problem of data skew. In order to solve uneven data distribution in theta-join and data skew in data processing, we propose a solution, which can improve the data filtering strategy and put forward a data distribution method using some affecting factors of data join efficiency quantified by us. Our solution is implemented based on the distributed computing framework Spark. The experimental results show that our method can be used for many types of data and also shows better performance.</p>
<p>AC051 17:30-17:45</p>	<p>SLA-based Dynamic Virtual Machine Consolidation in Cloud Data Centers Cheng-Ming Kuo, Han-Peng Jiang and Wei-Mei Chen National Taiwan University of Science and Technology, Taiwan</p> <p>Abstract—High energy consumption of data centers is an important issue which is widely discussed. After dynamic virtual machine (VM) consolidation, the energy consumption can be further reduced by switching the idle servers to sleep mode. Since the resource demand of each VM varies over time, it may cause service level agreements (SLA) violations between cloud service providers and users. In this paper, we propose a dynamic VM consolidation algorithm to reduce the energy consumption of data centers while meeting the quality of service (QoS) requirements. More precisely, the proposed algorithm reduces both the number of migrations and the energy consumption while keeping low and stabilized SLA violations. Compared to the state-of-the-art algorithm, the proposed algorithm has a great improvement in the number of migrations, SLA violations, and execution time.</p>
<p>AC207 17:45-18:00</p>	<p>An Application of Bilevel Optimization in Pricing and Leasing Strategy Suthee Thitiananpakorn and Pisit Jarumaneeroj Chulalongkorn University Bangkok, Thailand</p> <p>Abstract—This paper focuses on the finding of an optimal pricing and leasing strategy for both the third-party warehouse and customers, whose conflicts lie on their contradictory objective functions, via bilevel optimization approach. Bilevel</p>

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	<p>optimization is a game-based approach where the third-party warehouse is a leader, who first decides the price of short and long-term rental contracts, taking the behavioral reaction of other players, that is, customers and its competitor, into consideration. Once observed, customers then decide which contracts to be chosen so that their objectives are optimized. While complicated, under certain assumptions, we can show that a closed-form solution could be derived. Our experimental results indicate that competitor storage price significantly affects both third-party warehouse's profit and all of its customer's total costs. Besides, large customer tends to suffer more from high opportunity cost; but, the delivery cost charged by the third-party warehouse is crucial for small customer's rental decision.</p>
<p>AC046 18:00-18:15</p>	<p>Correlation between Entrance Exam Scores (Stanine) and Academic Performance Maria Cristina M. Ramos Lyceum of the Philippines University – Batangas, Philippines</p> <p>Abstract—Freshmen applicants are given an entrance examination to determine readiness for tertiary education in all fields. The result of the test is a determining factor whether the applicant is accepted or not in the school or program from which the applicant seeks admission. Schools may opt to use a standardized test which may be purchased from an outside vendor or from a teacher-made test which can be validated within by the officer in-charge. Academic achievement represents performance outcomes that indicate the extent to which a person has accomplished specific goals that were the focus of activities in instructional environments, specifically in school, college, and university.</p> <p>The study used the correlation research design to determine the extent to which two factors are related, not the extent to which one factor causes changes in another factor. Respondents are first year to third year students of school year 2015-2016. A total of 69 students who took the entrance examination and enrolled under the Bachelor of Science in Computer Science (BSCS) program served as the respondents of the study. The study used several variables such as the entrance examination results (Stanine) and students' academic performance (final grade) in 25 BSCS professional courses.</p>
<p>AC049 18:15-18:30</p>	<p>Bayesian Networks in Intelligent Tutoring Systems as an Assessment of Student Performance using Student Modelling Roselie Alday Lyceum of the Philippines University – Batangas, Philippines</p> <p>Abstract—This paper developed a model for designing an intelligent tutoring system for any programming language using Bayesian networks. The design model of the tutoring system considers a user model using student model. The Bayesian network was used to assess the current state of knowledge of the student so that the model can adjust and present new knowledge to improve student performance as an outcome in an e-learning environment.</p>

ABSTRACT

Poster Session	
AC006	<p>Architecture modeling of new C2 System of joint anti-ship combat Zhang Zhuang, LI Lin-lin and YU Hong-feng Research Inst. of High-Tech, China</p> <p>Abstract—By analyzing the department of defense architecture framework (DoDAF), the architecture modeling process for C2 System of Joint anti-ship combat (C2JAC) based on DoDAF2.0 is proposed. Combining with Operational requirements of joint anti-ship combat and specific operational process, key model of operational and system perspective for C2JAC is designed by using the method of combining structured and object-oriented. Finally, the behavior logic of the architecture dynamic model is verified by the Rational Rhapsody architecture verification tool. The results express the rationality of the designed architecture model.</p>
AC016	<p>Multi-core processor scheduling algorithm under the influence of process variation Xiaohui Wei, Lishuang Su and Jingweijia Tan Jilin University, China</p> <p>Abstract—Due to process variation, different cores of multi-core processors will generate frequency heterogeneity, and the difference in frequency will cause difference in the speed of executing instructions. The existing multi-core processor scheduling algorithms do not take the process variation into account, and ignore the deviation in the manufacturing process. This paper proposes a frequency-heterogeneous scheduling algorithm MFF (Max-Fast-First), which allocates long time-consuming tasks to cores with high frequency and assigns short time-consuming tasks to cores with low frequency, thus shortening the total operation time. The experimental results show that the MFF algorithm reduces the running time by 17.87% compared to the dynamic Min-Min algorithm, and it reduces the running time by 9.10% compared to the CATS(Criticality-Aware Task Scheduler) algorithm. At the same time, the running time of the MFF algorithm is less affected by the process variation, which is better than dynamic Min-Min and CATS to process variation.</p>
AC205	<p>A Label Propagation Algorithm Based on Local Density of Data Points Xiao Zhang, Zhixin Ma, Guoliang Deng, Qijuan Sun, Jingyi Zhang and Jun Yan Lanzhou University, China</p> <p>Abstract—Cluster analysis is one of the hot issues in the field of data mining and it has extensive applications in many aspects. The label propagation algorithm is easy to implement. At the same time, it has a low time complexity which has been recognized by scholars. Because the algorithm needs to specify the category labels of the data set, the accuracy and adaptability of the algorithm are affected. In view of the above</p>

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	<p>problems, this paper proposes a new clustering algorithm that combines the advantages of density-based and label propagation. The algorithm adaptively determines the label of the data points through local density and reducing the effect of noise on the results. Experimental results show that the proposed algorithm has better adaptability while improving the accuracy of clustering results.</p>
AC050	<p>High-Resolution Remote Sensing Scene Classification Using Improved LBP and SDSAE Feng'an Zhao, Xiaodong Mu, Zhaoxiang Yi, Zhou Yang and Shuyang Wang Xi'an Research Institute of High-Tech, China</p> <p>Abstract—Classifying high-resolution remote sensing scene images with high accuracy land-use is the challenging issues, the key of scene classification is to find effective features of the scene image. The low-level visual feature methods, such as local binary pattern (LBP), assume the same type of scene should share certain statistically holistic attributes and have demonstrated their efficiency on scene classification. In this paper, we propose an effective improved LBP method, called IRELBP, which use radial difference and angular difference as its difference based descriptors to represent HRRS scene images. Due to the fact that low-level features cannot represent more meaningful semantic information, we extract features from a Stack Denoising Sparse Autoencoder (SDSAE) to obtain more meaningful hierarchical feature. Both the global features and hierarchical features are encoded by Fisher Vector, and then they are concatenated into a discriminative representation. Finally are fed into the SVM classifier for training or testing. We perform comprehensive experiments on two remote sensing scene classification benchmarks: UC-Merced dataset and the recently introduced large scale aerial image dataset (AID). The result demonstrates that our proposed combination method provides an effective and discriminate feature representation and outperforms the state-of-the-art methods in HRRS scene image classification.</p>
AC204	<p>Parallel Optimization of Relion: Performance Comparison based on Cluster for CPU/GPU and KNL Heng Zhou, Fuchuan Ni, Liang Zhao, Fang Zheng Huazhong Agricultural University, Wuhan, China</p> <p>Abstract—Relion is the 3D reconstruction program with the Bayes algorithm of electron cryo-microscope (cryo-EM) data. We analyzed the characteristics of the Relion program, and designed a parallelization scheme. We use the optimization methods commonly used in the code optimization for Relion programs, such as memory access optimization, multithread optimization, vectorization and conversing coarse grained parallel to fine-grained parallelism. Finally, the overall running time of the entire Relion program was reduced by 379s. At the same time, we tested the program on GPU and KNL platform and compared the results of the Relion program on the KNL cluster platform and the GPU cluster platform. The results show that the optimization effect of Relion on the GPU platform is better than KNL.</p>

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FP019	<p style="text-align: center;">A Semi-Blind Receiver for Multi-Hop MIMO Relay Systems Zhiqiang Yu, Minghu Gao and Yantao Lan Yunnan Minzu University, China</p> <p>Abstract—In this paper, we propose a novel semi-blind receiver for multi-hop multi-input multi-output (MIMO) relay systems using the parallel factor (PARAFAC) model. At the source node, A Khatri-Rao space-time (KRST) coding scheme is considered to construct the transmitted signal. Each relay amplifies the received signals and forwards the amplified signals to the next node. The received signals at the destination node can be formulated as a PARAFAC model, and then a semi-blind receiver is proposed for joint symbol and channel estimation by using an alternating least squares (ALS) algorithm. Under the assumption that channel state information (CSI) is not available at any node, our semi-blind receiver can implement joint channel estimation and symbol decoding. Simulation results demonstrate the effectiveness of the proposed semi-blind receiver.</p>
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Dinner <18:45-20:30> Location: Restaurant (2nd floor)

Note: dinner coupon is needed for entering the restaurant.