1th International Conference on
Industrial Networks and Intelligent Systems

March 2 - 4 2015

Technical Program

Venue: Italian cultural center in Tokyo,
2-1-30 Kudan Minami, Chiyoda-ku, Tokyo 102-0074
Tokyo, Japan
Sponsors

European Alliance for Innovation

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WELCOME TO INISCom 2015!

The 1st International Conference on Industrial Networks and Intelligent Systems (INISCom 2015) has provided a successful forum for practitioners and researchers from diverse backgrounds to interact and exchange experiences about the latest technology, advancement, and future directions and trends in industrial networks and intelligent systems.

We received over 60 technical papers from all around the world. All submissions received high-quality reviews from technical program committee (TPC) members and eventually 19 regular papers and 4 work-in-progress papers are included in the technical program of the main conference.

The main technical program includes 6 technical sessions and 2 inspiring keynote speeches “Resource Optimization in Cloud Computing Systems” by Prof. Albert Y. Zomaya, University of Sydney, Australia and “Green Multi-Homing Video Transmission in Wireless Heterogeneous Networks” by Prof. Weihua Zhuang, University of Waterloo, Canada. Besides the main conference, we also had a joint International Workshop on Software Defined Sensor Networks (SDSN 2015). The conference successfully inspired many innovative directions in the fields of (1) industrial networks and applications, (2) intelligent systems and applications, (3) information processing and data analysis, and (4) hardware and software design and development.

It is our distinct honor to present two best papers, “Price-based Energy Control for V2G Networks in the Industrial Smart Grid” and “Best-Response Distributed Subchannel Selection for Minimizing Interference in Femtocell Networks” for INISCom 2015. The two papers were voted out based on the reviewers’ recommendations and on the papers’ significance, originality, and potential impact.

The technical program is the result of the hard work of many individuals. We would like to thank all the authors for submitting their outstanding work to INISCom 2015. We offer our sincere gratitude to the technical committee members and external reviewers, who worked hard to provide thorough, insightful, and constructive reviews in a timely manner. We are grateful to the Steering Committee and Organizing Committee of INISCom 2015, and especially to the TPC Chairs, Prof. Yong Xiang from Deakin University, Australia, Prof. Lei Shu from Guangdong University of Petrochemical Technology, China, and Prof. Xudong Wang from Shanghai Jiao Tong University, China for their invaluable support and insightful guidance. Finally, we are grateful to all the participants in INISCom 2015.

General Chairs

Carlo Cecati, University of L'Aquila, Italy

Song Guo, The University of Aizu, Japan
KEYNOTE SPEAKER

Prof. Albert Y. Zomaya,
University of Sydney, Australia

Prof. Albert Zomaya, is the Chair Professor of High Performance Computing & Networking and Australian Research Council Professorial Fellow in the School of Information Technologies, Sydney University. He is also the Director of the Centre for Distributed and High Performance Computing which was established in late 2009. Dr. Zomaya published more than 500 scientific papers and articles and is author, co-author or editor of more than 20 books. He served as the Editor in Chief of the IEEE Transactions on Computers (2011-2014) and currently serves as Editor in Chief of Springer’s Scalable Computing. He also serves as an associate editor for 22 leading journals and is the Founding Editor of the Wiley Book Series on Parallel and Distributed Computing. Dr. Zomaya was the Chair the IEEE Technical Committee on Parallel Processing (1999–2003) and currently serves on its executive committee. He is the Vice–Chair, IEEE Task Force on Computational Intelligence for Cloud Computing and serves on the advisory board of the IEEE Technical Committee on Scalable Computing and the steering committee of the IEEE Technical Area in Green Computing. Dr. Zomaya has delivered more than 150 keynote addresses, invited seminars, and media briefings and has been actively involved, in a variety of capacities, in the organization of more than 600 conferences.

Professor Zomaya is the recipient of the IEEE Technical Committee on Parallel Processing Outstanding Service Award (2011), the IEEE Technical Committee on Scalable Computing Medal for Excellence in Scalable Computing (2011), and the IEEE Computer Society Technical Achievement Award (2014). He is a Chartered Engineer, a Fellow of AAAS, IEEE, IET (UK). Professor Zomaya’s research interests are in the areas of parallel and distributed computing and complex systems.

Resource Optimization in Cloud Computing Systems

The cloud is well known for its elasticity by leveraging abundant resources. Cloud data centres easily host thousands or even millions of multicore servers. Further, these servers are increasingly virtualized for the sake of data centre efficiency. However, the reality is that these resources are often relentlessly exploited particularly to improve applications performance. Although the elasticity facilitates achieving cost efficiency (or the performance to cost ratio), the ultimate efficiency in resource usage (or more broadly data centres) lies in scheduling and resource allocation strategies that explicitly take into account actual resource consumption. The optimization of resource efficiency in clouds is of great practical importance considering its numerous benefits in the economic and environmental sustainability. In this talk, we will discuss resource efficiency in cloud data centres with an example of large-scale distributed processing applications including scientific workflows and MapReduce jobs.
Weihua Zhuang (M'93-SM'01-F'08) has been with the Department of Electrical and Computer Engineering, University of Waterloo, Canada, since 1993, where she is a Professor and a Tier I Canada Research Chair in Wireless Communication Networks. Her current research focuses on resource allocation and QoS provisioning in wireless networks, and on smart grid. She is a co-recipient of several best paper awards from IEEE conferences. Dr. Zhuang was the Editor-in-Chief of IEEE Transactions on Vehicular Technology (2007-2013), and the Technical Program Symposium Chair of the IEEE Globecom 2011. She is a Fellow of the IEEE, a Fellow of the Canadian Academy of Engineering, a Fellow of the Engineering Institute of Canada, and an elected member in the Board of Governors and VP Mobile Radio of the IEEE Vehicular Technology Society. She was an IEEE Communications Society Distinguished Lecturer (2008-2011).

Green Multi-Homing Video Transmission in Wireless Heterogeneous Networks

The wireless communication medium has become a heterogeneous environment with various wireless access options and overlapped coverage from different networks. Mobile terminals (MTs), equipped with multi-homing capabilities, can explore network cooperation to simultaneously aggregate the offered resources from different networks to support the same application and thus increase the data rate. On the other hand, as the gap between the MT energy demand and battery capacity continues to increase, the MT operational time in between battery charging has become a significant factor in service quality. In this presentation, we introduce an energy management system for MTs to support a sustainable multi-homing video transmission, over the call duration, in a heterogeneous wireless access medium. Through statistical video quality guarantee, the MT can determine a target video quality lower bound for a target call duration. The target video quality lower bound captures the MT available energy at the beginning of the call, the time varying bandwidth availability and channel conditions at different radio interfaces, the target call duration, and the video packet characteristics in terms of distortion impact, delay deadlines, and video packet encoding statistics. The MT then adapts its energy consumption to support at least the target video quality lower bound during the call. Simulation results demonstrate the superior performance of the proposed framework over two benchmarks, and some performance trade-offs.
# TECHNICAL PROGRAM

## 2 March – Monday (day 1)

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<td><strong>Keynote 1</strong>, Prof. Albert Zomaya, University of Sydney, Australia</td>
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<td>11:00-11:30</td>
<td>Coffee break</td>
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<td>11:30-11:50</td>
<td>Artificial Neural Network-based Maximum Power Point Tracker for the Photovoltaic Application</td>
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<td>Oleksandr Veligorskyi (Chernihiv National University of Technology); Roustiam Chakirov (Bonn-Rhein-Sieg University of Applied Science); Yuriy Vagapov (Glyndwr University)</td>
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<td>11:50-12:10</td>
<td>Stereo Image Based Object Localization Framework for Visually Impaired People Using Edge Orientation Histogram and Co-occurrence Matrices</td>
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<td>Karn Patanukhom (Chiang Mai University); Supakit Fuangkaew (Chiang Mai University)</td>
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<tr>
<td>12:10-12:30</td>
<td>The Development of Intelligent Service System for Machine Tool Industry: The Comparison of Taiwan Machine Tool Connect (TMTC) Standard with the MTConnect Standard</td>
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<td>Yueh-Ling Lin (Central Industry Research &amp; Service Division, CID, Institute for Information Industry); Chih-Chieh Lin (Central Industry Research &amp; Service Division, CID, Institute for Information Industry); Hung-Sheng Chiu (Central Industry Research &amp; Service Division, CID, Institute for Information Industry)</td>
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<td>12:30-13:30</td>
<td>Lunch</td>
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## Session II: Information Processing

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<td>13:30-13:50</td>
<td>Reversible and Embedded Watermarking of Medical Images for Telemedicine</td>
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<td>Chung-Yen Su (National Taiwan Normal University); Jeng-Ji Huang (National Taiwan Normal University); Che-Yang Shih (National Taiwan Normal University); Yu-Tang Chen (National Taiwan Normal University)</td>
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<tr>
<td>13:50-14:10</td>
<td>Key Frame Extraction for Text Based Video Retrieval Using Maximally Stable Extremal Regions</td>
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14:10- 14:30 **Performance Indicators for Complex Wastewater Pumping Stations and Pressure Mains**
Francois Clemens (TU Delft/Deltares); Kees Kooij (Deltares); Ivo Pothof (Deltares); Sarah Muhle (Deltares); Erik Blokzijl (Municipality of Almere)

14:30-14:50 **Robust Differential Evolution for solving Numerical Optimization Problems**
Sheng-Ta Hsieh (Oriental Institute of Technology); Chun-Ling Lin (Ming Chi University of Technology); Huang-Lyu Wu (Oriental Institute of Technology); Tse Su (Oriental Institute of Technology)

14:50- 15:00 **Adaptive Population Artificial Bee Colony for Numerical Optimization (Work-in Progress Paper)**
Sheng-Ta Hsieh (Oriental Institute of Technology); Chun-Ling Lin (Ming Chi University of Technology); Shih-Yuan Chiu (Chung-Shan Institute of Science and Technology)

15:00- 15:30 **Coffee break**

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**Session III: Industrial Networks and Applications**

15:30-15:50 **Price-based Energy Control for V2G Networks in the Industrial Smart Grid**
Rong Yu (Guangdong University of Technology); Jiefei Ding (Guangdong University of Technology); Weifeng Zhong (Guangdong University of Technology); Yan Zhang (Simula Research Laboratory); Stein Gjessing (University of Oslo); Alexey Vinel (Halmstad University); Magnus Jonsson (Halmstad University)

15:50-16:10 **Best-Response Distributed Subchannel Selection for Minimizing Interference in Femtocell Networks**
Shashi Shah (Thammasat University and Japan Advanced Institute of Science and Technology); Somsak Kittipiyakul (Thammasat University)

16:10-16:30 **Low-Complex Reliable Communications between Wireless Network-Nodes**
Alois Goiser (University of Technology Vienna)

16:30-16:50 **Tag-Based and QoS-Aware Mobile Application Search and Management**
Shang-Pin Ma (National Taiwan Ocean University); Jing-Hong Lin (National Taiwan Ocean University); Shin-Jie Lee (National Cheng Kung University); Wen-Tin Lee (National Kaohsiung Normal University); Jui-Hsaing Lin (National Taiwan Ocean University)

16:50-17:00 **An Intelligent Diagnosis Influenza System Based on Adaptive Neuro-Fuzzy Inference System (Work-in-Progress Paper)**

Chun-Ling Lin (Ming Chi University of Technology); Sheng-Ta Hsieh (Oriental Institute of Technology)

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**3 March – Tuesday (day 2)**

10:00-11:00 **Keynote 2, Prof. Weihua Zhuang, University of Waterloo**

11:00-11:30 **Coffee break**

**Session IV: Industrial Data Analysis and Mining**

11:30-11:50 **A Hybrid Model Ranking Search Result for Research Paper Searching on Social Bookmarking**

Pijitra Jomsri (Suan Sunandha Rajabhat University)

11:50-12:10 **MSER Based Text Localization for Multi-Language Using Double-Threshold Scheme**

Chayut Wiwatcharakoses (Chiang Mai University); Karn Patanukhom (Chiang Mai University)

12:10-13:30 **Lunch**

**Session V: Industrial Optimization Techniques**

13:30-13:50 **Time Series Forecasting with Missing Values**

Shin-Fu Wu (National Sun Yat-Sen University); Chia-Yung Chang (National Sun Yat-Sen University); Shie-Jue Lee (National Sun Yat-Sen University)

13:50-14:10 **A Particle Swarm Optimization with Adaptive Multi-Swarm Strategy for Capacitated Vehicle Routing Problem**
Session VI: Hardware and Software Design and Development

14:10-14:20 Solving Sudoku Puzzles Using Hybrid Ant Colony Optimization Algorithm (Work-in-Progress Paper)
Ibrahim Sabuncu (Yalova University)

Sergey Lupin (National Research University of Electronic Technology); Tan Shein (National Research University of Electronic Technology); Roustiam Chakirov (Bonn-Rhein-Sieg University of Applied Science); Yuriy Vagapov (Glyndwr University)

14:30- 15:00 Coffee break

15:00-15:20 On the Design of Active Crossover Network Using Double Capacitive Uniformly Distributed RC Filter
Sorapong Wachirattanapornkul (King Mongkut’s Institute of Technology Ladkrabang); Worapong Tangsrirat (King Mongkut’s Institute of Technology Ladkrabang)

15:20-15:40 A Dual-Issue Embedded Processor For LowPower Devices
Hanni Bagnordi (University of British Columbia); Mabo R. Ito (University of British Columbia)

15:40- 16:00 Efficient Key Management System for Large-scale Smart RFID Application
Mohammad Fal Sadikin (Free University of Berlin); Agus Kurniawan (Free University of Berlin); Marcel Kyas (Free University of Berlin)

16:00-16:20 Preliminary Study on Industry-Friendly and Native-IP Wireless Communication for Building Automation
Zhibo Pang (AB Corporation research)

16:20-16:30 Sub-pixel Edge Detection of LED Probes Based On Partial Area Effect (Work-in-Progress Paper)
Chung-Yun Su (National Taiwan Normal University); Li-An Yu (National Taiwan Normal University); Nai-Kuei Chen (National Taiwan Normal University); Jheng-Wang Jyun (National Taiwan Normal University); Ying-Hao Liu (National Taiwan Normal University)
18:30 Gala Dinner at Hotel Monterey Hanzomon –
(banquet room will be confirmed)
http://www.hotelmonterey.co.jp/en/htl/hanzomon/

23-1 Ichiban-cho, Chiyoda-ku, Tokyo, 102-0082, Japan
PHONE +81-3-3556-7111

Located in the center of Tokyo and situated just across the street from
Hanzomon Subway
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<td>10:30-10:50</td>
<td>Secure Range Query Based on Spatial Index</td>
<td>Dingxing Xie, Yanchao Lu, Congjin Du, Jie Li, and Li Li</td>
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<td>10:50-11:10</td>
<td>An Efficient Elephant Flow Detection with Cost-Sensitive in SDN</td>
<td>Peng Xiao, Wenyu Qu, Heng Qi, Yujie Xu, and Zhiyang Li</td>
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<td>11:10-11:30</td>
<td>PAM: An Efficient Power-Aware Multi-level Cache Policy to Reduce Energy Consumption of Software Defined Network</td>
<td>Xiaodong Meng, Long Zheng, Li Li, and Jie Li</td>
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<td>11:30-11:50</td>
<td>A Novel Algorithm Inspired by Plant Root Growth with Self-similarity Propagation</td>
<td>Xiaoxian He, Shigeng Zhang, and Jie Wang</td>
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<td>11:50-12:10</td>
<td>Cloud-Assisted Spatio-Textual k Nearest Neighbor Joins in Sensor Networks</td>
<td>Mingyang Yang, Long Zheng, Yanchao Lu, Minyi Guo, and Jie Li</td>
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<td>12:10-12:30</td>
<td>Sensors Placement in Water Distribution Systems Based on Coevolutionary Optimization Algorithm</td>
<td>Chengyu Hu, Dijun Tian, Chao Liu, and Xuesong Yan</td>
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For your notes: