

# **2015 International Conference on Intelligent Networking and Collaborative Systems (INCOS 2015)**

**Taipei, Taiwan  
2 – 4 September 2015**



IEEE Catalog Number: CFP1516I-POD  
ISBN: 978-1-4673-7696-9

# **2015 International Conference on Intelligent Networking and Collaborative Systems**

## **INCOS 2015**

### **Table of Contents**

Welcome Message from the 7th IEEE INCoS-2015	
Conference Chairs.....	xiii
Welcome Message from the 7th INCoS-2015 Workshops	
Co-Chairs.....	xv
INCoS-2015 Organizing Committee.....	xvi
INCoS-2015 Tracks and Program Committee Members.....	xviii
Keynote Talk I.....	xxvi
Keynote Talk II.....	xxvii
Welcome Message from ALICE-2015 Workshop Chairs.....	xxviii
ALICE-2015 Organizing Committee.....	xxix
ALICE-2015 Reviewers List.....	xxx
Welcome Message from ESN-2015 Workshop Chair.....	xxxi
ESN-2015 Organizing Committee.....	xxxii
ESN-2015 Reviewers List.....	xxxiii
Welcome Message from FINCoS-2015 International Workshop Organizers.....	xxxiv
FINCoS-2015 Organizing Committee.....	xxxv
FINCoS-2015 Reviewers List.....	xxxvi
Welcome Message from IABP-2015 Workshop Chairs.....	xxxvii
IABP-2015 Organizing Committee.....	xxxviii
IABP-2015 Reviewers List.....	xxxix
Welcome Message from STUMS-2015 Workshop Chairs.....	xl
STUMS-2015 Organizing Committee.....	xli
STUMS-2015 Reviewers List.....	xlii
Welcome Message from TAIAp-BigData-2015 Workshop Chairs.....	xliii
TAIAp-BigData-2015 Organizing Committee.....	xlv
TAIAp-BigData-2015 Reviewers List.....	xlvi
Welcome Message from WIND-2015 Workshop Chairs.....	xlvii
WIND-2015 Organizing Committee.....	xlvix

<b>WIND-2015 Reviewers List</b>	1
---------------------------------	---

---

## **7th International Conference on Intelligent Networking and Collaborative Systems (INCoS-2015)**

### **Session 1: Intelligent Collaborative Systems**

Collaboration and Locality in Crowdsourcing .....	1
<i>Andreas Mladenow, Christine Bauer, Christine Strauss, and Michal Gregus</i>	
Application of SNS-Based Collaboration Scheme into Reproductive Design Education and Collaborative Design with Information Sharing .....	7
<i>Masatoshi Imai and Yoshiro Imai</i>	
Collaborative Tool to Enhance Quality Evaluation of Higher Education Programmes .....	14
<i>David Baneres, Montse Serra, and M. Elena Rodríguez</i>	
A Model of Mining Noise-Tolerant Frequent Itemset in Transactional Databases .....	21
<i>Xiaomei Yu, Hong Wang, Xiangwei Zheng, and Shuangshuang Liu</i>	

### **Session 2: Intelligent Networking Systems and Applications**

Chip Designed Health Transducer and Wireless Sensor for Intelligent Networking Application .....	25
<i>Wen Cheng Lai</i>	
Proposing an Extended iBeacon System for Indoor Route Guidance .....	31
<i>Akihiro Fujihara and Takuma Yanagizawa</i>	
Performance Analysis of WMN-GA Simulation System for Different WMN Architectures and Routing Protocols Considering Exponential Distribution .....	38
<i>Admir Barolli, Tetsuya Oda, Keita Matsuo, Leonard Barolli, Fatos Xhafa, and Vincenzo Loia</i>	

### **Session 3: Networking and Software Management**

Management of Networking Systems Using Design Patterns .....	45
<i>Viliam Malcher</i>	
Comparison of Cognitive Information Systems Supporting Management Tasks .....	49
<i>Lidia Ogiela and Marek R. Ogiela</i>	
An Improved DCI_Closed Algorithm .....	57
<i>Yongming Miao and Hong Wang</i>	

### **Session 4: Services Systems**

Collaborative Composition of Production Services in Multi-agent Systems Based on Auctions .....	62
<i>Fu-Shiung Hsieh</i>	
Process as a Service (PaaS) for Planning of Resources in Organizations .....	70
<i>Peter Balco and Michal Gregus</i>	

Application of WMN-SA Web Interface and NS-3 for Optimization and Analysis in WMNs Considering Different Number of Mesh Routers and Architectures .....	74
<i>Vladi Kolici, Tetsuya Oda, Admir Barolli, Agenti Lala, Leonard Barolli, and Fatos Xhafa</i>	
A Modified Efficient Certificateless Signature Scheme without Bilinear Pairings .....	82
<i>Liangliang Wang, Kefei Chen, Yu Long, Xianping Mao, and Huige Wang</i>	

## **Session 5: Classification and Pattern Recognition**

A Novel Exemplar-Based Image Inpainting Algorithm .....	86
<i>Ying Liu, Chan-juan Liu, Hai-lin Zou, Shu-sen Zhou, Qian Shen, and Tong-tong Chen</i>	
Human Thermal Face Recognition Based on Random Linear Oracle (RLO) Ensembles .....	91
<i>Tarek Gaber, Alaa Tharwat, Abdelhameed Ibrahim, Václav Snášel, and Aboul Ella Hassanien</i>	
Muzzle-Based Cattle Identification Using Speed up Robust Feature Approach .....	99
<i>Shaimaa Ahmed, Tarek Gaber, Alaa Tharwat, Aboul Ella Hassanien, and Václav Snášel</i>	

## **Session 6: Data Mining**

An Unusual Approach to Basic Challenges of Data Mining .....	105
<i>Thomas H. Lenhard and Michal Greguš</i>	
Composing and Solving General Differential Equations Using Extended Polynomial Networks .....	110
<i>Ladislav Zjavka and Václav Snášel</i>	
Classification with Extreme Learning Machine on GPU .....	116
<i>Tomáš Ježowicz, Petr Gajdoš, Vojtěch Uher, and Václav Snášel</i>	
A Method of Image Classification with Optimized BP Neural Network by Genetic Algorithm .....	123
<i>Qian Shen, Chan-juan Liu, Hai-lin Zou, Shu-sen Zhou, and Tong-tong Chen</i>	

## **Session 7: P2P and Social Networking**

Effects of Packet Loss on Reliability of JXTA-Overlay P2P Platform: A Comparison Study for Two Fuzzy-Based Systems .....	130
<i>Yi Liu, Shinji Sakamoto, Ejvola Spaho, Keita Matsuo, Leonard Barolli, and Fatos Xhafa</i>	
Analysis of Trends in Authors Publication Activities .....	138
<i>Martin Radvansky, Milos Kudelka, and Václav Snášel</i>	
Data Owner Based Attribute Based Encryption .....	144
<i>Jindan Zhang, Xu An Wang, and Jianfeng Ma</i>	
Development and Evaluation of Adobe Flash Based CPU Scheduling Simulator Executable on Major Multiple Web Browsers .....	149
<i>Yoshiro Imai and Kei Takeichi</i>	
An Ontology about Emotion Awareness and Affective Feedback in Elearning .....	156
<i>Marta Arguedas, Fatos Xhafa, and Thanasis Daradoumis</i>	

## **Session 8: Nature Inspired Algorithms**

Design and Implementation of a Simulation System Based on Particle Swarm Optimization for Node Placement Problem in Wireless Mesh Networks .....	164
<i>Shinji Sakamoto, Tetsuya Oda, Makoto Ikeda, and Leonard Barolli</i>	
Evolutionary Algorithm Based on Partition Crossover (EAPX) for the Vehicle Routing Problem .....	169
<i>Takwa Tlili, Francisco Chicano, Saoussen Krichen, and Enrique Alba</i>	
Monte Carlo Schemata Searching for Physical Activity Recognition .....	176
<i>Alejandro Baldominos, Pedro Isasi, Yago Saez, and Bernard Manderick</i>	
Parallel Hybrid Trajectory Based Metaheuristics for Real-World Problems .....	184
<i>Gabriel Luque and Enrique Alba</i>	

## **Session 9: Intelligent Sensor Networks**

Estimating Harvestable Solar Energy from Atmospheric Pressure Using Support Vector Regression .....	192
<i>Pavel Krömer, Petr Musilek, James Rodway, Marek Reformat, and Michal Prauzek</i>	
Energy Availability Forecasting for Harvesting-aware Wireless Sensor Networks: Analysis of Energy Demand of a Predictor Based on Evolutionary Fuzzy Rules .....	200
<i>Michal Prauzek, Petr Musilek, Pavel Krömer, James Rodway, Martin Stankus, and Jakub Hlavica</i>	
Evaluation of Errors Caused by Lowering Frequency of Measurements of an Environmental Sensor Station .....	204
<i>Obiora Sam Ezeora, Jana Heckenbergerova, Petr Musilek, and Pavel Kromer</i>	
On Using Palm and Finger Movements as a Gesture-Based Biometrics .....	211
<i>Marcin Piekarczyk and Marek R. Ogiela</i>	
Performance Evaluation of Data Mining Frameworks in Hadoop Cluster Using Virtual Campus Log Files .....	217
<i>Fatos Xhafa, Daniel Ramirez, Daniel Garcia, and Santi Caballé</i>	

## **Session 10: Neural Networks, Clustering, Optimization, and Security**

A Fundamental Study on Coded Aperture Design for Depth from Projector Defocus Based on Evolutionary Multi-objective Optimization .....	223
<i>Yudai Mido, Yuki Horita, Kentaro Nakai, Taishi Megano, Satoshi Ono, and Hiroshi Kawasaki</i>	
An Efficiency Enhanced Cluster Expanding Block Algorithm for Copy-Move Forgery Detection .....	228
<i>Cheng-Shian Lin, Chien-Chang Chen, and Yi-Cheng Chang</i>	
A GA-Based Simulation System for WMNs: Performance Analysis of WMN-GA System for Different WMN Architectures Considering DCF and EDCA .....	232
<i>Tetsuya Oda, Makoto Ikeda, Leonard Barolli, Fatos Xhafa, and Makoto Takizawa</i>	

## **Session 11: Networking Protocols and Content Delivery**

Contents Delivery Method Using Route Prediction in Traffic Offloading by V2X .....	239
<i>Shunsuke Otsuki and Hiroyoshi Miwa</i>	
Minimum Background Fairness for Quality Video Delivery over the LTE Downlink .....	246
<i>Wen-Ping Lai, Ching-Hsiang Lin, and En-Cheng Liou</i>	
A Predicate Encryption Scheme Supporting Multiparty Cloud Computation .....	252
<i>Tan Zhenlin and Zhang Wei</i>	
Controlling Outsourcing Data in Cloud Computing with Attribute-Based Encryption .....	257
<i>Shuaishuai Zhu, Yiliang Han, and Yuechuan Wei</i>	
Depth-Based Energy-Balanced Hybrid Routing Protocol for Underwater WSNs .....	262
<i>Tayyaba Liaqat, Nadeem Javaid, Syed Muaraf Ali, Muhammad Imran, and Mohammed Alnuem</i>	
A BGN-Type Multiuser Homomorphic Encryption Scheme .....	268
<i>Zhang Wei</i>	

## **Fifth International Workshop on Adaptive Learning via Interactive, Collaborative and Emotional Approaches (ALICE-2015)**

### **ALICE Session 1**

A Knowledge Management Process to Enhance Trustworthiness-based Security in On-line Learning Teams .....	272
<i>Jorge Miguel, Santi Caballé, and Fatos Xhafa</i>	
Towards a Multi-modal Emotion-Awareness e-Learning System .....	280
<i>Santi Caballé</i>	
Improving e-Assessment in Collaborative and Social Learning Settings .....	288
<i>Néstor Mora, Santi Caballé, and Thanasis Daradoumis</i>	

### **ALICE Session 2**

Analytic Information Systems in the Context of Higher Education: Expectations, Reality and Trends .....	294
<i>Isabel Guitart and Jordi Conesa</i>	
A Semi-automatic System to Detect Relevant Learning Content for Each Subject .....	301
<i>Isabel Guitart, Joaquim Moré, Jordi Duran, Jordi Conesa, David Baneres, and David Gañan</i>	
Adaptive Serious Games for Emergency Evacuation Training .....	308
<i>Nicola Capuano and Richard King</i>	
Towards a General Adaptive e-Assessment System .....	314
<i>David Baneres, Xavier Baró, Ana-Elena Guerrero-Roldán, and M. Elena Rodríguez</i>	

## **International Workshop on Evolution of Social Networks (ESN-2015)**

### **ESN Session 1: Evolutionary Networks Algorithms**

Efficient Area Association Using Space Filling Curves .....	322
<i>Jan Platos, Pavel Kromer, and Vaclav Snasel</i>	
Computation of Kamada-Kawai Algorithm Using Barzilai-Borwein Method .....	327
<i>Lukas Pospisil, Martin Hasal, Jana Nowakova, and Jan Platos</i>	
On Evaluation of Evolutionary Networks Using New Temporal Centralities Algorithm .....	334
<i>Ivan Zelinka, Lukas Tomaszek, and Vacav Snasel</i>	

### **ESN Session 2: Social IT Tools**

Towards a Kansei WordNet by Color Design SNS Evaluation .....	340
<i>Kaori Yoshida, Dwilya Makiwan, and Mario Köeppen</i>	
Differential Evolution Enhanced by the Closeness Centrality: Initial Study .....	346
<i>Lenka Skanderova, Tomas Fabian, and Ivan Zelinka</i>	
Spam Detection Based on Nearest Community Classifier .....	354
<i>Michal Prilepok and Milos Kudelka</i>	

## **International Workshop on Frontiers in Intelligent Networking and Collaborative Systems (FINCoS-2015)**

### **Session 1: Security, Encryption and Authentication Services**

Video Steganography Algorithm Based on Trailing Coefficients .....	360
<i>Yingnan Zhang, Mingqing Zhang, Ke Niu, and Jia Liu</i>	
A Novel Information Hiding Algorithm Based on Grey Relational Analysis for H.264/AVC .....	365
<i>Yingnan Zhang, Mingqing Zhang, Jingjing Wang, and Ke Niu</i>	
Bit-pattern Based Integral Attack on ICEBERG .....	370
<i>Yuechuan Wei</i>	
Fine-Grained Privacy-Preserving Spatiotemporal Matching in Mobile Social Networks .....	374
<i>Xiuguang Li, Kai Yang, and Hui Li</i>	
New Compact CCA Secure Elgamal Scheme in the Random Oracle Model .....	379
<i>Xu An Wang, Jianfeng Ma, and Xiaoyuan Yang</i>	

### **Session 2: Advanced Networking Algorithms**

Parallel NoSQL Entity Resolution Approach with MapReduce .....	384
<i>Kun Ma and Bo Yang</i>	
An Energy-saving Geographic Routing in Wireless Sensor Network .....	390
<i>Xiao-ou Song</i>	
Analysis and Implementation of Modified Costas Loop for QPSK .....	394
<i>Xiao-ou Song</i>	

A Novel Detection Scheme Based on D-S Evidence Theory in Wireless Sensor Networks .....	398
<i>Kai Yang, Shuguang Liu, and Xiuguang Li</i>	
Parallel Proxy-Signcryption Scheme in Cloud Environment .....	402
<i>Deng Wenping and Wu Xuguang</i>	
Two-Dimensional Private Set Intersection in Big Data .....	407
<i>Xiuguang Li, Pan Feng, and Liu Shuguang</i>	

## **2015 International Workshop on Intelligent Applications for Business Productivity (IABP 2015)**

### **Session 1: Intelligent Applications for Business Productivity**

Developing a Fuzzy Predictive Aid System in Contact Centres for an Efficient Customer Recognition Process .....	411
<i>Morteza Saberi and Zahra Saberi</i>	
A Road Map to Risk Management Framework for Successful Implementation of Cloud Computing in Oman .....	417
<i>Fatma Al-Musawi, Ali H. Al-Badi, and Saqib Ali</i>	
An Analysis of the Security Threats and Vulnerabilities of Cloud Computing in Oman .....	423
<i>Amira M. AlZadjali, Ali H. Al-Badi, and Saqib Ali</i>	

## **International Workshop on Semantic Technologies in Ubiquitous, Massive and Smart Learning (STUMS-2015)**

### **STUMS Session 1: Context-ware, Seamless Learning and Frameworks**

Handling Continuity in Seamless Learning via Opportunistic Recognition and Evaluation of Activity Cohesion .....	429
<i>Giuseppe D'Aniello, Angelo Gaeta, Francesco Orciuoli, Pier Giuseppe Rossi, and Stefania Tomasiello</i>	
A Smart Competence-Based Prioritisation for Learning Programmes .....	435
<i>Matteo Gaeta, Antonio Marzano, Sergio Miranda, and Kurt Sandkuhl</i>	
Situation Awareness Enabling Decision Support in Seamless Learning .....	440
<i>Giuseppe D'Aniello, Matteo Gaeta, Vincenzo Loia, Francesco Orciuoli, and Demetrios G. Sampson</i>	
Semi-automatic Generation of an Object-Oriented API Framework over Semantic Repositories .....	446
<i>Daniele Toti and Marco Rinelli</i>	
A Visual Ontology Management System for Handling, Integrating and Enriching Semantic Repositories .....	450
<i>Daniele Toti and Andrea Longhi</i>	

## **International Workshop on Theory, Algorithms and Applications of Big Data Science (TAIAp-BigData-2015)**

### **Session 1: Big Data Techniques and Applications**

A Preliminary Investigation of a Semi-Automatic Criminology Intelligence Extraction Method: A Big Data Approach .....	454
<i>Marcello Trovati, Philip Hodgson, and Charlotte Hargreaves</i>	
A Comprehensive Evaluation of a Novel Approach to Probabilistic Information Extraction from Large Unstructured Datasets .....	459
<i>Marcello Trovati</i>	
Fuzzy Partition Rules for Heart Arrhythmia Detection .....	463
<i>Omar Behadada</i>	
A Survey on Constructing Rosters for Air Traffic Controllers .....	467
<i>Richard Conniss</i>	
A Critical Analysis of the Efficiencies of Emerging Wireless Security Standards Against Network Attacks .....	472
<i>Karolis Vilius, Lu Liu, John Panneerselvam, and Thomas Stimpson</i>	

## **International Workshop on Information Network Design (WIND 2015)**

### **Session 1: The Sustainable Internet**

Recent Trends and Some Lessons for Serious Network Failures in Japan .....	478
<i>Masato Uchida</i>	
Polynomial-time Algorithm for Server Location Method for Keeping Small Distance from Clients to Servers During Failures .....	486
<i>Shinya Kurimoto, Nao Maeda, and Hiroyoshi Miwa</i>	
Energy-Efficient Link and Node Power Control for Avoidance of Congestion in Accordance with Traffic Load Fluctuations .....	492
<i>Yuya Kawata, Akira Noguchi, and Hiroyoshi Miwa</i>	
A Short Note on the Solution of the Prisoner's Dilemma .....	498
<i>Mario Köppen and Masato Tsuru</i>	
<b>Author Index .....</b>	<b>503</b>