

**The 11th International Conference on Bio-inspired Computing:  
Theories and Applications (BIC-TA 2016)**

*October 28-30, 2016 - Xi'an, Shaanxi, China*

**Conference Venue: The Shaanxi Guesthouse Hotel (陕西宾馆)**

No.1 Zhangba E Rd, Yanta, Xi'an, Shaanxi, China (西安市雁塔区丈八东路 1 号)

**Programme Outline**

**Registration (Friday, 28<sup>th</sup> October 2016)**

<b>14:00h - 21:00h</b>	Registration and authors' kits (please approach the registration desk at the lobby of the hotel)
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**Technical Programme (Saturday, 29<sup>th</sup> October 2016)**

<b>08:00h - 08:30h</b>	Opening Ceremony
<b>08:30h - 09:30h</b>	Keynote Speech A Prof. <a href="#">Kay Chen Tan</a> , <i>National University of Singapore, Singapore</i>
<b>09:30h - 10:30h</b>	Keynote Speech B Prof. <a href="#">Qingfu Zhang</a> , <i>City University of Hong Kong, Hong Kong</i>
<b>10:30h - 11:00h</b>	<i>Coffee/Tea Break</i>
<b>11:00h - 12:00h</b>	Keynote Speech C Prof. <a href="#">Zhihui Zhan</a> , <i>South China University of Technology, China</i>
<b>12:00h - 14:00h</b>	<i>Lunch</i>
<b>14:00h - 16:00h</b>	3 Parallel Technical Sessions
<b>16:00h - 16:30h</b>	<i>Coffee/Tea Break</i>
<b>16:30h - 18:30h</b>	3 Parallel Technical Sessions
<b>19:00h - 21:00h</b>	<i>Conference Banquet</i>

## Technical Programme (Sunday, 30<sup>th</sup> October 2016)

<b>08:30h - 09:30h</b>	Keynote Speech <b>D</b> Prof. <a href="#">Gheorghe Păun</a> , <i>Institute of Mathematics of the Romanian Academy, Romania</i>
<b>09:30h - 10:30h</b>	Keynote Speech <b>E</b> Prof. <a href="#">Haibo He</a> , <i>University of Rhode Island, USA</i>
<b>10:30h - 11:00h</b>	<i>Coffee/Tea Break</i>
<b>11:00h - 12:00h</b>	Keynote Speech <b>F</b> Prof. <a href="#">Ke Tang</a> , <i>University of Science and Technology of China, China</i>
<b>12:00h - 14:00h</b>	<i>Lunch</i>
<b>14:00h - 16:00h</b>	3 Parallel Technical Sessions
<b>16:00h - 16:30h</b>	<i>Coffee/Tea Break</i>
<b>16:30h - 18:30h</b>	3 Parallel Technical Sessions

## Keynote Speech A

**Speaker: Kay Chen Tan (National University of Singapore, Singapore)**

Dr. Tan Kay Chen received the B. Eng. degree with First Class Honors in Electronics and Electrical Engineering, and the Ph.D. degree from the University of Glasgow, Scotland, in 1994 and 1997, respectively. He is actively pursuing research in computational and artificial intelligence, with applications to multi-objective optimization, scheduling, automation, data mining, and games.



Dr. Tan has published over 100 journal papers, over 100 papers in conference proceedings, co-authored 5 books including *Multiobjective Evolutionary Algorithms and Applications* (Springer-Verlag, 2005), *Modern Industrial Automation Software Design* (John Wiley, 2006; Chinese Edition, 2008), *Evolutionary Robotics: From Algorithms to Implementations* (World Scientific, 2006; Review), *Neural Networks: Computational Models and Applications* (Springer-Verlag, 2007), and *Evolutionary Multi-objective Optimization in Uncertain Environments: Issues and Algorithms* (Springer-Verlag, 2009), co-edited 4 books including *Recent Advances in Simulated Evolution and Learning* (World Scientific, 2004), *Evolutionary Scheduling* (Springer-Verlag, 2007), *Multiobjective Memetic Algorithms* (Springer-Verlag, 2009), and *Design and Control of Intelligent Robotic Systems* (Springer-Verlag, 2009).

Dr. Tan has been an Invited Keynote/Plenary speaker for over 40 international conferences. He served in the international program committee for over 100 conferences and involved in the organizing committee for over 50 international conferences, including the General Co-Chair for IEEE Congress on Evolutionary Computation 2007 in Singapore. Dr. Tan is the General Co-Chair for IEEE World Congress on Computational Intelligence 2016 in Vancouver, Canada. Dr. Tan is currently an elected member of AdCom (2014-2016) and is an IEEE Distinguished Lecturer of IEEE Computational Intelligence Society (2011-2013; 2015-2017).

Dr. Tan is the Editor-in-Chief of IEEE Transactions on Evolutionary Computation. He was the Editor-in-Chief of IEEE Computational Intelligence Magazine (2010-2013). He currently serves as an Associate Editor/Editorial Board member of over 20 international journals, such as IEEE Transactions on Cybernetics, IEEE Transactions on Computational Intelligence and AI in Games, Evolutionary Computation (MIT Press), European Journal of Operational Research, Neural Computing and Applications, Journal of Scheduling, International Journal of Systems Science, etc.

Dr. Tan is a Fellow of IEEE. He is the awardee of the 2012 IEEE Computational Intelligence Society (CIS) Outstanding Early Career Award for his contributions to evolutionary computation in multiobjective optimization. He also received the Recognition Award (2008) from the International Network for Engineering Education&Research (iNEER) for his outstanding contributions to engineering education and research. He was felicitated by the International Neural Network Society (INNS) India Regional Chapter (2014) for his outstanding contributions in the field of computational intelligence. He was also a winner of the NUS Outstanding Educator Awards (2004), the Engineering Educator Awards (2002, 2003, 2005, 2014), the Annual Teaching Excellence Awards (2002, 2003, 2004, 2005, 2006), the Honour Roll Awards (2007), and a Fellow of the NUS Teaching Academic (2009-2012).

**Title: Evolutionary Computing at Work: Opportunities and Challenges**

## Keynote Speech B

**Speaker: Qingfu Zhang (City University of Hong Kong, Hong Kong)**

Professor Qingfu Zhang received the BSc in mathematics from Shanxi University, China in 1984, the MSc in applied mathematics and the Ph.D. in information engineering from Xidian University, China, in 1991 and 1994, respectively. He is a Professor at the Department of Computer Science, City University of Hong Kong, Hong Kong, a Professor on leave from the School of Computer Science and Electronic Engineering, University of Essex, UK, and a Changjiang Visiting Chair Professor in Xidian University, China. He holds two patents and is the author of many research publications. His main research interests include evolutionary computation, optimization, neural networks, data analysis, and their applications. He is currently leading the Metaheuristic Optimization Research (MOP) Group in City University of Hong Kong.



Prof. Zhang is an Associate Editor of the IEEE Transactions on Evolutionary Computation and the IEEE Transactions on Cybernetics. He is also an Editorial Board Member of three other international journals. MOEA/D, a multiobjective optimization algorithm developed in his group, won the Unconstrained Multiobjective Optimization Algorithm Competition at the Congress of Evolutionary Computation 2009, and was awarded the 2010 IEEE Transactions on Evolutionary Computation Outstanding Paper Award.

**Title: Combination of Evolutionary Algorithms with Experimental Design and Traditional Optimization**

## Keynote Speech C

**Speaker: Zhihui Zhan** (South China University of Technology, China)

Prof. Zhihui Zhan received the bachelor's and Ph.D. degrees from the Department of Computer Science, Sun Yat-Sen University, Guangzhou, China, in 2007 and 2013, respectively. He is currently a Professor with the School of Computer Science and Engineering, South China University of Technology. His research interests include evolutionary computation algorithms and swarm intelligence algorithms, and their applications in real-world problems and in environments of cloud computing and big data.



Dr. Zhan received the China Computer Federation Outstanding Dissertation in 2013, the Natural Science Foundation for Distinguished Young Scientists of Guangdong Province, China, in 2014, and the Pearl River New Star in Science and Technology in 2015. He is listed as one of the Most Cited Chinese Researchers in Computer Science.

**Title: Distributed Evolutionary Computation and Its Application**

## Keynote Speech D

**Speaker: Gheorghe Păun (Institute of Mathematics of the Romanian Academy, Romania)**

Gheorghe Păun (born on December 6, 1950) graduated the Faculty of Mathematics, University of Bucharest, in 1974 and received his Ph.D. in mathematics (with specialization in computer science) from the same university in 1977. He held a research position at the University of Bucharest, and from 1990 to 2015, when he retired, he was at the Institute of Mathematics of the Romanian Academy, as a senior researcher. He visited numerous universities in Europe, Asia, and North America, with frequent and/or longer stays in Turku (Finland), Leiden (The Netherlands), Magdeburg (Germany, including an Alexander von Humboldt fellowship, in 1992-93), Tarragona, Madrid, and Sevilla (Spain, including a Ramon y Cajal scholarship, in 2001–2006), London-Ontario (Canada), Rome, Milano, Pisa (Italy), Tokyo (Japan), Warsaw (Poland), Vienna (Austria), Budapest (Hungary), China (Wuhan), etc.



His main research areas are formal language theory and its applications, computational linguistics, DNA computing, and membrane computing; this last research area was initiated by him, in 1998, and the respective models are now called P systems (see <http://ppage.psystems.eu>). He is the honorary president of IMCS, the International Membrane Computing Society, founded in 2016.

He has published a large number of research papers (collaborating with many researchers worldwide), has lectured at over 100 universities, and gave numerous invited talks at recognized international conferences. He has published eleven monographs in mathematics and computer science (some of them translated in Japanese, Chinese, Russian), has (co)edited over seventy collective volumes and special issues of journals, and also published many popular science books, books on recreational mathematics (games), and fiction books (he is a member of the Romanian Writers Association).

He was or still is a member of the editorial board of more than two dozens international journals and was/is involved in the program/steering/organizing committees for many international conferences and workshops.

In 1997 he was elected a member of the Romanian Academy and from 2006 he is a member of Academia Europaea. He also got many other honors, in Romania or abroad (professional and literary prizes, honorary citizenship titles, four doctor honoris causa titles, etc.). In 2009 he was included in the ISI Highly Cited Scientists category (see <http://isihighlycited.com>).

**Title: Spiking Neural P Systems, After Ten Years**

## Keynote Speech E

**Speaker: Haibo He (University of Rhode Island, USA)**

Prof. Haibo He received the B.S. and M.S. degrees in electrical engineering from the Huazhong University of Science and Technology, Wuhan, China, in 1999 and 2002, respectively, and the Ph.D. degree in electrical engineering from Ohio University, Athens, OH, USA, in 2006. From 2006 to 2009, he was an Assistant Professor with the Department of Electrical and Computer Engineering, Stevens Institute of Technology, Hoboken, NJ, USA. He is currently the Robert Haas Endowed Chair Professor and the Director of the Computational Intelligence and Self-Adaptive (CISA) Laboratory at the University of Rhode Island, Kingston, RI, USA. His primary research interests include computational intelligence, machine learning and data mining, cyber security, and various application domains.



He has published one sole-author research book (Wiley), edited one book (Wiley–IEEE), and six conference proceedings (Springer), and authored and co-authored over 200 peer-reviewed journal and conference papers, including several highly cited papers in IEEE Transactions on Neural Networks and IEEE Transactions on Knowledge and Data Engineering, Cover Page Highlighted paper in IEEE Transactions on Information Forensics and Security, and Best Readings of the IEEE Communications Society. He has delivered more than 40 invited talks around the globe. He was the Chair of IEEE Computational Intelligence Society (CIS) Emergent Technologies Technical Committee (ETTC) (2015) and the Chair of IEEE CIS Neural Networks Technical Committee (NNTC) (2013 and 2014). He served as the General Chair of 2014 IEEE Symposium Series on Computational Intelligence (IEEE SSCI'14, Orlando, Florida). He is currently the Editor-in-Chief of IEEE Transactions on Neural Networks and Learning Systems. He was a recipient of the IEEE International Conference on Communications (ICC) “Best Paper Award” (2014), IEEE CIS “Outstanding Early Career Award” (2014), National Science Foundation “Faculty Early Career Development (CAREER) Award” (2011), and Providence Business News (PBN) “Rising Star Innovator” Award (2011). More information can be found at: <http://www.ele.uri.edu/faculty/he/>.

**Title: Adaptive Learning and Optimization for Machine Intelligence**

## Keynote Speech F

**Speaker: Ke Tang (University of Science and Technology of China, China)**

Professor Ke Tang received the B.Eng. degree from Huazhong University of Science and Technology, Wuhan, China, in 2002, and the Ph.D. degree from Nanyang Technological University, Singapore, in 2007, respectively. Since 2007, he has been with the School of Computer Science and Technology, University of Science and Technology of China, Hefei, China, where he is currently a Professor. He has authored/coauthored more than 100 refereed publications. His research interests include evolutionary computation, machine learning, and their real-world applications.



Dr. Tang is an Associate Editor of the IEEE Transactions on Evolutionary Computation, the IEEE Computational Intelligence Magazine, and Computational Optimization and Applications (Springer), and served as a member of the editorial boards for a few other journals. He is a member of the IEEE Computational Intelligence Society (CIS) Evolutionary Computation Technical Committee and the IEEE CIS Emergent Technologies Technical Committee. He was the recipient of the Royal Society Newton Advanced Fellowship.

**Title: From Population-based Search to Cooperative Search**



## Detailed Programme

**Friday, 28<sup>th</sup> October, 2016**

- **14:00 – 21:00, Oct. 28**

Registration and authors' kits

Location: Registration desk in the lobby of the hotel

**Note:** You may also pick up your authors' kits on Oct. 29 at the registration desk during the coffee/tea break.

## Saturday, 29<sup>th</sup>, October, 2016

- **08:00 – 08:30, Oct. 29**

Opening Ceremony

**Location:** Building No. 12, 3<sup>rd</sup> floor, Room No. 3-3 (12 号楼 3 楼 3-3 号厅)

- **08:30 – 09:30, Oct. 29**

**Plenary Talk A, Evolutionary Computing at Work: Opportunities and Challenges**

Speaker: Kay Chen Tan, National University of Singapore, Singapore

**Location:** Building No. 12, 3<sup>rd</sup> floor, Room No. 3-3 (12 号楼 3 楼 3-3 号厅)

- **09:30 – 10:30, Oct. 29**

**Plenary Talk B, Combination of Evolutionary Algorithms with Experimental Design and Traditional Optimization**

Speaker: Qingfu Zhang, City University of Hong Kong, Hong Kong

**Location:** Building No. 12, 3<sup>rd</sup> floor, Room No. 3-3 (12 号楼 3 楼 3-3 号厅)

- **11:00 – 12:00, Oct. 29**

**Plenary Talk C, Distributed Evolutionary Computation and Its Application**

Speaker: Zhihui Zhan, South China University of Technology, China

**Location:** Building No. 12, 3<sup>rd</sup> floor, Room No. 3-3 (12 号楼 3 楼 3-3 号厅)

- **14:00 – 16:00, Oct. 29**

**Session on Bio-inspired Algorithms - I**

**Location:** Building No. 12, 3<sup>rd</sup> floor, Room No. 3-1 (12 号楼 3 楼 3-1 号厅)

**Session Chair:** Kangshun Li

**Paper ID 3:** DNA Self-assembly Model to Solve Compound Logic Operators Problem

Authors: Shihua Zhou, Bin Wang, Xuedong Zheng, and Changjun Zhou

**Paper ID 18:** A Universal Platform for Building DNA Logic Circuits

Authors: Zicheng Wang, Jian Ai, Yanfeng Wang, Guangzhao Cui, and Lina Yao

**Paper ID 23:** Model Checking Computational Tree Logic using Sticker Automata

Authors: Weijun Zhu, Yanfeng Wang, Qinglei Zhou, and Kai Nie

**Paper ID 49:** Logic Gate based on Circular DNA Structure with Strand Displacement

Authors: Guangzhao Cui, Xi Wang, Xuncaizhang, Ying Niu, and Hua Liu

**Paper ID 56:** Nucleic Acid Secondary Structures Prediction with Planar Pseudoknots using Genetic Algorithm

Authors: Kai Zhang, Shangyi Li, Juanjuan He, and Yunyun Niu

**Paper ID 72:** The Research of Solving Inverse Problems of Complex Differential Equations  
Authors: Kangshun Li, Yan Chen, and Jun He

**Paper ID 112:** Analysis of SNP Network Structure Based on Mutual Information of Breast Cancer Susceptibility Genes  
Authors: Shudong Wang, Shanqiang Zhang, Shanshan Li, Xinzeng Wang, Sicheng He, Yan Zhao, Xiaodan Fan, Fayou Yuan, Xinjie Zhu, and Yun Jiang

**Paper ID 117:** Generalized Project Gradient Algorithm for Solving Constrained Minimax Problems  
Authors: Cong Zhang, Limin Sun, and Zhibin Zhu

**Paper ID 121:** A Collaborative Learning Model in Teaching-Learning-based Optimization: Some Numerical Results  
Authors: Bei Dong, Xiaojun Wu, and Yifei Sun

**Paper ID 127:** An Improved Search algorithm about Spam Firewall  
Authors: Kangshun Li, Lu Xiong, and Zhichao Wen

● **14:00 – 16:00, Oct. 29**

**Session on Bio-inspired Methods for Multiobjective Optimization**

**Location:** Building No. 12, 3<sup>rd</sup> floor, Room No. 3-7 (12 号楼 3 楼 3-7 号厅)

**Session Chair:** Xinye Cai

**Paper ID 9:** A Hybrid Multi-objective Discrete Particle Swarm Optimization Algorithm for Cooperative Air Combat DWTA  
Authors: Guang Peng, Yangwang Fang, Shaohua Chen, Weishi Peng, and Dandan Yang

**Paper ID 63:** Multifactorial Brain Storm Optimization Algorithm  
Authors: Xiaolong Zheng, Yu Lei, Maoguo Gong, and Zedong Tang

**Paper ID 78:** Multi-objective Optimization with Nonnegative Matrix Factorization for Identifying Overlapping Communities in Networks  
Authors: Hongmin Liu, Hao Li, and Wei Zhao

**Paper ID 81:** Multi-objective Evolutionary Algorithm for Enhancing the Robustness of Networks  
Authors: Zheng Li, Shanfeng Wang, and Wenping Ma

**Paper ID 88:** An Multi-objective Optimization Algorithm Based on Tissue P System for VRPTW  
Authors: Wenbo Dong, Kang Zhou, Huaqing Qi, Cheng He, and Jun Zhang

**Paper ID 99:** A Diversity Keeping Strategy for the Multi-Objective Examination Timetabling Problem  
Authors: Yu Lei, Jiao Shi, and Kun Zhang

**Paper ID 105:** Indicator-based Multi-objective Bacterial Foraging Algorithm with Adaptive Searching Mechanism  
Authors: Lianbo Ma, Xu Li, Tianhan Gao, Qiang He, Guangming Yang, and Ying Liu

**Paper ID 113:** A Grid-Based Decomposition for Evolutionary Multiobjective Optimization  
Authors: Zhiwei Mei, Xinye Cai, and Zhun Fan

**Paper ID 128:** Design of Selecting Security Solution Using Multi-Objective Genetic Algorithm  
Authors: Yunghee Lee, Jaehun Jung, and Chang Wook Ahn

● **14:00 – 16:00, Oct. 29**

**Session on Bio-inspired Methods for Image Processing Problems**

**Location:** Building No. 12, 3<sup>rd</sup> floor, Room No. 3-8 (12 号楼 3 楼 3-8 号厅)

**Session Chair:** Han Huang

**Paper ID 2:** An Efficient Particle Swarm Optimization for MRI Fuzzy Segmentation  
Authors: Semchedine Moussa and Moussaoui Abdelouahab

**Paper ID 38:** Improving Sample Optimization with Convergence Speed Controller for Sampling-based Image Matting  
Authors: Liang Lv, Han Huang, Zhaoquan Cai, and Yihui Liang

**Paper ID 39:** An Improved Extraction Algorithm about Disease Spots  
Authors: Lu Xiong, Dongbo Zhang, and Kangshun Li

**Paper ID 42:** Fine-grained Image Categorization with Fisher Vector  
Authors: Xiaolin Tian, Xin Ding, and Licheng Jiao

**Paper ID 54:** Novel Image Deconvolution Algorithm Based on the ROF Model  
Author: Su Xiao

**Paper ID 60:** Unsupervised Image Segmentation Based on Watershed and Kernel Evolutionary Clustering Algorithm  
Authors: Chao Lei, Jingjing Ma, and Xiangming Jiang

**Paper ID 61:** Change Detection in Synthetic Aperture Radar Images Based on Fuzzy Restricted Boltzmann Machine  
Authors: Na Li, Jiao Shi, and Maoguo Gong

**Paper ID 64:** Change Detection in Remote Sensing Images Based on Clonal Selection Algorithm  
Authors: Tao Wu, Yu Lei, and Maoguo Gong

**Paper ID 75:** A Research for Recognition of Fold Structure in the Remote Sensing Image based on ELM  
Authors: Jiehong Wu, Liangkai Zou, and Xiang Li

**Paper ID 76:** Cross-media Information Retrieval with Deep Convolutional Neural Network  
Authors: Liang Bai, Tianyuan Yu, Jinlin Guo, Zheng Yang, and Yuxiang Xie

● **16:30 – 18:30, Oct. 29**

**Session on Bio-inspired Algorithms - II**

**Location:** Building No. 12, 3<sup>rd</sup> floor, Room No. 3-1 (12 号楼 3 楼 3-1 号厅)

**Session Chair:** Yang Yu

**Paper ID 12:** Incremental Learning with Concept Drift: A Knowledge Transfer Perspective  
Authors: Yu Sun and Ke Tang

**Paper ID 29:** Collaborative Rating Prediction based on Dynamic Evolutionary Heterogeneous Clustering  
Authors: Jianrui Chen, Ulji, Hua Wang, and Chunxia Zhao

**Paper ID 30:** Two-digit Full Subtractor Logical Operation Based on DNA Strand Displacement  
Authors: Junwei Sun, Xing Li, Chun Huang, Guangzhao Cui, and Yanfeng Wang

**Paper ID 37:** A Weighted-resampling based Transfer Learning Algorithm  
Authors: Xiaobo Liu, Zhengtao Liu, Guangjun Wang, and Zhihua Cai

**Paper ID 51:** Decision Variable Analysis Based on Distributed Computing  
Authors: Zhao Wang, Maoguo Gong, and Tian Xie

**Paper ID 52:** Matrix Flat Splicing Systems  
Authors: Rodica Ceterchi, Linqiang Pan, Bosheng Song, and K.G. Subramanian

**Paper ID 55:** Applying K-means Clustering and Genetic Algorithm for Solving MTSP  
Authors: Zhanqing Lu, Kai Zhang, Juanjuan He, and Yunyun Niu

**Paper ID 91:** A Multi-Task Learning Approach by Combining Derivative-Free and Gradient Methods  
Authors: Yiqi Hu and Yang Yu

**Paper ID 124:** A Multi-Parent Crossover Based Genetic Algorithm for Bi-Objective Unconstrained Binary Quadratic Programming Problem  
Authors: Chao Huo, Rongqiang Zeng, Yang Wang, and Mingsheng Shang

● **16:30 – 18:30, Oct. 29**

**Session on Neural Networks**

**Location:** Building No. 12, 3<sup>rd</sup> floor, Room No. 3-7 (12 号楼 3 楼 3-7 号厅)

**Session Chair:** Shengke Wang

**Paper ID 6:** A Study on the Recognition and Classification Method of High Resolution Remote Sensing Image based on Deep Belief Network  
Authors: Guanyu Chen, Xiang Li, and Ling Liu

**Paper ID 53:** A Simple Deep Feature Representation for Person Re-identification  
Authors: Shengke Wang, Lianghua Duan, Yong Zhao, and Junyu Dong

**Paper ID 58:** Image Compression based on Genetic Algorithm and Deep Neural Network  
Authors: Haisheng Deng, Hongying Liu, Feixiang Wang, Zhi Wang, and Yikai Wang

**Paper ID 62:** Differencing Neural Network for Change Detection in Synthetic Aperture Radar Images  
Authors: Feng Chen, Jiao Shi, and Maoguo Gong

**Paper ID 68:** A Diagnosis Model of Pulmonary Nodules Based on Deep Belief Network (DBN)  
Authors: Jialing Yang, Juanjuan Zhao, Yan Qiang, Pengfei Zhao, Fengzhi Wang

**Paper ID 71:** A Recognition Method of Hand Gesture with CNN-SVM Model  
Authors: Miao Ma, Zuxue Chen, and Jie Wu

**Paper ID 80:** DNN-Based Joint Classification for Multi-source Image Change Detection  
Authors: Wenping Ma, Zhizhou Li, Puzhao Zhang, and Tianyu Hu

**Paper ID 106:** Stacked Auto-Encoders for Feature Extraction with Neural Networks  
Authors: Shuanglong Liu, Chao Zhang, and Jinwen Ma

**Paper ID 116:** A Deep Learning Model of Automatic Detection of Pulmonary Nodules Based on Convolution Neural Networks (CNNs)

Authors: Xiaojiao Xiao, Yan Qiang, Juanjuan Zhao, and Pengfei Zhao

**Paper ID 130:** A Multi-agent System for Creating Art Based on Boids with Evolutionary and Neural Networks

Authors: Tae Jong Choi, Jaehun Jeong, and Chang Wook Ahn

● **16:30 – 18:30, Oct. 29**

**Session on Bio-inspired Methods for Data Analytics - I**

**Location:** Building No. 12, 3<sup>rd</sup> floor, Room No. 3-8 (12 号楼 3 楼 3-8 号厅)

**Session Chair:** Yangyang Li

**Paper ID 10:** A Memetic Kernel Clustering Algorithm for Change Detection in SAR Images

Authors: Yangyang Li, Gao Lu, and Licheng Jiao

**Paper ID 21:** Fault Diagnosis of Power Systems Based on Triangular Fuzzy Spiking Neural P Systems

Authors: Chengyu Tao, Wenping Yu, Jun Wang, Hong Peng, Ke Chen, and Jun Ming

**Paper ID 26:** K-Medoids-Based Consensus Clustering Based on Cell-like P Systems with Promoters and Inhibitors

Authors: Xiyu Liu, Yuzhen Zhao, and Wenxing Sun

**Paper ID 82:** Fault Classification of Power Transmission Lines Using Fuzzy Reasoning Spiking Neural P Systems

Authors: Kang Huang, Gexiang Zhang, Xiaoguang Wei, Haina Rong, Yangyang He, and Tao Wang

**Paper ID 83:** Exploration of the Critical Diameter in Networks

Authors: Haifeng Du, Jingjing Wang, Xiaochen He, and Wei Du

**Paper ID 93:** Membrane Algorithm with Genetic Operation and VRPTW-Based Public Optimization System

Authors: Yingying Duan, Kang Zhou, Huaqing Qi, and Zhiqiang Zhang

**Paper ID 108:** An Improved Heuristic Algorithm for UCAV Path Planning

Authors: Kun Zhang, Peipei Liu, Weiren Kong, Yu Lei, Jie Zou, and Min Liu

**Paper ID 114:** Research on the Acquisition of Design Resources Service Requirements Based on Context Awareness

Authors: Youyuan Wang, Leen Zhang, and Shengling Zhou

**Paper ID 120:** On Languages Generated by Asynchronous Spiking Neural P Systems with Astrocytes

Authors: Yuan Kong and Yun Jiang

**Paper ID 123:** Research on Micro-blog New Word Recognition Based on MapReduce

Authors: Chaoting Xiao, Jianhou Gan, Bin Wen, Wei Zhang, and Xiaochun Cao

● **19:00 – 21:00, Oct. 29, Conference banquet.**

**Location:** Building No. 12, the Ruyi Room (12 号楼如意厅)

## Sunday, 30<sup>th</sup>, October, 2016

- **08:30 – 09:30, Oct. 30**

**Plenary Talk D, Spiking Neural P Systems, After Ten Years**

Speaker: Gheorghe Păun, Institute of Mathematics of the Romanian Academy, Romania

**Location:** Building No. 12, 3<sup>rd</sup> floor, Room No. 3-3 (12 号楼 3 楼 3-3 号厅)

- **9:30 – 10:30, Oct. 30**

**Plenary Talk E, Adaptive Learning and Optimization for Machine Intelligence**

Speaker: Haibo He, University of Rhode Island, USA

**Location:** Building No. 12, 3<sup>rd</sup> floor, Room No. 3-3 (12 号楼 3 楼 3-3 号厅)

- **11:00 – 12:00, Oct. 30**

**Plenary Talk F, From Population-based Search to Cooperative Search**

Speaker: Ke Tang, University of Science and Technology of China, China

**Location:** Building No. 12, 3<sup>rd</sup> floor, Room No. 3-3 (12 号楼 3 楼 3-3 号厅)

- **14:00 – 16:00, Oct. 30**

**Session on Bio-inspired Algorithms - III**

**Location:** Building No. 12, 3<sup>rd</sup> floor, Room No. 3-1 (12 号楼 3 楼 3-1 号厅)

**Session Chair:** Hang Wei

**Paper ID 14:** A Real Adjacency Matrix-coded Differential Evolution Algorithm for Traveling Salesman Problems

Authors: Hang Wei, Zhifeng Hao, Han Huang, Gang Li, and Qinqun Chen

**Paper ID 15:** An Improved Algorithm for Constructing Binary Trees Using the Traversal Sequences

Authors: Fangxiu Wang, Kang Zhou, Huaqing Qi, and Bosheng Song

**Paper ID 27:** A Hybrid IWO Algorithm Based on Levy Flight

Authors: Xuncai Zhang, Xiaoxiao Wang, Guangzhao Cui, and Ying Niu

**Paper ID 28:** Improved Multi-step Iterative Algorithms for the Fixed Points of Strongly Pseudo-contractive Mappings

Authors: Jiangrong Liu, Kang Zhou, Shan Zeng, Huaqing Qi, and Tingfang Wu

**Paper ID 31:** One-Bit Full adder-full subtractor Logical Operation Based on DNA Strand Displacement

Authors: Yanfeng Wang, Xing Li, Chun Huang, Guangzhao Cui, and Junwei Sun

**Paper ID 33:** Grammar Automatic Checking System for English Abstract of Master's Thesis

Authors: Yueting Xu, Ziheng Wu, Han Huang, Tianxiong Yang, Pan Yu, and Erang Lu

**Paper ID 43:** Verified Error Bounds for Symmetric Solutions of Operator Matrix Equations  
Authors: Qingchun Li, Ziyu Li, Haifeng Sang, and Panpan Liu

**Paper ID 97:** Fast Algorithms for Verifying Centrosymmetric Solutions of Sylvester Matrix Equations  
Authors: Ziyu Li, Haifeng Sang, and Ying Zhao

**Paper ID 98:** The Subideal Version of the SOI-Algorithm and Its Application  
Authors: Haifeng Sang and Qingchun Li

● **14:00 – 16:00, Oct. 30**

**Session on Swarm Intelligence Based Methods - I**

**Location:** Building No. 12, 3<sup>rd</sup> floor, Room No. 3-7 (12 号楼 3 楼 3-7 号厅)

**Session Chair:** Hongwei Mo

**Paper ID 24:** Magnetic Bacterial Optimization Algorithm for Mobile Robot Path Planning  
Authors: Hongwei Mo, Lifang Xu, and Chaomin Luo

**Paper ID 87:** Improving Bee Colony Algorithm with Historical Archive  
Authors: Yalan Zhou, Jiahai Wang, Shangce Gao, Xing Yang, and Jian Yin

**Paper ID 90:** Application of Discrete Ant Colony Optimization in VRPTW  
Authors: Qinhong Fu, Kang Zhou, Huaqing Qi, and Tingfang Wu

**Paper ID 104:** Classification based on Fireworks Algorithm  
Authors: Yu Xue, Binping Zhao, and Tinghuai Ma

**Paper ID 109:** A Novel Hierarchical Artificial Bee Colony Optimizer and its application for model-based prediction of droplet Characteristic in 3D Electronic Printing  
Authors: Maowei He and Hanning Chen

**Paper ID 110:** Artificial Bee Colony Algorithm based on Clustering method and its application for Optimal Power Flow Problem  
Authors: Liling Sun and Hanning Chen

**Paper ID 118:** Modified Artificial Bee Colony Optimizer using Comprehensive Learning for the Application of Image Segmentation  
Authors: Gao Yang and Li Xu

**Paper ID 119:** Adaptive Bacterial Foraging Algorithm and its application in Mobile Robot Path Planning  
Authors: Xiaodan Liang, Maowei He, and Hanning Chen

**Paper ID 126:** Cooperative Discrete Firefly Algorithm to Solve TSP  
Authors: Abdulqader Mohsen, Wedad Al-sorori, and Walid Aljoby

● **14:00 – 16:00, Oct. 30**

**Session on Bio-inspired Methods for Data Analytics - II**

**Location:** Building No. 12, 3<sup>rd</sup> floor, Room No. 3-8 (12 号楼 3 楼 3-8 号厅)

**Session Chair:** Changhe Li

**Paper ID 4:** An Efficient Benchmark Generator for Dynamic Optimization Problems  
Author: Changhe Li



**Paper ID 32:** Automatic Methodology for the Diagnosis of Pulmonary Nodules Based on Stacked Extreme Learning Machines

Authors: Lei Ge, Yan Qiang, Juanjuan Zhao, Xiaolong Zhang, and Xiaoxian Tang

**Paper ID 65:** Memetic Image Segmentation Method Based on Digraph Coding

Authors: Tao Wu, Jiao Shi, and Yu Lei

**Paper ID 73:** Overlapping Community Detection in Network: A Fuzzy Evaluation Approach

Authors: Wei Zhao, Yangzhi Guo, Chao Lei, and Jianan Yan

**Paper ID 74:** Visual Tracking Based on Ensemble Learning with Logistic Regression

Authors: Xiaolin Tian, Sujie Zhao, and Licheng Jiao

**Paper ID 84:** A Common Strategy to Improve Community Detection Performance based on the Nodes' Property

Authors: Wei Du and Xiaochen He

**Paper ID 86:** Saliency Detection Model for Low Contrast Images based on Amplitude Spectrum Analysis and Superpixel Segmentation

Authors: Hua Yang, Xin Xu, and Nan Mu

**Paper ID 102:** HVS-inspired Dimensionality Reduction Model based on Factor Analysis

Authors: Zhigang Shang, Mengmeng Li, and Yonghui Dong

**Paper ID 111:** Human Face Reconstruction from a Single Input Image Based on a Coupled Statistical Model

Authors: Yujuan Sun, Muwei Jian, and Junyu Dong

● **16:30 – 18:30, Oct. 30**

**Session on Evolutionary Computing Theories**

**Location:** Building No. 12, 3<sup>rd</sup> floor, Room No. 3-1 (12 号楼 3 楼 3-1 号厅)

**Session Chair:** Wenyin Gong

**Paper ID 5:** Ensemble of Different Parameter Adaptation Techniques in Differential Evolution

Authors: Liang Wang and Wenyin Gong

**Paper ID 35:** Evolutionary Process: Parallelism Analysis of Differential Evolution Algorithm Based on Graph Theory

Authors: Xiaoqi Peng, Zhifeng Hao, Han Huang, Hongyue Wu, and Fangqing Liu

**Paper ID 41:** A Mean Shift Assisted Differential Evolution Algorithm

Authors: Hui Fang, Aimin Zhou, and Guixu Zhang

**Paper ID 45:** A Hybrid “Fast-Slow” Convergent Framework for Genetic Algorithm Inspired by Membrane Computing

Authors: Zhongwei Li, Shengyu Xia, Yun Jiang, Beibei Sun, Yuezhen Xin, and Xun Wang

**Paper ID 47:** Kernel Evolutionary Algorithm for Clustering

Authors: Xiangming Jiang, Jingjing Ma, and Chao Lei

**Paper ID 77:** Dynamic Fitness Landscape Analysis on Differential Evolution Algorithm

Authors: Shuling Yang, Kangshun Li, Wei Li, WeiGuang Chen, and Yan Chen

**Paper ID 96:** Recent Advances in Evolutionary Programming

Authors: Jing Yu and Lining Xing

**Paper ID 103:** Differential Evolution Algorithm with the Second Order Difference Vector  
Authors: Xinchao Zhao, Dongyue Liu, Xingquan Zuo, Huiping Liu, and Rui Li

● **16:30 – 18:30, Oct. 30**

**Session on Swarm Intelligence Based Methods - II**

**Location:** Building No. 12, 3<sup>rd</sup> floor, Room No. 3-7 (12 号楼 3 楼 3-7 号厅)

**Session Chair:** Hanning Chen

**Paper ID 11:** A New Optimal Neuro-fuzzy Inference System for MR Image Classification and Multiple Scleroses Detection  
Authors: Hakima Zouaoui, Abdelouahab Moussaoui, Abdelmalik Taleb-Ahmed, and Mourad Oussalah

**Paper ID 19:** An Image Threshold Segmentation Algorithm with Hybrid Evolutionary Mechanisms Based on Membrane Computing  
Authors: Shuo Liu, Kang Zhou, Shan Zeng, Huaqing Qi, and Tingfang Wu

**Paper ID 22:** Research on Network-on-Chip Automatically Generate Method Based on Hybrid Optimization Mapping  
Authors: Chao Li and YuQiang Chen

**Paper ID 44:** Quantum-Behaved Particle Swarm Optimization Using MapReduce  
Authors: Yangyang Li, Zhenghan Chen, Yang Wang, and Licheng Jiao

**Paper ID 95:** A Novel Image Fusion Method based on Shearlet and Particle Swarm Optimization  
Authors: Qiguang Miao, Ruyi Liu, Yiding Wang, and Jianfeng Song

**Paper ID 115:** Study of Multi-UAVs Communication Range Optimization Based on Improved Artificial Fish-Swarm Algorithm and Context-aware Parameters in OLSR Protocol  
Authors: Jiehong Wu, Liangkai Zou, Xiang Li, and Yang Cao

**Paper ID 122:** Biomimicry of Plant Root Foraging for Distributed Optimization: Models and Emergent Behaviors  
Authors: Hanning Chen, Xiaodan Liang, Maowei He, and Weixing Su

**Paper ID 125:** An Improved Hybrid Bat Algorithm for Traveling Salesman Problem  
Authors: Wedad Al-sorori, Abdulqader Mohsen, and Walid Aljoby

**Paper ID 129:** Visual Tracking by Sequential Cellular Quantum-behaved Particle Swarm Optimization algorithm  
Authors: Junyi Hu, Wei Fang, and Wangtong Ding

**Paper ID 131:** Classification based on Brain Storm Optimization Algorithm  
Authors: Yu Xue, Tao Tang, and Tinghuai Ma

● **16:30 – 18:30, Oct. 30**

**Session on Bio-inspired Methods for Data Analytics - III**

**Location:** Building No. 12, 3<sup>rd</sup> floor, Room No. 3-8 (12 号楼 3 楼 3-8 号厅)

**Session Chair:** Xuesong Yan

**Paper ID 7:** Research on Multimodal Optimization Algorithm for the Contamination Source Identification of City Water Distribution Networks  
Authors: Xuesong Yan, Jing Zhao, and Chengyu Hu

**Paper ID 8:** Study on Hybrid Intelligent Algorithm with Solving Pre-stack AVO Elastic Parameter Inversion Problem

Authors: Qinghua Wu, Ying Hao, and Xuesong Yan

**Paper ID 17:** The Influence of Diversification Strategy on Capital Structure

Author: Xuefeng Li

**Paper ID 34:** Evolutionary Algorithms for Many-objective Ground Station Scheduling Problem

Authors: Zhongshan Zhang, Lining Xing, Yuning Chen, and Pei Wang

**Paper ID 46:** Heterogeneous Information Knowledge Construction based on Ontology

Authors: Gan Jianhou, Xia Yuelong, Zhong Wei, Wen Bin, and Cao Xiaochun

**Paper ID 50:** The Working Operation Problem based on Probe Machine Model

Authors: Jing Yang and Zhixiang Yin

**Paper ID 57:** Research on Distributed Anomaly Traffic Detection Technology Based On Hadoop Platform

Author: Qiang Chen

**Paper ID 67:** The Short-term Traffic Flow Prediction based on MapReduce

Authors: Suping Liu and Dongbo Zhang

**Paper ID 70:** Immune Multipath Reliable Transmission with Fault Tolerance in Wireless Sensor Networks

Authors: Hongbing Li, Dong Zeng, Liwan Chen, Qiang Chen, Mingwei Wang, and Chunjiang Zhang

**End of the Programme**