The Fifth International Joint Conference on Computational Sciences and Optimization (CSO 2012)

Conference Program

Harbin and Wudalianchi, Heilongjiang, China
June 24-28, 2012
Table of Contents

1. Welcome from the CSO 2012 General and Program Co-Chairs ............1
2. Conference Schedule Overview .............................................................4
3. Technical Program..................................................................................5
   Day 1 — Sunday, June 24, 2012 .........................................................5
   Day 2 — Monday, June 25, 2012 .......................................................5
   Day 3 — Tuesday, June 26, 2012.........................................................9
   Day 4-5 — Wednesday-Thursday, June 27-28, 2012 .........................9
4. Keynote Speakers .................................................................................10
5. Organizing Committee..........................................................................15
6. Program Committee...............................................................................16
7. Workshop Information..........................................................................21
8. Conference Sponsorships....................................................................22
9. Information for Conference Arrangements ........................................24
Welcome from CSO 2012 General and Program Co-Chairs

Welcome to Harbin and to the Fifth International Joint Conference on Computational Sciences and Optimization (CSO 2012), held at Harbin, Heilongjiang, China, June 24-28, 2012. CSO 2012 builds on the success of the previous four conferences: the first conference held at Hong Kong on August 1-3, 2008, the second conference held at Sanya, Hainan, China, April 24-26, 2009 and the third conference held at Huangshan, Anhui, China, May 28-31, 2010 and the fourth conference held at Kunming/Lijiang, Yunnan, China, April 15-19, 2011. Encouraged by the successful experience and feedbacks from the participants, this year the conference is held at Harbin, Heilongjiang, China.

Computational Sciences and Optimization are two important disciplines in modern sciences with many applications ranging from applied sciences, engineering, management, finance, and economics, to arts, humanities, and social sciences. Currently some new challenges arise in the modeling of complex systems, sophisticated algorithms, advanced scientific and engineering computing and associated problem-solving environments. Because the solutions of complex problems must cope with the tight timing schedule, powerful computational algorithms and complex optimization techniques are inevitable for solving these practical problems.

In order to strengthen academic exchanges and discussions on the fields of computational sciences and optimization, The Fifth International Joint Conference on Computational Sciences and Optimization (CSO 2012) will be held on June 24-26, 2012 in Harbin, Heilongjiang Province, China. It provides a three-day forum on Computational Sciences and Optimization. The theme of the plenary session is “Computational Sciences and Engineering Optimization” and the following keynote speakers are invited to further explore these topics: Professor Witold Pedrycz (Department of Electrical and Computer Engineering, University of Alberta, Canada), Professor Jinhu Lü (Academy of Mathematics and Systems Science, Chinese Academy of Sciences and School of Electrical and Computer Engineering, RMIT University, Australia), and Jerome Yen (Hong Kong University of Science and Technology, Hong Kong). The General Co-chairs and PC Co-Chairs of CSO 2012 would like to thank all the keynote speakers for their innovative and inspiring speeches delivered in the conference.

Concurrent sessions and poster sessions will cover a wide range of topics and issues, including both contributed papers and special sessions/workshops developed on specific topics, all with a central focus of Applied Computing, Computational Sciences, Optimization Theory, Methods and Applications. This year, we also have twelve workshops or special sessions that complemented CSO 2012 program with contributions for specific topics. The workshops include The 4th International Workshop on Computational Transportation Science (CTS 2012, organized by Prof. Bin Jia, Dr. Tianliang Liu and Dr. Qiong Tian), The 3rd International Workshop on Spatial Computational Sciences and Applications (SCSA 2012, organized by Dr. Liqiang Liu, Dr. Gang Li and Dr. Yuxin Zhao), The 2012 International
Workshop on Optimization Methods and Applications (OMA 2012, organized by Prof. Youlin Shang), The Second Workshop on Computational Service Science (CSS 2012, organized by Dr. Jun Wu and Dr. Huajun Tang), The 2012 International Workshop on Computational Business Science (CBS 2012, organized by Dr. Yanhong Qin and Prof. Guangxing Wei), The Second International Workshop on Low-Carbon Economy and Carbon Finance (LCE-CF 2012, organized by Dr. Guoxing Zhang, Dr. Jian Chai and Dr. Li Gong), The Fourth International Workshop on Advanced Intelligent Computing for Meteorological Applications (IWAICMA 2012, organized by Prof. Long Jin and Prof. Fangping Zeng), The 2nd International Workshop on Risk Management: Theory, Methods and Applications (RMTMA 2012, organized by Dr. Gang Xie), The 4th International Workshop on Intelligent Computational Science (ICS 2012, organized by Dr. Wenzian Shang and Dr. Haibin Zhu), The 2nd International Workshop on Financial Optimization and Risk Management (FORM 2012, organized by Dr. Wei Xu), The 2nd International Workshop on Multi-Criteria Decision-Making and Emergency Management (MCDMEM 2012, organized by Dr. Lean Yu) and The 6th International Workshop on Computational Methods in Energy Economics (CMEE 2012, organized by Dr. Lean Yu). The General Co-chairs and Program Co-chairs of CSO 2012 would like to thank all the workshops chairs for their excellent works and effort in organizing these workshops.

The CSO 2012 joint conference will provide an idea-exchange and discussion platform for the world’s researchers and academia, where internationally recognized researchers and practitioners share state-of-the-art research results, cutting-edge information, address the hottest issue in computational science and optimization, explore new computational technologies, exchange and build upon new ideas. And meantime the joint conference will also provide researchers and practitioners an opportunity to highlight innovative research directions, and a growing number of novel applications, and to explore new approaches for future developments.

CSO 2012 received 648 submissions (including main track papers and workshop papers) from different countries and regions. All submitted papers have to go through a rigorous reviewing process. Each submission was reviewed by at least two independent reviewers in a standard peer-review process. Papers belonged to three categories: regular papers of 5 pages, short papers of 4 pages and poster papers of 2 pages. After rigorous peer-review, we finally select 203 papers (acceptance rate 31.33%) for publication. It should be emphasized that our policy is to guarantee the high-quality of the accepted papers and at the same time encourage more people to participate in the conference.

This year, CSO 2012 is co-sponsored by National Natural Science Foundation of China (NSFC), China; Chinese Academy of Sciences (CAS), China; Academy of Mathematics and Systems Science of CAS, China; Harbin Engineering University, China; Beijing University of Chemical Technology, China; School of Automation, Harbin Engineering University, China; Centre for Energy Chemical Management, Beijing University of Chemical Technology, China; Key Laboratory of Management, Decision and Information Systems (MADIS) of CAS, China; Beijing Zhongke Markway Education Technology Center, China. Meantime, CSO 2012 is

CSO 2012 would not have been successful without the support of many people and organizations. First and foremost, we would like to thank all the authors for submitting their papers to the conference, for their presentations and discussions during the conference. We would like to express our most sincere gratitude to Program Committee members and our professional reviewers, who carried out the most difficult work by carefully evaluating the submitted papers. We would like to give special thanks to the conference sponsors. Last but not least, we would like to thank all conference participants for their contribution and support. We hope that all participants can take this opportunity to share and exchange ideas with one another and enjoy CSO 2012.

Yanling Hao, Harbin Engineering University, China
K. K. Lai, City University of Hong Kong, Hong Kong
Shouyang Wang, Chinese Academy of Sciences, China
General Co-Chairs of CSO 2012

Lean Yu, Chinese Academy of Sciences, China
Kin Fun Li, University of Victoria, Canada
Xin-She Yang, National Physical Laboratory, UK
Lin Zhao, Harbin Engineering University, China
Program Co-Chairs of CSO 2012
## Conference Schedule Overview

<table>
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<tr>
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<tbody>
<tr>
<td><strong>14:00-18:30</strong></td>
<td><strong>10:00-10:40</strong></td>
<td><strong>10:00-11:00</strong></td>
<td>Full Day</td>
</tr>
<tr>
<td>Registration (The First Floor of Longhai Century Hotel)</td>
<td>Awarding Ceremony</td>
<td>Coffee/Tea Break</td>
<td>Three-Day Wudalianchi Tour Organized by Conference and Local Travel Agency</td>
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<tr>
<td><strong>9:00-9:10</strong></td>
<td><strong>9:00-10:00</strong></td>
<td><strong>10:40-11:00</strong></td>
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<tr>
<td>Opening Session</td>
<td>Author Workshop</td>
<td>Coffee/Tea Break</td>
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<tr>
<td><strong>9:10-10:00</strong></td>
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<td><strong>11:00-12:00</strong></td>
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<tr>
<td>Keynote Speech 1</td>
<td></td>
<td>One-Hour Tour to HEU History</td>
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<tr>
<td><strong>10:00-10:20</strong></td>
<td><strong>10:20-11:10</strong></td>
<td><strong>11:00-12:00</strong></td>
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<tr>
<td>Coffee Break/Group Photo</td>
<td>Keynote Speech 2</td>
<td>Keynote Speech 3</td>
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<tr>
<td><strong>10:20-11:10</strong></td>
<td><strong>11:10-12:00</strong></td>
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<tr>
<td>Keynote Speech 2</td>
<td>Keynote Speech 3</td>
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<tr>
<td><strong>12:00-13:30</strong></td>
<td><strong>12:00-13:00</strong></td>
<td><strong>12:00-13:00</strong></td>
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<tr>
<td>Lunch/Rest</td>
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<tr>
<td><strong>13:30-15:30</strong></td>
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<td><strong>After 13:00</strong></td>
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<tr>
<td>Parallel A1, B1, C1 (Best Paper Competition)</td>
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<td>Three-Day Wudalianchi Tour Organized by Conference and Local Travel Agency</td>
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<tr>
<td><strong>15:30-16:00</strong></td>
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<td>After 13:00</td>
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<tr>
<td>Coffee/Tea Break &amp; (Poster Paper Competition)</td>
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<tr>
<td><strong>16:00-18:00</strong></td>
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<td>Three-Day Wudalianchi Tour Organized by Conference and Local Travel Agency</td>
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<tr>
<td>Parallel A2, B2, C2 (Best Paper Competition)</td>
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<tr>
<td><strong>18:00-20:30</strong></td>
<td><strong>18:30-21:00</strong></td>
<td><strong>18:30-21:00</strong></td>
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<tr>
<td>Dinner</td>
<td>Banquet</td>
<td>Banquet</td>
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<tr>
<td><strong>Notes:</strong></td>
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<tr>
<td><strong>1. Conference Venue Arrangement</strong></td>
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<tr>
<td>Opening/Keynote/Awarding/Closing Session: Multi-Function Lecture Hall (Room 425), Sailing Conference Center, Harbin Engineering University (HEU)</td>
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<tr>
<td>Parallel Session A: East Sea Hall (Room 450), Sailing Conference Center, HEU</td>
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<tr>
<td>Parallel Session B: South Sea Hall (Room 445), Sailing Conference Center, HEU</td>
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<tr>
<td>Parallel Session C: Yellow River Hall (Room 435), Sailing Conference Center, HEU</td>
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<tr>
<td>Poster Session: Outside Wall at 4th Floor, Sailing Conference Center, HEU</td>
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<tr>
<td><strong>2. Conference Lunch/Supper and Banquet Arrangement</strong></td>
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<tr>
<td>Lunch/Dinner/Banquet: Longhai Century Hotel</td>
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<tr>
<td><strong>3. All participants enter into the restaurant by Lunch/Dinner/Banquet tickets issued by the Conference Organizer.</strong></td>
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</table>
# Technical Program

## June 24, 2012 (Sunday)

<table>
<thead>
<tr>
<th>14:00-18:30</th>
<th>Registration (Place: The First Floor of Longhai Century Hotel)</th>
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<tbody>
<tr>
<td>18:00-20:30</td>
<td>Dinner</td>
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</table>

## June 25, 2012 (Monday)

<table>
<thead>
<tr>
<th>9:00-9:10</th>
<th>Opening Session (Chair: Prof. Lean Yu)</th>
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<tbody>
<tr>
<td></td>
<td>Opening Address (Prof. K.K. Lai, General Co-Chair)</td>
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<tr>
<td></td>
<td>Welcome Address (Prof. Lin Zhao, Program Co-Chair)</td>
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<tr>
<td>9:10-10:00</td>
<td>Keynote Speech 1 (50m/P) (Chair: Prof. Lin Zhao)</td>
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<tr>
<td></td>
<td>Speaker: Prof. Witold Pedrycz (University of Alberta, Canada)</td>
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<tr>
<td></td>
<td>Title: Content-Rich Information Granules as Fundamental Design Constructs of Intelligent Systems</td>
</tr>
<tr>
<td>10:00-10:20</td>
<td>Coffee/Tea Break/Group Photo Taking</td>
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<tr>
<td>10:20-11:10</td>
<td>Keynote Speech 2 (50m/P) (Chair: Prof. Yuxin Zhao)</td>
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<tr>
<td></td>
<td>Speaker: Prof. Jinhu Lü (Chinese Academy of Sciences and RMIT University, Australia)</td>
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<tr>
<td></td>
<td>Title: Multi-Agent Systems: Nexus of All Realities in Systems and Control</td>
</tr>
<tr>
<td>10:10-12:00</td>
<td>Keynote Speech 3 (50m/P) (Chair: Prof. K.K. Lai)</td>
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<td></td>
<td>Speaker: Prof. Jerome Yen (Hong Kong University of Science and Technology &amp; Tung Wah College, Hong Kong)</td>
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<tr>
<td></td>
<td>Title: Some Optimization Problems in Program Trading</td>
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<tr>
<td>12:00-13:30</td>
<td>Lunch/Rest</td>
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<tr>
<td>13:30-15:30</td>
<td>Session A1: Optimization Methods and Applications I (15m/P)</td>
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</tbody>
</table>

### Session Chair:
**Dr. José Crispín Zavala-Díaz** and **Dr. Yung-Yih Lur**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primal and Dual Variables for New QP-free Method without a Penalty Function and a Filter (ID: OMA2012-02)</td>
<td>Dingguo Pu and Youlin Shang</td>
</tr>
<tr>
<td>A Modified Adaptive Conic Trust Region Algorithm (ID: 41)</td>
<td>Wenxing Yuan and Baocong Jiao</td>
</tr>
<tr>
<td>A New Lagrangian Multiplier Method (ID: OMA2012-01)</td>
<td>Youlin Shang, Shengli Guo, and Muhua Liu</td>
</tr>
<tr>
<td>Conditioning Convex and Nonconvex Functions in Optimization (ID: 80)</td>
<td>Roxin Zhang</td>
</tr>
<tr>
<td>Unsupervised Change Detection Based on Iterative Histogram Matching and Bayesian Decision of Thresholding (ID: OMA2012-22)</td>
<td>Qiongcheng Xu, Wei Wang, Yunchen Pu, and Huamin Zhong</td>
</tr>
<tr>
<td>An Analysis of Some Dual Problems for Mathematical Programming Problems with Inequality and Equality Constraints (ID: OMA2012-23)</td>
<td>Sanming Liu and Zhijie Wang</td>
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<tr>
<td>Time</td>
<td>Session B1: Advanced Intelligent Computing Methods and Applications (15m/P)</td>
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<tr>
<td>Title</td>
<td>Higher-order Optimality Conditions of Strict Local Minima in Optimization Problems (ID: OMA2012-28)</td>
</tr>
<tr>
<td>Authors</td>
<td>Xuanwei Zhou</td>
</tr>
<tr>
<td>Title</td>
<td>A Filled Function with One Parameter Approach For Box Constrained Optimization Problem (ID: OMA2012-30)</td>
</tr>
<tr>
<td>Authors</td>
<td>Yirong Yao, Liang Zeliang, and Liansheng Zhang</td>
</tr>
<tr>
<td>13:30-15:30</td>
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<tr>
<td>Session Chair</td>
<td>Dr. Jiansheng Wu and Dr. Yukun Bao</td>
</tr>
<tr>
<td>Title</td>
<td>A Particle Swarm Optimization-Neural Network Prediction Model for Typhoon Intensity Based on Isometric Mapping Algorithm (ID: IWAICMA2012-01)</td>
</tr>
<tr>
<td>Authors</td>
<td>Long Jin and Ying Huang</td>
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<tr>
<td>Title</td>
<td>The Neural Network Model for Wind Field Assessment Based on Particle Swarm Optimization Algorithm (ID: IWAICMA2012-02)</td>
</tr>
<tr>
<td>Authors</td>
<td>Kaiping Lin, Binglian Chen, Yan dong, Xiaoyan Huang, Weiliang Liang</td>
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<tr>
<td>Title</td>
<td>Application of Hybrid RBF Neural Network Ensemble Model Based on Wavelet Support Vector Machine Regression in Rainfall Time Series Forecasting (ID: IWAICMA2012-03)</td>
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<tr>
<td>Authors</td>
<td>Lingzhi Wang and Jiansheng Wu</td>
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<tr>
<td>Title</td>
<td>A Genetic-Neural Network Model Based on Multidimensional Scaling for Typhoon Intensity (ID: IWAICMA2012-04)</td>
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<tr>
<td>Authors</td>
<td>Xiaoyan Huang, Long Jin, and Ying Huang</td>
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<tr>
<td>Title</td>
<td>An Neural Network Ensemble approach based on PSO algorithm and LLE for Typhoon Intensity (ID: IWAICMA2012-05)</td>
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<tr>
<td>Authors</td>
<td>Xvming Shi, Long Jin, Xiaoyan Huang, and Ying Huang</td>
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<tr>
<td>Title</td>
<td>An Algorithm for Global Optimization Problems Based on ABC-BFGS (ID: IWAICMA2012-06)</td>
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<tr>
<td>Authors</td>
<td>Xiaojing Li, Hua-sheng Zhao, and Long Jin</td>
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<tr>
<td>Title</td>
<td>An application of ensemble prediction for typhoon intensity based on MDS and PSO-ANN (ID: IWAICMA2012-07)</td>
</tr>
<tr>
<td>Authors</td>
<td>Huasheng Zhao, Long Jin, Ying huang, and Xiaoyan Huang</td>
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<tr>
<td>Title</td>
<td>Synoptic Analysis and Numerical Simulations of an Air Pollution Episode over Ningbo City in Winter (ID: IWAICMA2012-09)</td>
</tr>
<tr>
<td>Authors</td>
<td>Jiehui Song, Xu Liu, Haiyan He, Shaowen Shou, and Jinchao Zhang</td>
</tr>
</tbody>
</table>

<p>| 13:30-15:30| Session C1: Computational Science and Applications (15m/P)                                           |
| Session Chair | Dr. Wenqian Shang and Prof. Bin Jia                                                              |
| Title      | F-Parallel Reducts in the Information View (ID: ICS2012-08)                                      |
| Authors    | Lin Chen, Dayong Deng, and Chunping Wang                                                          |
| Title      | Advanced deep web crawler based on Dom (ID: ICS2012-13)                                          |
| Authors    | Weicheng Ma, Xiuxia Chen, and Wenqiang Shang                                                     |
| Title      | On a computational method for impact of compressible fluid (ID: 101)                             |
| Authors    | Shili Sun, Shiyun Sun, and Jian Hu                                                               |
| Title      | Information Based Model Selection Criterion for Binary Response Generalized Linear Mixed Models criterion for binary response generalized (ID: 35) |
| Authors    | Dalei Yu, Kelvin K. W. Yau and Chang Ding                                                        |</p>
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
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</thead>
<tbody>
<tr>
<td>15:30-16:00</td>
<td>Coffee/Tea Break</td>
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<tr>
<td>15:30-16:00</td>
<td>Best Poster Paper Competition Session (Chair: Prof. K.K. Lai and Prof. Lean Yu)</td>
<td>Title: An Adaptive Regularization Method for Ill-conditioned Problem Method for (ID: 67)</td>
<td>Authors: Ran Zhao and Baocong Jiao</td>
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<tr>
<td></td>
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<td>Title: A Fast NL Means De-noise Algorithm Based on Fuzzy Adaptive (ID: 72)</td>
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<td>Title: QP Representable Mahalanobis Ellipsoidal Learning Machine for Imbalanced Data Classification (ID: OMA2012-08)</td>
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<td>Title: A Smoothing Active-Set Newton Method for Constrained Optimization (ID: OMA2012-27)</td>
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<td>Title: An Approximate Algorithm for The Mixed Integer Nonlinear Programming (ID: OMA2012-36)</td>
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<td>Title: Multi-Objective Light Ray Optimization (ID: SCSA2012-32)</td>
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<td>Title: Research the Artificial Intelligent Algorithm for Positioning of Eyed Typhoon with High Resolution Satellite Image (ID: IWAICMA2012-08)</td>
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<td></td>
<td>Title: A Prediction Model Based on Evolving Neural Network Using Genetic Algorithm Coupled with Simulated Annealing for Water-level (ID: IWAICMA2012-10)</td>
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<tr>
<td>16:00-18:00</td>
<td>Session A2: Optimization Methods and Applications II (15m/P)</td>
<td>Title: A Modified DY Conjugate Gradient Algorithm with Sufficient Descent (ID: 40)</td>
<td>Authors: Ran Zhao and Baocong Jiao</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Title: On Simultaneously Nilpotent Fuzzy Matrices over Max-nilpotent Operations (ID: 53)</td>
<td>Authors: Wen-Wei Yang, Chia-Cheng Liu, Ching-Feng Wen, and Yung-Yih Lur</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Title: An Algorithm for Solving Linear Optimization Problems Subject to a System of Fuzzy Relational Inequalities with the Max-Einstein Composition to a System (ID: 57)</td>
<td>Authors: Chia-Cheng Liu, Jiing-Yurn Lyu, Yan-Kuen Wu, and Sy-Ming Gu</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Title: Image Change Detection Based on Minimum Mean Square Error (ID: OMA2012-20)</td>
<td>Authors: Yunchen Pu, Wei Wang, Qiongchong Xu</td>
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<td>Title: On Some Properties of Parametric Quadratic Programs Pertaining to Continuous-time Quadratic Fractional Programming (ID: 39)</td>
<td>Authors: Ching-Feng Wen, Yung-Yih Lur, Wen-Hsien Ho, and Jyh-Horng Chou</td>
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<tr>
<td></td>
<td></td>
<td>Title: A Solution to the Strongly Correlated 0-1 Knapsack Problem by a Binary Branch-and-Bound Algorithm (ID: 79)</td>
<td>Authors: José Crispin Zavala-Diaz, Jorge A. Ruiz-Vanoye and Ocotlán Diaz-Parra</td>
</tr>
<tr>
<td>Title</td>
<td>Authors</td>
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<tr>
<td>A Risk Model with Reservoir and Dividend Payments (ID: OMA2012-14)</td>
<td>Chunwei Wang, Zheng Xia, and Bo Xiao</td>
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<tr>
<td>Truncated Newton Method for Minimax Problems (ID: 86)</td>
<td>Junxiang Li, Bo Yu, and Shuting Zhang</td>
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<tr>
<td>Optimal Submission Problem in a Limit Order Book with VaR Constraints (ID: 58)</td>
<td>Na Song, Wai-Ki Ching, Tak-Kuen Siu and Cedric Yiu</td>
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<tr>
<td>An Improved EEMD-based Framework for CPI Forecasting (ID: 64)</td>
<td>Tao Xiong, Zhongyi Hu and Yukun Bao</td>
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<tr>
<td>The Life Insurance Actuarial Model of Paying m Times Annually with the Stochastic Interest Rate (ID: 97)</td>
<td>Niannian Jia and Baoceng Ni</td>
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<tr>
<td>Household Energy Consumption in China: Forecasting with BVAR Model Up to 2015 (ID: LCE-CF2012-01)</td>
<td>Qing Zhu, Yujing Guo, Qing Zhu, and Genfu Feng</td>
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<td>A Study on Relationships of Knowledge Spillover and Contract Stability and Profit-sharing within Enterprises of Cluster (ID: LCE-CF2012-02)</td>
<td>Juanli Lan, Lei Lei, and Ke Ding</td>
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<td>A comparison of ensemble methods in financial market prediction (ID: FORM2012-02)</td>
<td>Cheng Cheng, Wei Xu, and Jiajia Wang</td>
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<td>A Coordinated Dynamic Positioning Control Algorithm Based on Active Disturbance Rejection Control (ID: 55)</td>
<td>Mingyu Fu, Jianfang Jiao, and Lifei Hao</td>
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<td>The Reflexive Optimal Approximation Solutions of Matrix Equations AXB+CYD=E (ID: 36)</td>
<td>Heming Sun, Tingting Ye, and Jiawen Yang</td>
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<td>Statistical Inference on Progressive Type-II Censored Data from Extreme-value Distribution on Progressire Type-II (ID: 45)</td>
<td>Chang Ding and Dalei Yu</td>
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<td>System Dynamics Model of Unconventional Emergency Resource Coordination System (ID: 107)</td>
<td>Xuping Wang, Qi Wang and Mingtian Chen</td>
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<td>A Nonparametric Trend Model for Henan’s GDP (ID: OMA2012-10)</td>
<td>Xinqian Wu, Wancai Yang, and Qianqian Mei</td>
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<td>Three-Dimensional Adaptive Guidance Law Based on Robust Control Method (ID: SCSA2012-26)</td>
<td>Hua-dong Yang and Yong-dun Yan</td>
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Notes:
1. In the parallel oral sessions, the session chairs can recommend one best paper in their session. In the same session, there will have at most one best paper. Please give a rank list for all session papers in case a certain paper cannot be ensured to be a best paper.
2. In the best poster paper competition session, the chairs can recommend at most one best poster paper.

June 26, 2012 (Tuesday)

9:00-10:00  Author Workshop (60m) (Coordinator: Prof. Lean Yu)

Topic: Understanding the Publishing Process in Scientific Journals
Presenter and Workshop Chair: Prof. Witold Pedrycz

10:00-10:40  Awarding and Closing Session (30m) (Chair: Prof. Lean Yu)

10:00-10:30  Awarding Ceremony (Conference Co-Chairs)
1. Distinguished Contribution Award for Workshop Organization
2. Best Paper Award
3. Best Poster Paper Award

10:30-10:40  CSO2013 Remarks by Prof. Youlin Shang, Local Organizing Co-Chair of CSO 2013
CSO2012 Closing

10:40-11:00  Coffee/Tea Break

11:00-12:00  One-Hour Tour to HEU History (60m)

1. HEU History Introduction (History Illustration)
2. HEU History Tour (Watch in-Kind)

12:00-13:00  Lunch/Rest

13:00-  Three-Day Wudalianchi Tour by Conference and Local Travel Agency

June 27-28, 2012 (Wednesday-Thursday)

8:00-17:00  Three-Day Wudalianchi Tour by Conference and Local Travel Agency
Keynote Speakers

Content-Rich Information Granules as Fundamental Design Constructs of Intelligent Systems

Prof. Witold Pedrycz
Department of Electrical and Computer Engineering, University of Alberta, Canada

Abstract

We have been witnessing an emergence of information granules being treated as conceptually justifiable constructs of numerous architectures of intelligent systems. They have established predominant visibility in various human-centric architectures.

To fully benefit from the use of information granules and the ensuing constructs, such granules have to capture the nature of the data as well as effectively contribute to the functionality of the designed systems. Clustering (including also fuzzy clustering, rough clustering, and algorithms exploiting other formal frameworks of information granularity) offers a comprehensive framework for building data-driven constructs. In spite of the existing plethora of the optimization methods currently used in clustering, there are several limitations in the conceptual setup of the methodology as well as limitations of the resulting constructs (clusters). There is a need for a paradigm shift: information granules have to be developed in the presence of sources of knowledge of different nature (quite often auxiliary to the knowledge residing within locally available data). This gives rise to the concept of content-rich information granules.

A fundamental question emerges about an efficient conceptual setup in which the sources of auxiliary knowledge, especially functionality requirements, may contribute to the designed systems. Both the content and the underlying semantics of obtained information granules require a thorough exploration so that their properties could be effectively utilized in the realization of the system.

The objective of the talk is to discuss fundamental ways of augmenting the existing conceptual and algorithmic setup of building information granules (clusters) by accommodating domain knowledge and forming mechanisms of usage of the content of information granules in system design. Specific schemes of condition-based clustering, collaborative clustering and higher-order clustering are elaborated on. A detailed study is presented for rule-based systems (and fuzzy rule-based systems, in particular) designed for nonlinear systems and classification problems.
Short Introduction

Dr. Witold Pedrycz is Professor and Canada Research Chair (CRC - Computational Intelligence) in the Department of Electrical and Computer Engineering, University of Alberta, Edmonton, Canada. He is also with the Systems Research Institute of the Polish Academy of Sciences, Warsaw, Poland. In 2009 Dr. Pedrycz was elected a foreign member of the Polish Academy of Sciences. His main research directions involve Computational Intelligence, fuzzy modeling and Granular Computing, knowledge discovery and data mining, fuzzy control, pattern recognition, knowledge-based neural networks, relational computing, and Software Engineering. He has published numerous papers in this area. He is also an author of 15 research monographs covering various aspects of Computational Intelligence and Software Engineering. Witold Pedrycz has been a member of numerous program committees of IEEE conferences in the area of fuzzy sets and neurocomputing.

Dr. Pedrycz is intensively involved in editorial activities. He is an Editor-in-Chief of Information Sciences and Editor-in-Chief of IEEE Transactions on Systems, Man, and Cybernetics - Part A. He currently serves as an Associate Editor of IEEE Transactions on Fuzzy Systems and a number of other international journals. In 2007 he received a prestigious Norbert Wiener award from the IEEE Systems, Man, and Cybernetics Council. He is a recipient of the IEEE Canada Computer Engineering Medal. In 2009 he has received a Cajastur Prize for Soft Computing from the European Centre for Soft Computing for “pioneering and multifaceted contributions to Granular Computing”.
Multi-Agent Systems: Nexus of All Realities in Systems and Control

Prof. Jinhu Lü

Academy of Mathematics and Systems Science, Chinese Academy of Sciences
School of Electrical and Computer Engineering, RMIT University, Australia

Abstract

Multi-agent systems are ubiquitous in the world. A multi-agent system consists of multiple interacting intelligent agents. This talk aims at providing a theoretical framework for the modeling, analysis, control, and applications of multi-agent systems. This is the case not only in deeper and wider theoretical studies but also in many newly found real-world applications. It calls for continued efforts from the communities of engineering, physics, and applied mathematics as well as biological and social sciences.

Short Introduction

Jinhu Lü is Professor of the Academy of Mathematics and Systems Science, Chinese Academy of Sciences. He is also an Australian Research Council Future Fellow and Professor in the School of Electrical and Computer Engineering, Royal Melbourne Institute of Technology (RMIT) University, Australia. He was a Visiting Fellow in Princeton University, USA from 2005 to 2006. He is now serving as the Elect-Chair of the Technical Committee of Neural Systems and Application and Track-Chair of the Technical Committee of Nonlinear Circuits and Systems in the IEEE CASS. He served and is serving as Editors in different ranks for 10 SCI journals, including the PLoS Computational Biology, IEEE Transactions on Circuits and Systems I: Regular Papers, IEEE Transactions on Circuits and Systems II: Brief Papers, IEEE Transactions on Neural Networks, and IEEE Transactions on Industrial Informatics. He is the Program Co-Chair of the 9th Asian Control Conference, the Co-Chair of International Workshop on Complex Systems and Networks in 2010 and 2011, and the International Publicity Co-Chair of the 37th Annual Conference of the IEEE Industrial Electronics Society.

His research fields include complex systems and complex networks, nonlinear circuits and systems. He has published 2 research monographs and more than 100 international journal papers, received more than 4800 SCI citations with h-index 35, including 15 journal papers with more than 100 SCI citations, and 19 ISI Highly Cited Papers (2001-2011). He also has two authorized patents. Prof. Lü received the prestigious Second Prize of National Natural Science Award from the Chinese government in 2008, the Australian Research Council Future Fellowships Award in 2009, the First Prize of Sciences and Technology Award from the Beijing City of China, the First Prize of Natural Science Award from the Ministry of Education of China in 2007, the 11th Science and Technology Award for Youth of China, the National Best PhD Theses Award from the Ministry of Education of China in 2004. Moreover, he was granted the National Natural Science Fund for Distinguished Young Scholars, the 100 Talents Program from the Chinese Academy of Sciences, and the Scopus Young Researchers Award.
Some Optimization Problems in Program Trading

Prof. Jerome Yen

Hong Kong University of Science and Technology
Tung Wah College, Hong Kong

Abstract

Program Trading or Algorithm Trading has become more and more important in various financial markets, for example, over fifty percent of trades of Nasdaq were done by Program Trading. To have good performance, the P&L, in program trading, the most important is to have good and robust trading strategies.

A trading strategy is created by taking trading concepts, ideas, and observations about the market, such as movements of assets like volatility or correlation, liquidity or trading cost, trading volume, potential market impact, etc., then implementing them into a trading system. Traders always search for optimal solutions in their daily trading and they are actually performing implicit optimization. So, traders often tried to incorporate such knowledge or rules into the trading system and optimization was always the key consideration. Such optimization is even more important to the high-frequency trading (HFT) that the scope of parameters involved is much broader, for example, size of trades, holding period, micro-structure issues, etc.

In my talk, I will discuss some optimization problems in program trading of equities, futures, and options. I will also discuss some problems that faced by researchers and practitioners in high-frequency trading. "Is that possible to use HFT in China equities or futures markets?" was a question been asked frequently. With my limited knowledge and experience, I will not be able to answer this question directly. But, instead, I will try to point out some differences between the financial markets in China and other countries.

Short Introduction

Professor Jerome Yen is currently a Professor in the Department of Accounting and Finance and an Adjunct Professor in the Department of Finance at Hong Kong University of Science and Technology (HKUST). Before joining Tung Wah College, Prof. Yen was the coordinator of BSc in Quantitative Finance at HKUST where most of its graduates went to investment banks like Goldman Sachs and Morgan Stanley.

He received his PhD. in 1992 in Systems Engineering and Management Information Systems from the University of Arizona. His Ph.D. research was conducted in the Economic Science Lab. (ESL) that led by Prof. Vernon Smith – a Nobel Prize Laureate. His dissertation studied the short-term and long-term behavior of traders in Oligopoly market where individuals' decisions did affect the market price and so do the pay-offs of all the participants.

He has taught at leading institutions, such as, Carnegie Mellon University (CMU), the
University of Arizona, the University of Hong Kong (HKU), and the Chinese University of Hong Kong (CUHK). He is the president of the Asia Association of Financial Engineering. On such capacities, he contributed in teaching and research as well as building a bridge between the academia and the industry.

At HKUST, he established the Financial Trading Lab with supports from Reuters and HP, to provide students an environment that similar to Wall Street, where students learned how to develop, price, and trade equities, foreign exchange, options, and structured products like Quanto and Accumulator. His current research includes derivatives and exotic options trading strategies. The models and systems, such as Volatility Term Structure and Volatility Surface, that Prof. Yen and his research partner, Prof. K. K. Lai of City University of Hong Kong, developed to forecast the futures movement and volatility of Hang Seng Index (HSI) have been tested and adopted by firms in Hong Kong.

Besides the academic experience, Prof. Yen was a senior vice president (SVP) and deputy chief risk officer at Cathay Financial Holdings (CFH), which was the largest financial holding company in Taiwan with assets under management (AUM) greater than USD 150 Billion and also a Forbes 500 and Fortune 500 firm. He led the “Quant” team at the Cathay Union Bank, one of the subsidiaries of CFH, to develop trading strategies for equities and derivative markets.
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Shushang Zhu, Fudan University, China
Workshop Information

1. The 4th International Workshop on Computational Transportation Science (CTS 2012). Workshop Co-Chairs: Prof. Bin Jia, Dr. Tianliang Liu and Dr. Qiong Tian

2. The 3rd International Workshop on Spatial Computational Sciences and Applications (SCSA 2012). Workshop Co-Chairs: Dr. Liqiang Liu, Dr. Gang Li and Dr. Yuxin Zhao

3. The 2012 International Workshop on Optimization Methods and Applications (OMA 2012). Workshop Chair: Prof. Youlin Shang

4. The Second Workshop on Computational Service Science (CSS 2012). Workshop Co-Chairs: Dr. Jun Wu and Dr. Huajun Tang

5. The 2012 International Workshop on Computational Business Business Science (CBS 2012). Workshop Co-Chairs: Dr. Yanhong Qin and Prof. Guangxing Wei

6. The Second International Workshop on Low-Carbon Economy and Carbon Finance (LCE-CF 2012). Workshop Co-Chairs: Dr. Guoxing Zhang, Dr. Jian Chai and Dr. Li Gong


8. The 2nd International Workshop on Risk Management: Theory, Methods and Applications (RMTMA 2012). Workshop Chair: Dr. Gang Xie

9. The 4th International Workshop on Intelligent Computational Science (ICS 2012). Workshop Co-Chairs: Dr. Wenqian Shang and Dr. Haibin Zhu

10. The 2nd International Workshop on Financial Optimization and Risk Management (FORM 2012). Workshop Chair: Dr. Wei Xu


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# Technical Co-Sponsors

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<td>Technical Committee on Business Intelligence of Chinese Society of Management Modernization, China</td>
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Information for Conference Arrangements

1. **Registration Place:** (1) 14:00-18:30, June 24, 2012: The first floor of Longhai Century Hotel (Address: No. 88, Songshan Road, Nangang District, Harbin, Heilongjiang Province, China); (2) 8:00-11:30, June 25, 2012: Outside of Multi-Function Lecture Hall, Sailing Conference Center, Harbin Engineering University (Address: No. 145, Nantong Street, Nangang District, Harbin, Heilongjiang Province, China).

2. **Conference Venue:** (1) Open/Keynote/Awarding/Closing Session: Multi-Function Lecture Hall (Room 425), Sailing Conference Center, Harbin Engineering University (HEU); (2) Parallel Session A: East Sea Hall (Room 450), Sailing Conference Center, HEU; (3) Parallel Session B: South Sea Hall (Room 445), Sailing Conference Center, HEU; (4) Parallel Session C: Yellow River Hall (Room 435), Sailing Conference Center, HEU.

3. **Hotel:** The conference hotel is Longhai Century Hotel (four-star hotel), where is located at No. 88, Songshan Road, Nangang District, Harbin, Heilongjiang Province, China. It is about 40km to Harbin Taiping International Airport and 4.5km to the railway station. The local organizers will arrange one or two buses to pick up participants between hotel and conference place.

4. **Meal:** The conference Lunch/Dinner/Banquet will be arranged in Longhai Century Hotel, all participants enter into the restaurant by Lunch/Dinner/Banquet tickets issued by the Conference Organizer.

5. **Travel:** The three-day Wudalianchi Tour will be started at 1:00pm, June 26, 2012 from Harbin to Wudalianchi after conference. If you would like to attend the three-day Wudalianchi tour, please tell the conference service group and pay the travel fees to local travelling agency when you register at registration desk.