DATA MINING NEWS

Volume 7   **January 2014**

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A Message from the Chair

Hi Everyone! First, I would like express my sincere gratitude for your strong support of the INFORMS Section on Data Mining (DM) this year! Over the last 10 years, the section has grown dramatically to over 400 members and has become one of the most active communities in INFORMS. This growth has been due to the efforts of the past advisory boards, section chairs, secretary-treasurers, council members, webmaster-newsletter editor, session chairs, and other active members.

Last year, as the section chair, I was fortunate to work with Dr. Myong K. (MK) Jeong (Chair-Elect & Cluster Chair), Dr. Durai Sundaramoorthi (Secretary/Treasurer), four council members (Dr. Onur Seref, Dr. Hui Yang, Dr. Cynthia Rudin, and Dr. Sung Won Han), and Dr. Mustafa Baydogan (webmaster-newsletter editors). Without their efforts, we could not have had such a successful year for our section.

At the INFORMS Annual Meeting in Minneapolis this year, the DM cluster sponsored 27 technical sessions. Special thanks go to the Cluster Chair, Dr. Myong K. (MK) Jeong, for putting together this comprehensive cluster. Thank you to all session chairs who organized high quality sessions for the cluster this year. More information about the cluster is included in an article below.

Dr. Chun-An Chou served as the chair of the DM Best Student Paper Award competition. Among 19 papers submitted, the top four papers were selected for the presentation at the DM Best Student Paper Competition session. Congratulations to the winner Benjamin Letham and the other three finalists Chitta Ranjan, Zhaoran Wang, and Zhengyi Zhou. Thank you to Dr. Chou and the team of reviewers for their work in selecting the

finalists and winner. More information about the finalists is included in an article below.

In conjunction with the INFORMS Annual Meeting, the eighth annual Data Mining-Health Informatics workshop was held. Dr. Onur Seref, Dr. Nicoleta Serban, and Dr. Daniel Zeng invested a tremendous amount of time and effort to organize the workshop which was reflected in a high quality event. This year, the DM section, the College on Artificial Intelligence (AI) and Health Applications Society (HA) co-sponsored the workshop. More information about the workshop is included in an article below.

In July 2013, the second International Symposium on Systems Informatics and Engineering (ISSIE) was held in Xi'an, China. The general chairs were Richard Wang, Kwok Tsui, and Wei Huang. The program chairs were Rong Duan, Gengzhong Feng, and Jing Li. The symposium was sponsored by the National Science Foundation of China, the Systems Engineering Society of China, Xi'an Jiaotong University, the City University of Hong Kong, the MIT Information Quality Program, and the DM section. There were four keynote presentations and 81 regular presentations.

Again, it has been a great pleasure to work with all the officers this year. I am sure that the DM section will have another great year in 2014 with the new slate of officers: Dr. Myong K. (MK) Jeong, Chair, Dr. Art Chaovalitwongse, Chair-Elect, and Dr. Shawn Mankad, Secretary/Treasurer.

Paul Brooks

Virginia Commonwealth University

Review of 2013 INFORMS Annual Meeting

The 2013 INFORMS Annual meeting was held in Minneapolis, Minnesota October 6-9, 2013. The Data Mining Section sponsored 27 sessions, chaired by Dr. MK Jeong. The sessions covered a variety of topics including data-integrated simulation modeling, statistical modeling for adaptive dynamic programming, high dimensional statistical inference, data mining for business, and integration of data mining and control charts. Dr. Art Chaovalitwongse will take the lead in organizing the cluster for the INFORMS Annual Meeting next year. At the business meeting, the Secretary/Treasurer Dr. Duria Sundaramoorthi reported that the section continues to grow in membership and is in good financial health.

2013 Data Mining Business Meeting in Minneapolis, MN

Review of the 8th Workshop on Data Mining and Health Informatics

The Data Mining (DM), Artificial Intelligence (AI), and Health Applications (HA) Subdivisions of the Institute for Operations Research and Management Sciences (INFORMS) jointly organized the 8th Workshop on Data Mining and Health Informatics (INFORMS DM-HI 2013) on October 5, 2013 at Minneapolis, MN, in conjunction with the 2013 INFORMS Annual Conference. A total of 28 papers were selected for presenting in two parallel all-day sessions at the workshop. The detailed session information and abstracts are available on the INFORMS website

(http://meetings.informs.org/minneapolis2013/dmhi.html).

Prof. Dorit S. Hochbaum from University of California, Berkeley and Prof. Panos M. Pardalos from University of Florida gave two special keynote talks on "An effective combinatorial optimization algorithm for data mining and clustering" and "Data Mining and Knowledge Discovery in Dynamic Networks".

Dr. Dorit S. Hochbaum from University of California, Berkeley gave a keynote talk on "An effective combinatorial optimization algorithm for data mining and clustering" at the 8th Workshop on Data Mining and Health Informatics in 2013.

The program co-Chairs of this workshop were Onur Seref (Virginia Polytechnic Institute and State University), Nicoleta Serban (Georgia Institute of Technology), and Daniel Zeng (University of Arizona). The Management Committee consisted of Kwok-Leung Tsui (City University of Hong Kong), Victoria Chen (University of Texas at Arlington), Dolores Romero Morales (University of Oxford) and Helen Hao Zhang (University of Arizona).

Dr. Panos M. Pardalos from University of Florida gave a keynote talk on "Data Mining and Knowledge Discovery in Dynamic Networks" at the 8th Workshop on Data Mining and Health Informatics in 2013.

Review of the 5th Annual INFORMS Data Mining Student Paper Award

There were an increased number of submissions to the INFORMS Data Mining Best Student Paper competition this year over past years. A total of 19 papers were submitted and these papers were evaluated by 5 reviewers. Dr. Chun-An Chou organized the competition this year.

The top four papers were selected for the presentation at the 2013 INFORMS Annual Meeting in Minneapolis, Minnesota. The information on the four finalists and their papers is as follows.

- Benjamin Letham: An Interpretable Stroke Prediction Model Using Rules and Bayesian Analysis, MIT

- Chitta Ranjan: Flow Modeling and Prediction of Heterogenous Patients Using Semi-Markov Mixture Clustering, Georgia Tech

- Zhaoran Wang: An Inexact Homotopy Method for Nonconvex High Dimensional Sparse Learning Problems, Princeton

- Zhengyi Zhou: A Spatio-Temporal Mixture Model for Point Processes with Application to Ambulance Demand, Cornell

The winner of the Best Student Paper Award, **Benjamin Letham** at MIT, was announced at the Data Mining business meeting.

The award was established in 2009 to increase the involvement of students in the section, facilitate networking among students with interest in data mining, and recognize excellent student work.

Announcements

Faculty Opening Positions:

- **University of Iowa**

The Department of Mechanical and Industrial Engineering (MIE) invites applications and nominations for a tenure-track Assistant Professor position in industrial engineering in the area of big data analytics, effective Spring or Fall 2014. Candidates for senior ranks will also be considered. An earned doctorate in industrial engineering or a related discipline is required. Candidates with interests in analysis of large data sets with applications in medicine,

energy, and industry are particularly encouraged to apply. Desirable skills include data-driven modeling; development of algorithms and software for medical, transportation, energy, and industrial applications; and analysis of large, distributed, and heterogeneous data sets.

The position offers collaborative opportunities with departments, centers, and institutes in engineering and health sciences, e.g., Center for Computer-Aided Design, IIHR--Hydroscience & Engineering, Iowa Institute for Biomedical Imaging, Institute of Clinical and Translational Sciences, and participating in bioengineering research programs across in the University of Iowa hospital s and Clinics.

The Mechanical and Industrial Engineering Programs offer excellent opportunities for multidisciplinary collaboration with various engineering and science departments and research centers. The MIE Department is a home of innovative research and innovative teaching activities. Faculty responsibilities include effective classroom teaching of undergraduate and graduate courses in industrial engineering or mechanical engineering, developing curricula and laboratories, supervising M.S. and Ph.D. students, publishing journal articles, and establishing and maintaining an externally funded research program that contributes to the overall goals of the College of Engineering. Effective communication and leadership skills are vital. Teaching experience is desirable. Salary and benefits are excellent.

Interested candidates will be asked to submit a letter of application with a statement of research and teaching interests, the names and addresses of three references, and current curriculum vitae. Applications will be reviewed starting October 18, 2013; however, they will be accepted until the position is filled. The University of Iowa is an Equal Opportunity/Affirmative Action Employer. The College of Engineering is committed to building a welcoming and inclusive academic community with the support systems for all persons to thrive and strongly encourages applications from women and minorities.

Further information is available at https://jobs.uiowa.edu/faculty/view/63290.

- **Hong Kong University of Science and Technology**

The Department of Industrial Engineering and Logistics Management at HKUST invites applications for tenure-track junior faculty positions, one in Engineering Statistics and Data Analytics, and one in Product Design, Sustainable Design. We are seeking candidates with strong methodology background and an interest in interdisciplinary research. Applicants should have a PhD degree in a related discipline, and demonstrate potential for excellence in both teaching and research.

HKUST is ranked first in Asia by QS World University Rankings three years in a row and its Engineering School has also been ranked among the world's top 25 since 2004. The Department has attained international recognition and we have a strong group of researchers in two main areas, Design and Manufacturing (including Design, Quality and

Ergonomics), and Logistics Management (including Operations Research, Operations Management and Financial Engineering). Located in the gateway to China and the most dynamic logistics hub of Asia, the Department is expected to experience rapid growth in the near future.

Salary is competitive and will be commensurate with qualifications and experience. Fringe benefits include annual leave, medical/dental benefits. Housing benefits will be provided where applicable.

Applications with a full CV, statement of research and teaching, transcript, and names of three referees, should be directed to the Faculty Search Committee by email to <ielm@ust.hk>. More information about the Department can be found at http://www.ielm.ust.hk.

Conferences:

- **Conference on Business Analytics in Finance and Industry (BAFI), Santiago, Chile, January 6 - 8, 2014**

The conference on Business Analytics in Finance and Industry, BAFI 2014 is aimed to bring together researchers and practitioners to present their recent developments and to identify future challenges in this novel combination of research areas. For this purpose, we are looking for original contributions on topics related to Business Analytics in Finance and Industry.

Further information is available at http://www.bafi.cl/

- **"Big Data Analytics" for the IFORS 2014 in Barcelona, Spain (July 13-18)**

Topics of interest include, but are not limited, big data or data mining research in the areas of machine learning algorithms, statistics, computer science, database management, optimization, and various applications. If you're interested in organizing the session or presenting a talk, please send an email to Seoung Bum Kim (sbkim1@korea.ac.kr) by November 30, 2013. More information can be found from the conference website at http://www.ifors2014.org/

Call for Papers:

- **Special Issue on Business Analytics in Finance and Industry**

This special issue is aimed to present recent developments and to identify future challenges in this novel combination of research areas. For this purpose, we are looking for original contributions on topics related to Business Analytics and Intelligent Optimization in finance and industry.

Further information is available at https://www.informs.org/content/download/279239/2671722/file/BAFI-2014SpecialIssue-IDA.pdf

- **Volume 2 of Contemporary Perspectives in Data Mining**

The series, Contemporary Perspectives on Data Mining, is composed of double blind refereed scholarly research methods and

application papers in the area of data mining. This series will be targeted both at the academic community, as well as the practitioner.

This series will focus on, but not limited to:

(1) Statistical and mathematical techniques used to discover knowledge from vast amounts of data. (The knowledge is extracted from this data by examining the patterns of the data, whether they are associations of groups or things, predictions, sequential relationships between time order events or natural groups.)

(2) data mining applications, as seen in finance (banking, brokerage, insurance), marketing (customer relationships, retailing, logistics, travel), as well as in manufacturing, health care, fraud detection, homeland security, law enforcement, science and engineering.

Please send an abstract of your research/application work to lawrencekd@aol.com by January 30, 2014. The deadline for the final paper will be April 30, 2014.

Further information is available at https://www.informs.org/content/download/279455/2673289/file/Volume%202%20of%20Contemporary%20Perspectives%20%20in%20Data%20Mining.pdf

• **Annals of Operations Research - Special Volume on Data Mining and Analytics**

The decision-making capabilities of operations research methods can enhance the learning and representation of patterns and structure in data. Vice-versa, the characterizations identified and modeled by data mining and analytics can improve the efficiency of decision-making algorithms. This special volume seeks novel applied and methodological papers focused on any aspect of the interplay between operations research and data mining or analytics. Methodologies include, but are not limited to business analytics, web analytics, learning analytics, intelligent systems, pattern recognition, kernel methods, computing, simulation, optimization, operations management, and natural language processing. Application areas include, but are not limited to health care, environmental sciences, energy and power systems, transportation and logistics, emergency management, manufacturing, supply chain management, marketing, risk assessment, and portfolio analysis.

Further information is available at https://www.informs.org/content/download/282770/2715741/file/AOR-CFP-DMA-2013.pdf

Schedule of Upcoming Annual INFORMS Meetings

2014
November 9-12, 2014
Hilton San Francisco
San Francisco, CA.

2015
November 1-4, 2015
Pennsylvania Convention Center & Marriott
Philadelphia Downtown
Philadelphia, PA.

2016
November 13-16, 2016
Music City Center & Omni Nashville
Nashville, TN.

Celebrating Member Achievements

Dr. Young-Seon Jeong joined Department of Industrial Engineering at Chonnam National University as an assistant professor.

Dr. Mustafa Baydogan joined the Industrial Engineering Department of Boğaziçi University as an assistant professor.

Dr. Kaibo Liu joined the Department of Industrial and Systems Engineering at University of Wisconsin-Madison as an assistant professor. He was the recipient of ASQ 2013 Richard A. Freund International Scholarship.

Section Officers (2012 – 2013)

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AT&T Lab

Seoung Bum Kim (2010-2011)
Korea University

Jing Li (2011-2012)
Arizona State University

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Let's Share Your Achievements

Please send your achievements – appointment, awards, grants, promotions, and others to **Kaibo Liu** at kliu8@wisc.edu

Data Mining Section Website

Please visit our website at http://dm.section.informs.org/.