INFORMS DATA MINING

NEWSLETTER December 2018

A Message from the Chair

Dear INFORMS Data Mining members,

I would to begin with thanking each and every one of you for your continued strong support for our section in 2018. I am proud to report that our section has doubled the outreach of its prolonged activities, some performance metrics are even tripled last year. We can safely state that 2018 has been a year of records broken! Due to your contributions, our section has significantly grown in the past year not only with respect to registered members but also in terms of various activities conducted. I am very excited to report that, in turn, we are now qualified to apply to become a society of INFORMS! The application process has already been initiated and our council will closely follow up with this process in the year(s) to come.

In 2018, as the section Chair, I was fortunate to work with a great team: Dr. Duraikannan Sundaramoorthi (Vice Chair), Dr. Matthew Lanham (Secretary/Treasurer), four council members Dr. Cem Iyigun, Dr. Ramin Moghaddass, Dr. Shouyi Wang, Dr. Tong Wang; and Dr. Ali Dag as the webmaster & newsletter editor. Without this team's immense efforts and involvement, we could not have had such a

successful year. We have achieved quite a bit of things some of which are brand new to our section. First off, we have initiated a new tradition by conducting monthly 1 to 2-hour online meetings and discussed to strategize each activity to be performed in the year to get ready well for the INFORMS Annual Meeting. It is due to this camaraderie and decency in decision making, involvement, and partaking in organizing events that we could achieve a great deal in 2018. I hope this turns out to be the norm in the years to come. What follows next is some achievement to exemplify. Our section now has a new officially approved logo by INFORMS as seen at the very top of this newsletter.

Compared to last year, the membership has increased by 19.13% as of Q3 of 2018 and has reached 523 members. This has sustained our section as the largest Data Mining community in the world for the business schools and IEs.

As of Q3 of 2018, our fund balance has also increased by +150% compared to last year and increased to over $20K. I want to thank our Treasurer Dr. Matt Lanham and all council members as well as registered members who have contributed to this tremendous growth.

Vice Chair of 2017-2018, Dr. Duraikannan Sundaramoorthi has organized 74 technical sessions within the Data Mining Cluster of INFORMS 2018 Annual Meeting in Phoenix, which is another record broken this year. I would

like to thank our past vice chair and all the session chairs for organizing such high quality sessions.

Co-Chairs of the 13th Data Mining & Decision Analytics (DMDA) Workshop, Dr. Ali Dag and Dr. Shouyi Wang have invested a lot of time and effort to organize the workshop as a pre-meeting event, which was reflected in a very successful event both in terms of quantity and quality. I'd like to extend our gratitude to the generous sponsors: Manning School of Business-UMass Lowell, Tippie College of Business-Univ. of Iowa, Beacom School of Business-Univ. of South Dakota, Krannert School of Management-Purdue Univ., and College of Engineering-UT Arlington. The 13th DMDA Workshop has attracted more than 70 papers this year and also number of registered participants for this workshop have reached 100s. Considering all these, I sincerely congratulate the workshop co-chairs for their significant success.

Co-Chairs Dr. Tong Wang and Dr. Ramin Moghaddass, have successfully organized the INFORMS 2018 Data Mining Best Paper Contest. 66 submissions were received on various DM topics this year, with a 57% increase compared to the last year. At the first round of review, 30 reviewers helped to determine the top performing papers for presentation and 6 judges helped for evaluating the final presentations. I would like to thank Dr. Wang and Dr. Moghaddass, all the reviewers, and the judges for their efforts and contributions in selecting the finalists and winners. Three papers were awarded in the Best Applied Data Mining Paper category, congratulations to the winners: Salar Fattahi, Will Ma, and Angela Zhou. Two papers were awarded in the Best Theoretical Data Mining Paper category, congratulations to the winners: Max Biggs & Rim Hariss, and Mostafa Reisi Gahrooei.

INFORMS Data Mining section has also taken part in the development and proposal of a brand new journal, i.e. INFORMS Journal on Data Science.

We have also reached out to the INFORMS College of Artificial Intelligence before and during the INFORMS 2018 Annual Meeting for potential collaboration and relationship building to conduct a fully- or partially-joint workshop on data mining, data science, data analytics in order to reach a wider audience and to avoid duplication of efforts. We are hopeful to have more dialog about this in 2019.

In sum, it gave me immense pleasure to work with all the DM officers in 2017-2018 and I am sure another great year is awaiting Data Mining section with the new slate of officers: Dr. Duraikannan Sundaramoorthi as the Chair, Dr. Ali Dag as the Vice Chair, Dr. Matthew Lanham as the Secretary/Treasurer; council members Dr. Changqing Cheng, Dr. Cem Iyigun, Dr. Evangelos Triantaphyllou, and Dr. Shouyi Wang.

Sincerely,

Dr. Asil Oztekin, Manning School of Business-University of Massachusetts Lowell

Review of 2018 Annual Meeting

The 2018 INFORMS Annual meeting was held in Phoenix, Arizona on November 4-7, 2018. The Data Mining cluster was chaired by Dr. Durai Sundaramoorthi. The cluster included 74 technical sessions that spanned the entire length of the meeting. These sessions included joint collaborations with other subdivisions including Artificial Intelligence, Health Applications, Quality, Statistics, & Reliability, and Energy, Natural Resources & the Environment. It also included 36 sessions in the newly introduced practice curated track. The sessions covered a variety of topics including Machine learning, Big Data, Probability and Statistics, and interplay between data mining and optimization.

Applications included societal issues, business decision-making, manufacturing and operations management, production planning, bio-informatics, health care and etc. Dr. Ali Dag will take the lead in organizing the data mining cluster for the INFORMS Annual Meeting next year.

Review of the 13th Workshop on Data Mining & Decision Analytics

In conjunction with the 2018 INFORMS Annual Conference, 13th Workshop on Data Mining & Decision Analytics was organized as a day-long pre-meeting event on November 3, Saturday 2018 in Phoenix, Arizona. The Workshop Co-Chairs were Dr. Ali Dag (U of South Dakota) and Dr. Shouyi Wang (UT Arlington). The Management Committee consisted of Victoria Chen (UT Arlington), Matthew Lanham (Purdue University), Asil Oztekin (UMass Lowell), and Onur Seref (Virginia Tech). The three keynote speakers of the workshop were: Aaron Burciaga (Booz Allen Hamilton), Subodha Kumar (Temple University), and Roger Chiang (University of Cincinnati). 72 papers were accepted to be presented during the day-long workshop within four parallel tracks, 10 sessions in total. Some authors were invited to submit the extended versions of their papers to the Data Mining & Decision Analytics special issue at the *Annals of Operations Research* journal. More than 100 participants were registered to attend the workshop. The workshop also hosted the editors of *Production & Operations Management* journal Dr. Subodha Kumar and Dr. Saravanan Kesavan; editor of *Management Science* Dr. Manel Baucells; and the editor of *Journal of Operations Management* Dr. Suzanne de Treville within its special section entitled *"Editors' Panel: How to publish in top journals?"*

Further details about the workshop are available at the INFORMS website:

http://meetings2.informs.org/wordpress/phoenix2018/pre-meeting/#data-mining

Review of the 8th Data Mining Best Paper Award Contest

Dr. Tong Wang and Dr. Ramin Moghaddass organized the 8th Data Mining Best Paper Contest this year. Of the 66 submissions, 39 were considered in the "applied" category and the rest 27 were evaluated within the "theoretical" category. Nine finalists were selected (five for applied and four for theoretical). Information about the five finalists of the applied track are as follows:

- student: **Salar Fattahi**, University of California Berkeley (with Somayeh Sojoudi) *"Graphical Lasso and Thresholding: Equivalence and Closed-Form Solutions"*

- student: **Will Ma**, MIT (with David Simchi-Levi) *"Learning Valuation Distributions from Bundle Sales"*

- nonstudent: **Velibor V. Misic**, University of California Los Angeles (with Dragos Florin Ciocan) *"Interpretable optimal stopping"*

- student: **Long Zhao**, University of Texas Austin (with Deepayan Chakrabarti, and Kumar Muthuraman) *"A Better Linear Predictor Motivated by Robust Optimization"*

- student: **Angela Zhou**, Cornell University (with Nathan Kallus) *"Confounding-Robust Policy Improvement"*

Information about the four finalists of the theoretical track are as follows:

- *student:* **Max Biggs** and **Rim Hariss**, MIT *"Optimizing Objective Functions Determined from Random Forests"*

- *nonstudent:* **Negin Golrezaei**, MIT (with Max Lin, Vahab Mirrokni, and Hamid Nazerzadeh) "*Boosted Second Price Auctions*"

- student: **Mostafa Reisi Gahrooei**, Georgia Institute of Technology (with Hao Yan, Kamran Paynabar, and Jianjun Shi) "*Multiple Tensor-on-Tensor Regression: An Approach for Modeling Processes with Heterogeneous Sources of Data*"

- student: **Raquel de Souza Borges Ferreira**, Purdue University (with Arman Sabbaghi) "*Multi-scale Gaussian Process for Dynamic Evolution Prediction of Complex Systems*"

Review of the INFORMS Journal on Data Science

An effort to start a new INFORMS journal has been in the works since late 2017, which is led by Dr. Yu Ding (Texas A&M) with support from INFORMS Data Mining, Artificial Intelligence, Quality, Reliability & Statistics, and Simulation communities. The new journal's mission is to serve the INFORMS communities whose research interests and undertakings are primarily data-driven or data analytics-oriented. A preproposal was submitted in January 2018, followed by an invitation from the INFORMS Board in April 2018 to submit a full proposal. The full proposal required input from all involved communities, and the Data Mining Section Council Members and past leaders provided valuable feedback. The full proposal will soon be submitted in early January 2019 with the title for new journal being *INFORMS Journal on Data Science* (IJDS), and a decision will be made in March 2019 by the INFORMS Board. INORMS Data Mining Section has nominated the following colleagues for the Editor-in-Chief: Dr. Victoria Chen (UT Arlington), Dr. Andrew Kusiak (Univ. of Iowa), Dr. Ramesh Sharda (Oklahoma State Univ.), Dr. Galit Shmueli (National Tsing Hua Univ.), and Dr. Nick Street (Univ. of Iowa). For the Editorial Review Board, the following colleagues were nominated: Dr. Paul Brooks (Virginia Commonwealth Univ.), Dr. Asil Oztekin (Univ. of Massachusetts Lowell).The full proposal for this new journal is being prepared for submission by a six-person journal planning committee chaired by Dr. Jeff Wu (Georgia Tech Univ.) with other members as Dr. Alexandre Belloni (Duke Univ.), Dr. Yu Ding (Texas A&M Univ.), Dr. Barry Nelson (Northwestern Univ.), Dr. George Shanthikumar (Purdue Univ.), and Dr. Jianjun Shi (Georgia Tech Univ.). On the other hand, Dr. Onur Seref (Virginia Tech Univ.) has been coordinating the INFORMS Data Mining Section's involvement in this new journal proposal on behalf of the section and will continue updating the Data Mining community with news about the IJDS.

Announcements

- Dr. Victoria Chen, Dr. Seoung Bum Kim, Dr. Asil Oztekin are guest co-editing a special issue entitled "Data Mining & Decision Analytics" at the *Annals of Operations Research* journal with the deadline of December 31, 2019. For more information, please see the call for paper.

- Dr. Cynthia Rudin has been appointed as one of the Associate Editors of the *Management Science* journal for the Big Data Analytics department.

- Dr. Asil Oztekin has been appointed as one of the Associate Editors of *Decision Sciences* journal and has been handling the submissions within the Business Analytics department, particularly the

studies pertaining to data mining, text and web mining, social media analytics.

- Dr. Paul Brooks will be the Area Editor in Biology, Medicine, and Healthcare for the *INFORMS Journal on Computing* beginning in January 2019. Associate Editors are Dr. Archis Ghate, Dr. Maria Mayorga, and Dr. Andrew Schaefer. The area welcomes submissions that include advancements in OR methodology for addressing domain problems and submissions that present innovative applications of existing OR methodologies to address new problems. Submissions should include aspects of biology/medicine/healthcare, operations research/management science, and computer science/computing. Accepted papers will provide a significant contribution in one of these three or possibly provide a contribution in the combination. INFORMS Section on Data Mining members are encouraged to consider the journal as an outlet for their work!

- The 2019 INFORMS Business Analytics conference will be held in Austin, TX on April 14-16. If you have never attended this venue, this conference is more practitioner-focused as compared to the Annual Meeting. Industry's cream of the crop have attended this conference the past several years to present their analytics work, learn, network, and fill their firm's talent needs. The prestigious Franz Edelman Ceremony is held here each year to award the best achievement in Advanced Analytics, Operations Research, and Management Science. The Edelman Award is like our communities' Nobel Prize. Do we have any members out there that have been an Edelman Award winner or runners-up? If so, we would like to hear from you. If not, the future is bright, our section is becoming stronger each year, and maybe this year's winning team might decide to join our community. This year our section will be expanding our footprint to better connect with this audience in two ways. First, we are co-hosting the Freestyle OR Supreme Data Hackathon with Analyics2Go. Students and early career professionals that are less than 5-years past their graduation are invited to participate to compete for a $2K grand prize. Details of the hackathon will be posted on the conference website in early January. Secondly, the poster competition will now hold a poster competition. Posters will be judged via an industry track and a student track. Our section will be awarding $500 to the top student poster. The deadline to submit a poster abstract is January 29. If you have any questions about these events, you may contact our Secretary/Treasurer Matthew Lanham at lanhamm@purdue.edu as he is serving as co-organizer for both events.

2017-2018 INFORMS Data Mining Section Officers

Chair

Asil Oztekin
University of Massachusetts Lowell
Email: asil_oztekin@uml.edu

Vice Chair

Duraikannan Sundaramoorthi
Washington University in St. Louis
Email: sundaramoorthi@wustl.edu

Secretary/Treasurer

Matthew A. Lanham
Purdue University
Email: Lanhamm@purdue.edu

Council Members

Cem Iyigun
Middle East Technical University
Email: iyigun@metu.edu.tr

Ramin Moghaddass
University of Miami
Email: ramin@miami.edu

Shouyi Wang
University of Texas Arlington
Email: shouyiw@uta.edu

Tong Wang
University of Iowa
Email: tong-wang@uiowa.edu

Newsletter & Webmaster Editor

Ali Dag
University of South Dakota
Email: Ali.Dag@usd.edu

Co-Chairs of the 13th Workshop on Data Mining & Decision Analytics

Ali Dag & Shouyi Wang

Former Chairs of the INFORMS Data Mining Section

Kwok Tsui (2003-2004)
City University of Hong Kong

Tom Au (2004-2005)
AT&T Lab

Victoria Chen (2005-2006)
University of Texas at Arlington

Andrew Kusiak (2006-2007)
University of Iowa

Wei Jiang (2007-2008)
Stevens Institute of Technology

Xiaoming Huo (2008-2009)
Georgia Institute of Technology

Rong (Winnie) Duan (2009-2010)
AT&T Lab

Seoung Bum Kim (2010-2011)
Korea University

Jing Li (2011-2012)
Arizona State University

Paul Brooks (2012-2013)
Virginia Commonwealth University

M.K. Jeong (2013-2014)
Rutgers University

Art Chaovalitwongse (2014-2015)
University of Washington

Cynthia Rudin (2015-2016)
Duke University

Onur Seref (2016-2017)
Virginia Tech University

For more information about the INFORMS Data Mining Section, please visit our website at
https://connect.informs.org/data-mining/home