SEEDS “You Choose” Award Application

University of Miami Data Science Symposium

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Abstract

This SEEDS application is seeking funding to implement a day-long symposium on data science that can bring together data science researchers, faculty members, and students across various University of Miami’s departments and build interdisciplinary relationships and collaborations, encourage undergraduate students to pursue graduate studies on data science, and help graduate students interested in the theory and application of data science develop more diverse data science methods to research questions in engineering, medicine, social sciences, and business. The main activities include data science faculty presentations (8), two keynote talks by two data science leaders, and two networking sessions. The symposium will consist of 8 presentations from faculties from College of Engineering (2), School of Business (2), Department of Computer Science (2), Department of Medicine (1), and Department of Public Health Sciences (1). The PI will also invite two highly recognized external researchers in the field of data science to give a keynote speech at the symposium on the recent advancement of data science and its applications. Specific group of industry leaders will also be invited to attend the symposium. The symposium is expected to engage many disciplines across all three of University of Miami campuses.

Activity Goals

The symposium will provide a forum for technical exchange and professional networking among data science faculty and researchers, undergraduate, and graduate researchers across University of Miami. The PI will invite all relevant faculty and researchers across University of Miami to attend the symposium. The PI estimates that there is around 25 research faculty members across UM that are actively involved in Data Science or other related fields (e.g., Data Analytics and decision sciences). The symposium consists of faculty presentations, keynote talks, and networking sessions. Three main objectives of the symposium are summarized below:

A. Foster Collaboration Across UM Departments on Data Science: Researchers across the University of Miami have been actively working on various aspects of the data science over the last decade. I believe this symposium will be one of the first events at UM that can help connect students and faculties with others outside their own departments. In order to foster collaboration across researchers at UM and better coordinate for developing projects at a larger scale, the symposium is expected to have significant impact on facilitating internal collaborations and to seek the expertise on such an interdisciplinary discipline of data science. In addition, the workshop provides an opportunity for interdisciplinary exchange and networking opportunities that can potentially promote more collaborative programs and degrees in the future.

B. Encourage Undergraduate Students to Pursue Graduate Study in Data Science: Interested undergraduate students will develop a broad understanding of data science and its applications. Undergraduate students, depending on their interest and career goals, will
have the opportunity to see various applications of data science and will have the opportunity to interact with University of Miami’s researchers and faculty.

C. Graduate Students: Students get the opportunity to exchange research and discuss closely with other researchers in the other fields at UM how to apply data science to solve real-world problems. It will also help them develop new interdisciplinary ideas that discover knowledge in specific domains.

Brief Information on the two Internationally Renowned Speakers:

Cynthia Rudin is an associate professor of computer science, electrical and computer engineering, and statistics at Duke University. Previously, Prof. Rudin held positions at MIT, Columbia, and NYU. She is the recipient of the 2013 and 2016 INFORMS Innovative Applications in Analytics Awards, an NSF CAREER award, was named as one of the “Top 40 Under 40” by Poets and Quants in 2015, and was named by Businessinsider.com as one of the 12 most impressive professors at MIT in 2015. She also serves on committees for DARPA, the National Institute of Justice, the National Academy of Sciences, and AAAI.

David Madigan is currently the Executive Vice-President for Arts and Sciences, Dean of the Faculty, and Professor of Statistics at Columbia University. He previously served as Chair of the Department of Statistics at Columbia University, Dean of Physical and Mathematical Sciences at Rutgers University, Director of the Institute of Biostatistics at Rutgers University, and Professor in the Department of Statistics at Rutgers University.

Schedule

For implementation at the University of Miami, the symposium is designed as a one-day workshop (8 hour) with a one-hour lunch break and two short coffee breaks for networking. The symposium will host two guest speakers. The tentative outline for the symposium is as follows:

- 8:00-8:30 Welcome Note & Breakfast
- 8:30-9:30 Keynote Speech – Dr. Cynthia Rudin
- 9:30-10:30 Faculty Presentations 1&2
- 10:30-11:00 Networking Session
- 11:00-12:00 Faculty Presentations 3&4
- 12:00-13:00 Lunch
- 13:00-15:00 Faculty Presentation 5-8
- 15:00-15:30 Networking Session
- 15:30-14:30 Keynote Speech – Dr. David Madigan

Personal Goals
The PI’s research focuses mainly on developing novel mathematical models to generate insights and decision-making intelligence from large-scale datasets. This is a multidisciplinary and collaborative research domain that works at the interface of advanced computing, statistics, mathematics and emerging Internet technologies and media studies. The PI is also expanding his research ideas to cover more application settings and develop more multi-disciplinary models that are highly interpretable. The symposium will strengthen the PI’s inter-disciplinary and inter-institutional collaboration in Data Science and Big Data. It will facilitate new collaborative efforts to tackle emerging research challenges that the PI is actively working on (smart grid analytics and medical treatment). The PI is expected to establish a team of collaborators to generate innovative research ideas to apply for large-scale federal funding opportunities. The symposium is also designed to help PI hire a highly motivated undergraduate and graduate students for his research team.

**Budget and Budget Justification:**

The total budget requested for the symposium is **$2,500**.

**A. Breakfast + Refreshments for networking sessions:** $900

**B. Dr. Cynthia Rudin:** $800
   A round trip flight ($500) + one night hotel accommodation ($250) + lunch ($50)

**C. Dr. David Madigan:** $800
   A round trip flight ($500) + one night hotel accommodation ($250) + lunch ($50)
Ramin Moghaddass, PhD

CONTACT INFORMATION

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RESEARCH INTERESTS


ACADEMIC APPOINTMENTS

Assistant Professor Jul 2015 - Present
Assistant Director of the University of Miami’s Industrial Assessment Center - Supported by the Department of Energy
University of Miami, Coral Gables, USA
Department of Industrial Engineering

Postdoctoral Research Scholar Sept 2013 - June 2015
Massachusetts Institute of Technology (MIT), Cambridge, USA
Sloan School of Management
Operations Research and Statistics Group
Supervisor: Dr. Cynthia Rudin

Instructor Jan 2013 - Apr 2013
Financial Management for Engineers (with 140 students)
University of Alberta, Edmonton, Canada

EDUCATION

PhD, Engineering Management, Specialization in Operations Research June 2013
University of Alberta, Canada, GPA: 4/4
Supervisor: Dr. Ming Zuo

Master of Science, Industrial Engineering Jan 2008
Sharif University of Technology, Iran, GPA: 17.3/20

Bachelor of Science, Industrial Engineering Aug 2005
Sharif University of Technology, Iran, GPA: 14.5/20

REFEREED JOURNAL PUBLICATIONS


Submitted Journal Publications


Books

Book Chapters


Refereed Conference Papers

2. Ramin Moghaddass and Ming J Zuo, Multi-state degradation analysis for a condition monitored device with unobservable states, Proceedings of the International conference on quality, reliability, risk, maintenance, and safety Engineering, 549-554, Chengdu, China.


6. Ramin Moghaddass and Ming J Zuo, 2011, Optimal design of repairable k-out-of-n systems considering maintenance, Proceedings of the *Annual Reliability and Maintainability Symposium*, 1-6, Orlando, USA.


Awards & Scholarships
- Microsoft Azure Research Award (2017)
- Provost Research Award (2017)
- Donald Julius Groen Prize (by the safety & reliability group) (2016)
- Sackler Big Data Travel Award by National Academy of Sciences (2015)
- Natural Sciences and Engineering Research Council of Canada (NSERC) Postdoctoral Fellowship (2013) - Ranked 6th among 111 outstanding PhDs graduated in Canada from Civil, Industrial, and Mechanical Engineering
- IIE Golomski Award for Best Paper (2013)
- RR Gilpin Memorial Scholarship (2012)
- Profiling Alberta's Graduate Student Award (2012)
- Ralph Evans-P.K. McElroy Award for Best Paper (2012)
- GSA Professional Development Grant, University of Alberta, (2012)
- Queen Elizabeth II Graduate Scholarship (2012)
- University of Electronic Science and Technology of China Scholarship (2012)
- Petro-Canada Graduate Scholarship in Petroleum Engineering (2012)
- The Green and Gold Student Leadership and Professional Development Grant (2011)
- GSA Professional Development Grant, University of Alberta, (2011)
- Queen Elizabeth II Graduate Scholarship (2011)
- MITAC Accelerate Internship Grant (2010)
- Queen Elizabeth II Graduate Scholarship (2009)
- Ranked 8th among 3,874 participants in the national wide entrance exam for graduate studies in Industrial Engineering (2005)
- Ranked 426th among 128,154 participants in the university entrance exam for undergraduate studies (2001)

Presentations & Invited Talks
- An online condition monitoring method for wind turbine analytics, Concordia University, Montreal, Canada, (2014).
- Condition-based replacement policy for a device using interval-censored inspection data, Annual Reliability and Maintainability Symposium, Orlando, USA, (2013).

Professional Membership
- Institute of Industrial Engineers (IIE)
- The Institute for Operations Research and the Management Sciences (INFORMS)
- The Institute of Electrical and Electronics Engineers (IEEE)
- University of Miami Center for Computational Science (CCS)
- University of Miami Sylvester
- Comprehensive Cancer Center
- The Innovation in Medical Evidence Development and Surveillance (IMEDS) Research Laboratory
Professional Service

a. Professional Society Membership and/or Activities
- Board Member of IISE Quality Control and Reliability Engineering (QCRE) Division (2017-Present)
- Council Member of INFORMS Data Mining Section (2016-Present)
- Webmaster of INFORMS Data Mining Section (2015-2016) - Member of Informs - Member of IEEE - Senior Member of IISE

b. Conference Organization & Professional Contributions
- Co-chair and Organizer of the 12TH Workshop on Data Mining and Decision Analytics, INFORMS Annual Meeting (2017)
- Co-chair and Organizer of the 11TH Workshop on Data Mining and Decision Analytics, INFORMS Annual Meeting (2016)
- Chair & Organizer of session: Data Analytics and Reliability in Energy/Smart Grids, INFORMS Annual Meeting (2016)
- Chair & Organizer of session: Data Mining in Healthcare, INFORMS Annual Meeting (2016)

GRANTS AND CONTRACTS
1. An Integrated Approach To Utilize Large Scale Smart Meter Count Data for Anomaly Detection in Power Distribution Systems
   Role: PI
   Sponsor: Provost’s Research
   Date: 2017 (1 year)

2. University of Miami INDUSTRIAL ASSESSMENT CENTERS
   Role: Assistant Director (Director: Dr. Asfour)
   Sponsor: Department of Energy
   Date: 2016 - 2021

3. Big Data Analytics for Diagnosis and Prediction of Central Line-Associated Bloodstream Infections (CLABSI) at Critical Care Units
   Role: PI (joint work with Dr. Mary Hooshmand and UMH)
   Sponsor: Collaborative Research Exchange Forum at University of Miami
   Date: 2015 - 2016

4. University of Miami’s Faculty Startup Fund
   Role: PI
   Sponsor: University of Miami

Internship
- TransAlta, Calgary, Canada, Project "Data analytics using SCADA data for Wind Turbines"

Editorial Activities (Reviewers)
- Reliability Engineering and System Safety
- IIE Transactions
- IEEE Transactions on Reliability
- Engineering Economics
- Journal of Risk and Reliability
- European Journal of Operational Research
Certificates & Professional Development Hours

- Graduate Teaching and Learning Certificate (level 1), University of Alberta, 2013
- Tutorial Certificate of Reliability and Maintainability Symposium, 2012
- 3.6 IEEE Continuing Education Units, 2011 - 2012

Other Professional Experiences

Research Assistant, Sharif University of Technology, Sept 2006 - Aug 2008
Project: "Sequence Dependent Setup Times Scheduling Problems", Tehran, Iran

Research Assistant, Sharif University of Technology, Sept 2007 - July 2008
Project: "Assembly Line Balancing with Setup", Tehran, Iran.

Industrial Engineering Senior Consultant, 2006 - 2007
Pars Behin System, Tehran, Iran. Projects: Production planning, supply chain control and diagnostics, assembly line balancing, production control, warehouse software development, quality control, redesign of working stations considering ergonomic criteria.

Graduate Course Work

Computer Skills
Programming Languages (Python), Matlab & Simulink, Optimization Software (CPLEX), Statistical Software (R, Weka, Minitab), MS Office, Auto CAD

References
Available Upon Request