

New Jersey Big Data Alliance
6th Annual Symposium
**The Future of Big Data:
Artificial Intelligence and Machine Learning**
New Jersey City University
April 5, 2019

Agenda

Morning

- 8:30 - 9:30 **Registration - Main Lobby; Refreshments/Exhibits** Skyline Room (231-232)/2nd Floor Hallway
- 9:30 - 10:00 **Welcome** Skyline Room (231-232)
Dr. Peggy Brennan-Tonetta, President, NJBDA; Associate Vice President for Economic Development, Rutgers University
Dr. Bernard McSherry, Dean, School of Business, NJCU
Steven Fulop, Mayor, Jersey City
Chris Rein, Chief Technology Officer, New Jersey Office of Information Technology
- 10:00 – 10:45 **Keynote Address: Dr. Manish Parashar, Director, Office of Advanced Cyberinfrastructure, National Science Foundation (NSF) and Distinguished Professor of Computer Science, Rutgers University** Skyline Room (231-232)

Harnessing the Data Revolution: A Convergence of AI/ML, Data Science, and Advanced Cyberinfrastructure
Harnessing the Data Revolution (HDR), one NSF's 10 Big Ideas, is a national-scale initiative with the overarching goal of enabling new modes of data-driven discovery and innovation, allowing new fundamental questions to be asked and answered at the frontiers of science and engineering. The convergence of Machine Learning, Data Science and Advanced Cyberinfrastructure is fundamental to the HDR vision, and the emerging priorities and programs of NSF's Office of Advanced Cyberinfrastructure (OAC) are critical for catalyzing this convergence. This talk will highlight OAC's vision for transforming science in the 21st century and will present an overview of how its programs and investments align with, and enable, HDR.
- 10:45 – 11:15 **Break/Exhibits**
- 11:15 – 12:15 **Big Data Insights: Research in AI, Machine Learning and Big Data**
The latest academic research in AI/Machine Learning and big data by NJBDA member faculty will provide attendees with information on cutting edge advancements in the fields.

Research Session 1: Deep Learning *Classroom 201A*

Moderator: **Dr. Hieu Duc Nguyen**, Rowan University

- **Zero-Shot Learning With Error-Correcting Output Codes**
Shen-Shyang Ho, **Scott Zockoll**, Mathew Marchiano, Hieu Nguyen, Rowan University
- **Automating stroke lesion segmentation in brain images using a multi-model multi-path convolutional neural network**
Yunzhe Xue, NJIT; Fadi G. Farhat, NJIT; Olga Boukrina, Kessler Foundation, Anna M. Barrett, Kessler Foundation; Jeffrey R. Binder, Medical College of Wisconsin; Usman W. Roshan, NJIT; William W. Graves, Rutgers University
- **Robust Deep Learning Systems Integrated with Confidence Evaluation**
Dimah Dera, Ghulam Rasool, Nidhal Bouaynaya, Rowan University

Research Session 2: Big Data *Classroom 212*

Moderator: **Dr. Forough Ghahramani**, Rutgers University

- **Using Big Data to Measure the Reaction of Authoritarian States to Tools of Foreign Policy: Case Studies of North Korea and Russia**
Scott Fisher, New Jersey City University
- **Multi-faceted Information Seeking Leveraging Big Data**
Ruoyuan Gao, Souvick Ghosh, **Matthew Mitsui**, Chirag Shah, Rutgers University
- **Is Big Data Tactical or Strategic: Alignment between Big Data and Firm's Strategy & IS Governance**
Rashmi Jain, Abdullah Albizri, Katherine Ashley, Marina Johnson, Montclair State University

Research Session 3: Advanced Technologies and Applications *Classroom 215*

Moderator: **Dr. JD Jayaraman**, NJCU

- **Information Driven Behavior in Experimental Stock Market Simulations**
Jim Samuel, William Paterson University
- **Blockchain in Academia: Design of New Multi-Disciplinary Program**
Deniz Appelbaum, Abdullah Albizri, Rashmi Jain, Montclair State University
- **Machine Learning for Data Management in Extreme Scale Scientific Workflows**
Pradeep Subedi, Philip Davis, Manish Parashar, Rutgers University

11:15- 12:15 *Concurrent Workshop Lecture Hall (202)*

Jason G. Cooper, Managing Director, JCG, LLC.

Analytics Consulting Lifecycle - How to Design, Launch, and Complete a Business Analytics Project Successfully.

Analytics Consulting Lifecycle (Business Problem; Analytical Plan; Stakeholder Engagement; Storytelling; Actions). Focus on "asking the right questions" and probing to understand the business problem, as well as storytelling and analytics governance/rigor to encourage the business to act on results.

Afternoon

12:15 – 12:45 **Lunch, Exhibits, Networking** Skyline Room (231-232)/2nd Floor Hallway

12:45 - 1:45 **Dr. Sue Henderson, President, NJCU** Skyline Room (231-232)

Keynote Address: Dr. Chris White, Lab Leader, Algorithms, Analytics and Augmented Intelligence, Nokia Bell Labs

Small Data and Invisible AI

Data consumption is a fundamental challenge - extracting the *small data* from the torrent of data, with the goal of extracting key value. The future of AI will involve the development of applications, tools and models that address the basic building blocks of intelligence (perception, interpretation, meaning), prediction, and action, to *invisibly* augment human, machine and network tasks. Thus, the important question is how systems with limited resources can be optimized in industrial, enterprise, and importantly, human applications. All of this can only happen with a network that enables the connections that facilitate measurement, cognition, and control. The promise of the 5G network is not just about more and faster data to consumers - it's really about enabling optimization.

1:45 - 2:45 **Role of AI/Machine Learning in Driving Industry Performance and Innovation** Skyline Room
Moderator: Dr. Rashmi Jain, Professor, Feliciano School of Business, Montclair University.
Representatives from a diversity of industry sectors will discuss current and future applications of AI/Machine Learning to their operations and how these advances in technology can drive innovation, efficiency, and improved operations.

- **Water** - **Mark McKoy**, VP & General Manager, Suez North America
- **Transportation/Logistics** - **Mohammed Chaara**, Enterprise Director of Advanced Analytics, UPS
- **Energy** - **Karen Reif**, Vice President, Renewables and Energy Solutions, PSE&G
- **Advanced Manufacturing** - **Dennis Belanger**, Director, Operational Certainty, Emerson Automation Solutions

1:45 – 2:45 *Concurrent Workshop Lecture Hall (202)*

Alex Cunningham, Data Scientist, Church and Dwight Co, Inc.

Mining the “Amazon Data Forest”: Web Scraping and Sentiment Analysis of Amazon Reviews

In the digital world, knowledge is power. The ability to quickly and reliably understand the reaction of consumers to a brand’s online presence is critical to E-commerce success. In this hands-on tutorial, learn how to collect, clean, and analyze customer reviews from Amazon. The tutorial will utilize R, an open-source programming language -- no experience required!

2:45 – 3:30 **NJ Big Data Alliance- Building a Data-Enabled Ecosystem for NJ** Skyline Room (231/232)
Panelists will discuss the 2019 NJBDA report to the Governor’s Task Force on the Future of Work: *New Jersey Big Data Workforce Roadmap: An Examination of the Challenges and Opportunities for New Jersey’s Workforce to Successfully Compete in the Data-Driven Economy*

Peggy Brennan-Tonetta, Deborah Silver, Jessica Paolini - Rutgers University; Rashmi Jain, Ethne Swartz, Marina Johnson, Stanislav Mamonov, Chelsey Hill - Montclair State University

Moderator: Dr. Peggy Brennan-Tonetta, Associate VP Economic Development, Rutgers

- Overview of Technologies Impacting Workforce Today and in the Future - **Stanislav Mamonov**, Montclair University
- Impacts of Technological Advancements on Key Industry Clusters – **Peggy Brennan-Tonetta**, Rutgers University
- Skill Sets Needed for the Future Workforce - **Christie Nelson**, Rutgers University
- Analysis of Programs and Curriculum for Preparing a Future Workforce - **Rashmi Jain**, Montclair University
- Recommendations and Big Data Workforce Roadmap for New Jersey - **Jessica Paolini**, Rutgers University