Memphis DATA – A Data Science Conference

www.memphis-data.org

March 25-26, 2021
Fedex Institute of Technology
The University of Memphis
Memphis, TN, USA

Organized by the Data Science Cluster of the Fedex Institute of Technology
Sponsored by The University of Memphis

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Dr. Sudha Ram
Anheuser-Busch Endowed Chair of MIS, Entrepreneurship & Innovation, University of Arizona

Toward a Roadmap for AI Research & Development
(Everything Old is New Again)

Abstract: Prominent AI researcher and founder of Coursera, Andrew Ng, has said, "AI is the new electricity". Indeed, AI is powering profound changes in commerce, healthcare, defense, entertainment, and education. Yet only a few years ago the field of AI was met with derision in many quarters, and there is still much confusion about what the phrase "artificial intelligence" denotes. In this talk, I will provide a brief history of AI and speculate on its trajectory into the next decade - which, I will argue, will revisit unsolved problems from decades past. I will describe current efforts to expand and coordinate support by government and industry in AI R&D. These efforts include the development of a roadmap for AI research being led by the Community Computing Consortium with support from the National Science Foundation, and the development of the US National AI R&D Strategic Plan and Progress Report.

Biographical Sketch: Sudha Ram is Anheuser-Busch Endowed Professor of MIS, Entrepreneurship & Innovation in the Eller College of Management at the University of Arizona. She has joint faculty appointments as Professor of Computer Science, member of BIO5 Institute, and Institute for Environment. She is the director of the INSITE: Center for Business Intelligence and Analytics at the University of Arizona. Dr. Ram received a Ph.D. from the University of Illinois at Urbana-Champaign in 1985. Her research is in the areas of Enterprise Data Management, Business Intelligence, Large Scale Networks and Big Data Analytics. Her work uses different methods such as machine learning, statistical approaches, ontologies and conceptual modeling.

Dr. Ram has published more than 200 research articles in refereed journals, conferences and book chapters. She has received more than $60 million in research funding from organizations such as, IBM, Intel Corporation, SAP, Ford, Raytheon Missile Systems, US ARMY, NIST, NSF, NASA, and Office of Research and Development of the CIA. Dr. Ram served as the senior editor for Information Systems Research, and is currently a senior editor of Journal of AIS and on the editorial board for many leading Information Systems journals. She is also a co-editor in chief of the Journal on Data Semantics and a founding editor for Journal of Business Analytics. She is a co-founder of the Workshop on Information Technology and Systems (WITS) and serves on the steering committee of many workshops and conferences including the Entity Relationship

Conference (ER). Dr. Ram has published articles in such journals as Communications of the ACM, IEEE Expert, IEEE Transactions on Knowledge and Data Engineering, Information Systems, Journal of MIS, Information Systems Research, Management Science, and MIS Quarterly. She received the IBM faculty Development Award and UA Leading Edge Innovator in Research Award in 2007 and 2012. She is a Fellow of the Association for Information Systems (AIS). Her research has been highlighted in several media outlets including UANEWS, Arizona Alumni Magazine, International Journalism Festival, NPR news, and New York Times. She was a speaker for a TEDx talk in December 2013 on "Creating a Smarter World with Big Data".For more information please visit her at The University of Arizona or the INSITE research center.

Conference Keynote Speakers

Thursday, March 26, 1:00pm – 2:00 pm

Adam Smith
Chief Technology Officer
Fedex Services

Talk Title - Data Technology - The Strategic Asset for Today' Business

Abstract: TBA

Biographical Sketch: Adam Smith serves as Chief Technology Officer (CTO) and leads the Enterprise Platform & Architecture team at FedEx Services. Under his direction, more than 315 team members work collaboratively to provide the foundation for connected business ecosystems of multi-layer,
integrated core data components that support information-based revenue streams.

In this role, Adam leverages his influential leadership to profoundly reimagine the way customers experience FedEx through a consistent, reliable experience across all digital touch points. He is responsible for Enterprise Platform, Cloud Enablement, Enterprise Architecture, Big Data, and Analytics. As CTO, Adam ensures FedEx remains future focused by collaborating with the IT team to design and implement our global architecture and data strategy.

Adam has more than 20 years of information technology experience and has held leadership roles in Information Services for over 15 years. Since joining FedEx in 2001, he led the ideation and strategy to deliver the Common Access Layer – exposing customer-facing and core business capabilities and enabling the delivery of LiteShip for the EMEA region. Most recently, he guided the team to a successful launch of Product and Location Enterprise Foundational Services in just 143 days. Adam received the FedEx Five Star Award in 2007, the highest honor for outstanding service to the company. He was also awarded the IT Hall of Fame in 2005 and 2017. He is also a recipient of the Marketing Rising Star award. Adam, a native of Toronto, Canada, earned his bachelor's degree in Electronics Engineering from DeVry University. He now resides in Memphis with his wife Leslie.

Dr. Radu Prodan
Director, Advanced Analytics & Industry Research at FedEx
Greater Memphis Area

Distribute One Billion

Abstract: We live in a digital world estimated to host around 4 billion Internet users and 10 billion of mobile connections generating 2.5 billion billion of data every day. Managing and extracting value from this sheer amount of raw data requires deep software analysis tools on massive distributed and parallel computing infrastructures aggregating billions of cores and threads. The talk gives an overview of the research activities at the University of Klagenfurt, Austria, on optimising system software support for extreme-scale data processing applications, with focus on scientific simulations, social media and massively multiplayer online games.

Biographical Sketch: Dr. Radu Prodan is a Full Professor at the Institute for Information Technology, Alpen-Adria-Universität, Klagenfurt, Austria, where he currently leads the Distributed Systems Group. His research interests include parallel and distributed systems and software tools (performance, debugging, scheduling, fault tolerance, and energy). Prodan has a habilitation degree in computer science from the University of Innsbruck. He's an associate editor of IEEE Transactions on Parallel and Distributed Systems. He is the author of one book, over 100 journal and conference publications, and is the recipient of two IEEE best paper awards. One of Dr. Prodan's major projects is ARTICONF (smART socIal media eCOsystem in a blockchaiN Federated environment). ARTICONF aims to create a decentralised and federated social media ecosystem, supported by an underlying blockchain technology seamlessly coupled with optimized trust-based measures in an anonymised environment, which simplifies traceability to identify bad actors and eliminates malicious contents such as fake news. The three-year project, endowed with a budget of approx. 4.2 million Euros, brings together a total of eight participating institutions from Austria, the Netherlands, Great Britain, FYRO Macedonia, Portugal, Spain, and Norway. Initial results are expected in 2020..

<h1 style="text-align:center">Conference Panel</h1>

<h2 style="text-align:center">Influential Women in Data Science</h2>

Hosted by the Society of Women Engineers (SWE) Memphis Professional Section

<h2 style="text-align:center">Friday, March 26, 10:30 am – 11:30 am</h2>

Data science and analytics are critical to most industries; however, women comprise only 25% of the STEM workforce and as low as 15% of the data science professions. **The Influential Women in Data Science** Panel is hosted by the SWE Memphis Professional Section, the Society of Women Engineers (SWE) chapter in the Memphis, TN area. SWE is the world's largest advocate for women in engineering and technology. SWE's mission is to empower women to achieve their full potential in careers as engineers and leaders, expand the image of the engineering and technology professions as a positive force in improving the quality of life, and demonstrate the value of diversity and inclusion. **The Influential Women in Data Science** Panel will focus on the perspectives and experiences of females in their data-oriented fields. This panel includes women from a variety of industries, professional experience levels, and backgrounds. The questions will range from broad multidisciplinary inquiries to field-specific questions regarding data science application. The panelists will explore some of the ways in which they extract value from data in their day to day roles, discuss their career paths, the challenges they face in their respective industries, and the importance of diversity and inclusion in the STEM and data science workforce.

<p style="text-align:center">**PANELISTS**</p>

Moderator: Lauren Thornton, Structural Engineer EI at Smith Seckman Reid, Inc.

Julia Alspaugh, Product Development Engineer at Stryker

Julia Alspaugh is an experienced Product Development Engineer in the medical device industry with a demonstrated history of bringing novel 510(k)-cleared medical devices to market. She earned Bachelor's degrees from Virginia Tech in both Mechanical Engineering and French, and a Master's in Mechanical Engineering from Purdue University. Julia is currently a Staff Engineer at Stryker on the Lower Extremity Digital Strategy team. She has 7 years of experience designing patient-specific surgical instruments for total ankle replacement, with a focus on digital solutions. While not a data scientist by training, data analysis and system optimization are key parts of Julia's role.

Debbie Gregory DNP, RN, Clinical Innovation and Transformation, Senior Clinical Consultant at Smith, Seckman, Reid, Inc.

Dr. Debbie Gregory is a national leader in healthcare design, innovation, and transformation. As a nurse executive and interior designer, Dr. Gregory is passionate about "Intentional Design" that aligns People, Place, and Process. She creates and transforms environments into functional ecosystems using complex systems science, strategic design, and innovation thinking. Dr. Gregory has a Doctorate of Nursing Practice in Health Innovation and Leadership from the University of Minnesota and a bachelor's in nursing from Vanderbilt University. Currently, she serves as Senior Clinical Consultant for the Technology Planning Group at Smith, Seckman, Reid, Inc., a national engineering firm. In today's healthcare environment, clinical transformation and innovation are essential in navigating and reengineering the care delivery model of the future.

Fernanda Guerra, Clinical Research Project Manager at MicroPort Orthopedics Inc.

Fernanda Guerra received a Bachelor's degree in Chemistry from State University of Campinas (UNICAMP) in Brazil. She was awarded a four-year PhD Scholarship from the Science Without Borders Program which funded her doctoral degree at Clemson University in Biomedical Engineering. Fernanda was a Postdoctoral Fellow at The University of Memphis for 2 years, in the Biomedical department, exploring different biomaterials for tissue engineering. She is currently a Clinical Research Project Manager at MicroPort Orthopedics. As part of her job she is responsible for analyzing data and creating reports for post-market clinical follow up studies. Similar to her peers, Fernanda is not a data scientist by training, but her role has exposed her to data analysis and data processing automation as a means of providing more efficient working processes.

Jeanice Hayslett, Business Intelligence & Analytics - Solution Development Manager at International Paper

Jeanice Hayslett is a credible Information Technology professional with many years of diverse experience and exposure in the industry. Jeanice has a Bachelor's in Electrical Engineering and a Master's in Engineering Management from Christian Brothers University and many years of community engagement within the non-profit sector. She currently serves as the Development Manager of twenty US-based application development resources and a dotted line relationship with eight EMEA-based resources within the area of Business Intelligence & Analytics for the past four years supporting the organization's Paper, Packaging and Pulp businesses in delivering BI & Analytic application solutions.

Alison Powers, Head, Test & Qualification, Innovation & Qualification Center at thyssenkrup Elevator

Alison Powers holds a Bachelor's degree in Mechanical Engineering from the Georgia Institute of Technology, a Master's degree in Mechanical Engineering from Stanford University and currently leads the testing and qualification team for TK Elevator in Atlanta, Georgia. Alison has been with TK for 8 years and has held several roles including development engineering manager and head of research and innovation. In her current role, Alison has oversight to testing and qualification activities within the US elevator development organization and also works with global teams on development projects. In her career, Alison has worked on projects ranging from elevator safety brakes to TK's flagship IoT project that enables hundreds of thousands of elevators to globally transmit their status information to the Microsoft cloud for monitoring and performance analysis. Alison also helped lead a sensor-based project that will enable TK to gather even more data about the elevators that TK services. Alison has experienced first-hand the value of data and the difficulty in processing it when attempting to understand the performance of physical systems.

Conference Panel

St. Jude Children's Research Hospital and Data Science in Healthcare Research
Hosted by St. Jude Children's Research Hospital

Friday, March 26, 10:30 am – 11:30 am

St. Jude Children's Research Hospital is a place of hope, refuge, and healing for so many children who suffer from a wide range of pediatric diseases. The staff at St. Jude is well adept at treating and curing illnesses. What is much less known is the research that goes into finding the cures. Data Science is at the center of St. Jude Research. St. Jude has a thriving Data Science community led by the efforts of the St. Jude Data Science Focus Group. The SJCRH Data Science consortium encompasses members from all departments of the institution and serves as a catalyst throughout the institution. This panel is comprised of four members of the SJCRH Data Science consortium; Dr. Stanley Pounds, Dr. Zhaohua Lu, Dr. Paul Geeleher, and Dr. Franz Parkins.

Dr. Pounds, a Faculty member within the department of Biostatistics, leads research in the development of methods to integrate multiple pharmacological and clinical endpoints with multiple forms of genomic data. Dr. Zhaohua Lu, an Assistant Faculty member within the department of Biostatistics, commands the department's efforts neuroimaging and genetic data. Dr. Paul Geeleher, an Assistant faculty member within the department of Computational Biology, focuses on developing and validating computational methods/approaches aimed at improving outcomes in pediatric cancers. Dr. Franz Parkins, a Computational Engineer within Research Information Systems, holds the primary purpose of delivering the means of AI/ML capabilities to researchers through infrastructure, applications, data pipelining, and model development. This panel will explore the Research behind St. Jude Children's Research Hospital.

PANELISTS

Panel Chair: Dr. Stanley Pounds
Stan Pounds received his PhD in Statistics from Texas A&M in 2002. He then joined the St. Jude Department of Biostatistics, rising through the academic ranks to Member. His research interests involve integrated statistical analysis of multi-omic profiles with multiple clinical outcomes. He will provide an overview of the data science landscape at St. Jude and a brief description of his research.

Panel Co-Chair: Dr. Franz Parkins
Franz Parkins joined the Research Information Services team at St. Jude in 2019 as a Computational Engineer specializing in Artificial Intelligence and Machine Learning. His primary role is to support the HPC efforts to expand AI capability by providing infrastructure planning, platform recommendations, customized solutions, project specific ML modeling, and AI training. He received a Ph.D. from the University of Memphis in Computer Engineering with a focus on Deep Learning models for temporal data in the domain of Computer Vision.

Panelist: Dr. Zhaohua Lu
Zhaohua Lu received his Ph.D. (2010) in the Department of Statistics from the Chinese University

of Hong Kong. He is currently an Assistant Member in the Department of Biostatistics, St. Jude Children's Research Hospital. His research interest includes high dimensional data analysis, imaging data analysis, natural language processing with applications in medical research.

Panelist: Dr. Paul Geeleher
Paul Geeleher was recruited to St. Jude from the University of Chicago in 2019. His lab focuses on using large publicly available genomics and drug screening data to nominate new therapeutic strategies for pediatric cancers, combining data science and experimental techniques. He will present a practical example showing what this pipeline looks like.

Conference Program
Thursday, March 25, 2021

Thursday, March 25, 8:45am – 10:00am   **Session 1**

Welcome, 8:45am – 9:00am   **Dr. David Kemme & Dr. Thomas Nenon, Provost**

Session 1: Plenary Session (Room: The Zone)   **Chair: Srikar Velichety**
9:00am

Dr. Sudha Ram

Anheuser-Busch Endowed Chair of MIS, Entrepreneurship & Innovation, University of Arizona

Leveraging Artificial Intelligence and Big Data to create Value

BREAK, 10:00am – 10:30am

Thursday, March 25, 10:30am – 11:50am   **Session 2**

Session 2: Data Science in Biomedical Sciences (Zoom Link:)   **Chair: Hongmei Zhang**

10:30 am   *Automating, Analyzing, and Databasing Enzyme Simulations*
                Thomas Summers, Qianyi Cheng, Connor Frost, Donatus Agbaglo, Manuel Palma and Nathan
                DeYonker

10:50 am   *Initial Development and Validation of the Plant Awareness Disparity Index*
                Kathryn Parsley, Bernie Daigle and Jaime Sabel

11:10 am   *A joint approach to screening high dimensional meditators in epigenetic data with repeated outcomes*
                Lu Xie, Yu Jiang, Hongmei Zhang, Meredith Ray and Cen Wu

11:30 am   *Structural Equation Modeling of Neuroendocrine and Clinical PTSD Measures*
                Mazen Istanbouli, Kristoffer S. Berlin and Bernie J. Daigle Jr.

LUNCH BREAK, 11:50am – 1:00pm

Thursday, March 25, 1:00pm – 2:00pm   **Session 3**

Session 3: Plenary Session (Zoom Link: ???)   **Chair: David Kemme**
1:00pm

Adam Smith
Chief Technology Officer, Fedex Services

Talk Title: TBD

BREAK, 2:00pm – 2:30pm

Thursday, March 25, 2:30 pm – 3:50 pm   **Session 4**

Session 4A: Data Science Foundations (Zoom Link: ???)   **Chair: Deepak Venugopal**

2:30 pm   *Integrating Blockly with JupyterLab for Data Science*
                 Andrew Olney and Scott Fleming

2:50 pm   *Local Subspace Clustering Methodologies and Metrics for Parametric Reduced-order Models*
                 Dinesh Kumar Kinjangi and Daniel Foti

3:10 pm   *Fine-Grained Explanations using Markov Logic*
                 Khan Mohammad Al Farabi, Somdeb Sarkhel, Sanorita Dey and Deepak Venugopal

3:30 pm   *C(alpha)-type LM Test of Over-Identifying Moment Conditions in Time Series GEL Model*
                 Kalidas Jana

Session 4B: Data Science in Business and Economics (Zoom Link: ???)   **Chair: Ali Adeli**

2:30 pm   *Methods and Tools for Commodity Freight Flow Data Disaggregation*
                 Karlis Pujats, Mihalis Golias and Sabyasachee Mishra

2:50 pm   *Words Matter: A Closer Look at Top Management Team Language and Organizational Outcomes*
                 Courtney Peters and George Deitz

3:10 pm   *How Persistent Are Unconventional Monetary Policy Effects?*
                 Christopher Neely

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BREAK, 3:50pm – 4:00pm

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Thursday, March 25, 4:00pm – 5:00pm   **Session 5**

Session 5: Plenary Session (Zoom Link: ???)   **Chair: Hongmei Zhang**
4:00pm

Panel: St. Jude Children's Research Hospital and Data Science in Healthcare Research
Panel Chair: Dr. Stanley Pounds
Panel Co-Chair: Dr. Franz Parkins
Panelist: Dr. Zhaohua Lu
Panelist: Dr. Paul Geeleher

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5:00 pm – 5:10 pm   CONFERENCE UPDATES (Zoom Link: ???)

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Friday, March 26, 8:45am – 10:00am   **Session 6**

Announcements, 8:45am – 9:00am	**Dr. David Kemme & Dr. Vasile Rus**

Session 1A: Plenary Session (Zoom Link: ???)   **Chair: Vasile Rus**
9:00am

Dr. Radu Prodan
University of Klagenfurt, Austria

Distribute One Billion

BREAK, 10:00am – 10:30 am

Friday, March 26, 10:30am – 11:30am   **Session 7**

Session 1A: Plenary Session (Zoom Link: ???)   **Chair: Dale Bowman**
10:30am

Panel: Influential Women in Data Science
Moderator: Lauren Thornton, Structural Engineer EI at Smith Seckman Reid, Inc.
Panelists:
Julia Alspaugh, Product Development Engineer at Stryker
Debbie Gregory DNP, RN, Clinical Innovation and Transformation, Senior Clinical Consultant at Smith, Seckman, Reid, Inc.
Alison Powers, Head, Test & Qualification, Innovation & Qualification Center at Thyssenkrup Elevator;
Fernanda Guerra, Clinical Research Project Manager at MicroPort Orthopedics Inc.
Jeanice Hayslett, Business Intelligence & Analytics - Solution Development Manager at International Paper

LUNCH, 11:30am – 1:00pm

Friday, March 26, 1:00pm – 2:20pm   **Session 8**

Session 8A: Special Session: COVID-19 Data Intelligence (Zoom Link: ???)   **Chair: Xinhua Yu**

1:00 pm   *A Vision for the Memphis Pandemic Health Informatics System (MEMPHI-SYS)*
                 David Schwartz

1:20 pm   *GIS's role in COVID-19 management and control*
                 Esra Ozdenerol

1:40 pm   *Urban Population Health Observatory (UPHO) for Pandemic Surveillance and Policy Development*
Arash Shaban-Nejad

2:00 pm   *Are COVID-19 Projections Really Forecasts?*
Fridtjof Thomas

Session 8B: Special Session: Corona Virus (Zoom Link: ???)   **Chair: Bernie Daigle**

1:00 pm   *Modeling the Impact of Social Distancing Interventions on COVID-19*
Andrew Olney

1:20 pm   *Association of asthma and rhinitis with epigenetics of coronavirus related genes*
Aniruddha Rathod, Rutu Patel, Hongmei Zhang, Parnian Kheirkhah Rahimabad, Wilfred Karmaus and Hasan Arshad

BREAK, 2:20pm – 2:30pm

Friday, March 26, 2:30 pm – 3:50 pm   **Session 9**

Session 9A: The Human Technology Frontier (Zoom Link: ???)   **Chair: Dale Bowman**

2:30 pm   *Why people avoid AI? A quadruple perspective*
Md Jabir Rahman and Huigang Liang

2:50 pm   *Are You Drawing Thieves' Attention? A Study of Firms' Digital IQ, System Visibility, and Data Breaches*
Santhosh Srinivas and Huigang Liang

3:10 pm   *Deepfake: A double-edged sword?*
Shao Chew and Huigang Liang

3:30 pm   *Impact of Data Breaches on the Reallocation of IT Capital*
Ali Mahdavi Adeli

Session 9B: The Human Technology Frontier (Zoom Link: ???)   **Chair: Lih-Yuan Deng**

2:30 pm   *Application of the Dirichlet Process to Model Earthquake Hypocenter Temporal Patterns*
Meredith Ray, Dale Bowman, Ryan Csontos, Roy Van Arsdale and Hongmei Zhang

2:50 pm   *Memphis Blight and Preeclampsia*
Patricia Goedecke

3:10 pm   *Data-Enabled Reduced-Order Modeling of Turbulence Coherent Structures in Wakes*
Daniel Foti

3:30 pm – 3:45 pm   CLOSING REMARKS AND FAREWELL (Zoom Link: ???)
END OF CONFERENCE

We hope that you enjoyed the Memphis DATA conference!

Join us for Memphis DATA in 2022
http://www.memphis-data.org

Data Science Initiative's Mission

The goal of the Data Science initiative is to develop a vision for The University of Memphis and the local community, train future data scientists, create an environment to foster research and to build a Data Science community of practice that includes members from academia, government, and industry in West Tennessee, the Mid-South and beyond.

www.memphis-data.org

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