NJ Big Data Alliance

13th Annual Symposium

May 20, 2026

BUILDING ACCESSIBLE & SUSTAINABLE AI ECOSYSTEMS:

People, Data, Ethics, and Infrastructure

Rowan University

njbda.org

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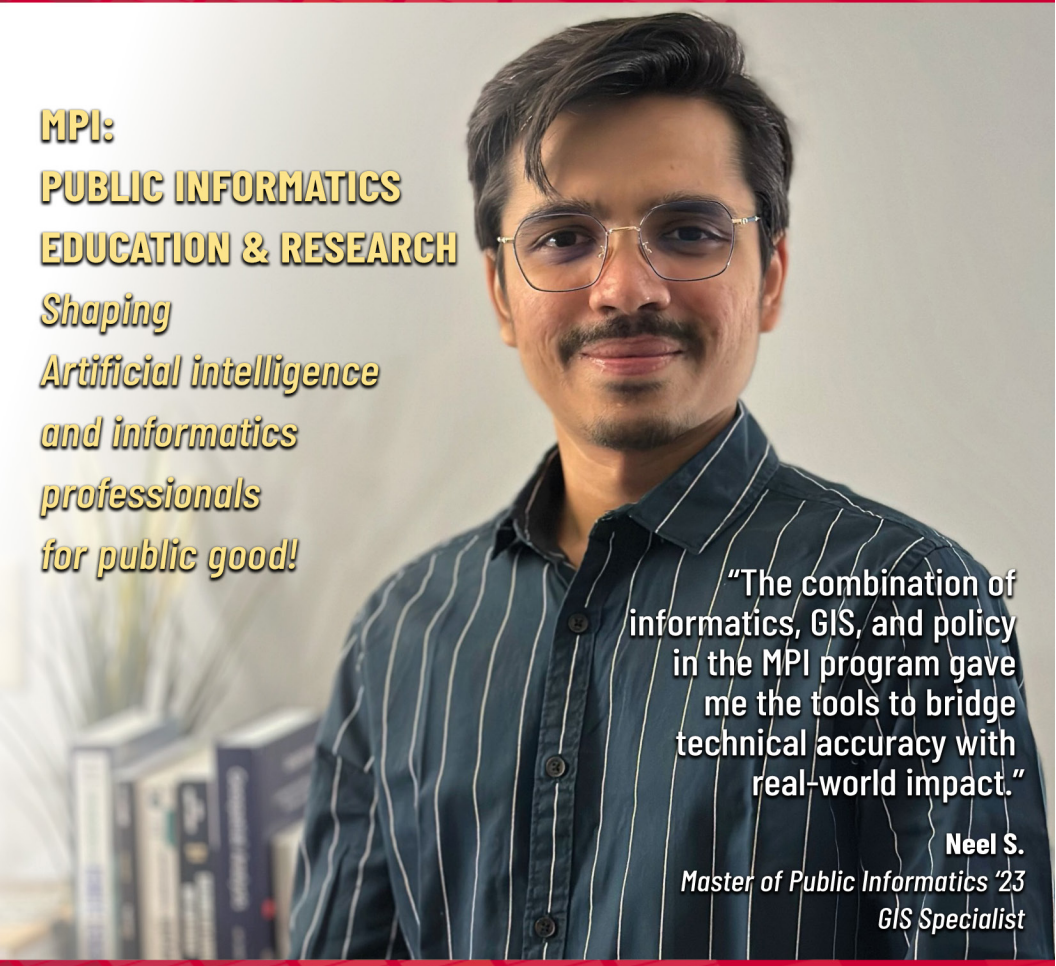

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Letter from the President & Provost of Rowan University

Welcome, Colleagues,

On behalf of Rowan University, we are pleased to welcome you to the 13th Annual New Jersey Big Data Alliance Symposium. It is an honor to host this year's event and to convene colleagues from higher education, industry, government and our student community for a day of dialogue, discovery and collaboration around the theme, "Building Accessible & Sustainable AI Ecosystems: People, Data, Ethics & Infrastructure."

Artificial intelligence is no longer a distant concept—it is already shaping education, research, industry, health care and daily life. As its influence continues to expand, so too does our shared responsibility to ensure that AI is developed and applied in ways that are ethical, inclusive and sustainable. The future of AI depends not only on technical innovation, but also on the strength of the human, institutional and societal ecosystems that support it—and on our collective capacity to ensure that data and AI serve the greater public good.

At Rowan, we are committed to preparing students, researchers and partners to engage with these challenges through interdisciplinary education, applied research and workforce development. We believe institutions of higher education have a critical role to play in advancing innovation while ensuring it remains accessible, responsible and responsive to societal needs.

We hope today's conversations spark new ideas, strengthen connections and inspire lasting collaboration. We wish you an engaging and productive symposium.

Sincerely,

Ali Houshmand, Ph.D.
President

Vojislava (Voki) Pophristic, Ph.D.
Provost and Executive Vice Chancellor for Academic Affairs

Letter from the President of NJBDA

Welcome to the 13th Annual New Jersey Big Data Alliance Symposium. This year's theme, **"Building Accessible & Sustainable AI Ecosystems: People, Data, Ethics, & Infrastructure."** It reflects the growing recognition that artificial intelligence (AI) must be developed within a balanced ecosystem that connects this exciting new technology with responsible data stewardship, resilient infrastructure, and human values.

We are honored to feature keynote speakers **Dr. Khalifeh Al Jadda, Director of Data Science at Google**, and **Dr. Jeannette Wing, Executive Vice President for Research at Columbia University**. Their leadership in data science and research innovation will provide valuable insight into the future of AI development. Throughout the day's program, we will examine key strategic themes: investing in people through AI literacy and workforce development; promoting responsible access to high-quality data; building equitable, energy-efficient infrastructure that enables broad participation; and integrating ethics, fairness, and accountability into AI systems. Together, these efforts support long-term sustainability while balancing technological progress with environmental and social responsibility.

We are thrilled to have the opportunity to partner with and leverage the expertise of our industry members and government partners. I particularly want to thank our **Lunch Sponsors *IBIS Works*** and ***Rowan University***, **Industry Networking Sponsor *e+*** and the **Student Poster Awards Sponsor *Velocity Technology***. Also, please join me in thanking the academic, corporate and government sponsors who appear in this program.

Special thanks to **Rowan University**, this year's host, for their outstanding efforts in planning the symposium. We are grateful to Rowan faculty **Uma Thayasivam, Symposium Chair, Nidhal Bouaynaya, and Hieu Nguyen** for their leadership; and Rowan staff members **Laura Simmons** for exceptional administrative support and **Jessica Porch** for event planning coordination.

We look forward to a productive and inspiring symposium!

Yours faithfully,
Stephen K. Burley, Ph.D.
President, New Jersey Big Data Alliance

About the New Jersey Big Data Alliance

The New Jersey Big Data Alliance (NJBDA) is an unprecedented collaboration of academic, industry, and government partners designated by the New Jersey Legislature as the state's research, education, and technology consortium to advance data-driven innovation.

OBJECTIVES

- **Catalyze Economic Development** — enable New Jersey businesses and communities to gain a competitive advantage through access to big data technologies and expertise.
- **Foster Industry, Government, and Academic Collaboration** — provide access to research capabilities, computational resources and technical expertise, and facilitate multi-institutional and public-private collaborations.
- **Grow a Data-Enabled Workforce** — promote STEM careers, connect students to local employers, organize symposia and workshops, create and coordinate curricula.

New Jersey Big Data Alliance Executive Committee

Executive Board

PRESIDENT:
Stephen Burley | University Professor and Henry Rutgers Chair, Rutgers University

EXECUTIVE DIRECTOR:
Peggy Brennan-Tonetta | President, MBT Consulting, Rutgers University (Retired)

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Jim Samuel | Associate Professor and Executive Director, Public Informatics, Rutgers University

ADVANCE & EMERGING TECHNOLOGIES:
Forough Ghahramani | Associate Vice President, Research, Innovation, Sponsored Programs Edge

MARKETING & OUTREACH:
Demetrios Roubos | Information Security Officer, Stockton University

2026 Symposium Organizers

Uma Thayasivam | *NJBDA Symposium Chair* | Professor and Head, Mathematics, Rowan University

Hieu Nguyen | *NJBDA Symposium Co-Chair* | Professor, Mathematics, Rowan University

Peggy Brennan Tonetta | *NJBDA Symposium Co-Chair* | Executive Director, NJBDA President, MBT Consulting; Rutgers University (Retired)

David Bader | Distinguished Professor, Data Science Director, Institute for Data Science New Jersey Institute of Technology

Nidhal Bouaynaya | Associate Vice Chancellor, Artificial Intelligence Professor, Electrical and Computer Engineering, Rowan University

Stephen Burley | University Professor and Henry Rutgers Chair, Rutgers University

Lori Dars | Associate Director, Economic Development and Innovation Rutgers University

Selenny Fabre | Director of Research Ying Wu College of Computing New Jersey Institute of Technology

Forough Ghahramani | Associate Vice President Research, Innovation & Sponsored Programs, Edge

Mira Lavolic-Hand | Professor & Senior VP/CIO, Information Resources and Technology, Rowan University

Rashmi Jain | Dept. Chair/Professor, Information & Operations Management, Montclair University

Rajiv Kashyap | Professor and Chair, Management, Marketing & Professional Sales, William Paterson University

Eli Katz | Director of Cloud and Consumption Services PKA Technologies

Nick Piccicco | Professor, Computer Science, Middlesex College

Josh Piddington | Vice President & Chief Information Officer, Rowan College of South Jersey

Demetrios Roubos | Information Security Officer, Stockton University

Jim Samuel | Associate Professor, Executive Director, Public Informatics Editor-in-Chief, *NJBDA Journal of Big Data & AI*, Rutgers University

Joseph Sheruda | Director of Sales & Strategic Growth, Velocity Tech Solutions

Stephanie Staub | Director of Workforce Strategy, New Jersey Community College Consortium for Workforce and Economic Development

Sangya Varma | Associate Dean for Program Development Mathematical & Physical Sciences, Associate Professor of Professional Practice, Rutgers University

Sonja Yaco | Digital Initiatives and Technologies Librarian, Rutgers University

Local Arrangements

Laura Simmons | Administrative Assistant, Rowan University

Jessica Porch | Assistant Director, University Events, Rowan University

Shane Karolyi | Lead Marketing Project Manager, Rowan University

Henry Basta | Public Relations & Events Coordinator, Rowan University

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PROGRAM: Morning Session

8:30-9:00 a.m. | REGISTRATION: 2nd Floor – Main Ballroom Area
Registration
Continental Breakfast
Student Posters
Exhibitors

9:00–9:30 a.m. | WELCOME: Main Ballroom
Dr. Stephen Burley | NJBDA President and University Professor/Henry Rutgers Chair, Rutgers University
Dr. Ali Houshmand | President, Rowan University
Dr. Vojislav Pophristic | Provost and Executive Vice Chancellor, Academic Affairs
Kevin Dehmer | New Jersey State Chief Technology Officer
Dr. Peggy Brennan Tonetta | NJBDA Executive Director

9:30–10:15 a.m. | KEYNOTE ADDRESS
Keynote Introduction: **Dr. Forough Ghahramani** | Edge

Keynote Address: **Dr. Jeannette Wing** | Executive Vice President for Research and Professor Computer Science, Columbia University

"Trustworthy AI"
Recent years have seen an astounding growth in the deployment of AI systems in critical domains such as autonomous vehicles, criminal justice, and healthcare, where decisions taken by AI agents directly impact human lives. Consequently, there is an increasing concern whether these decisions can be trusted. This presentation will consider how the promise of AI benefits can be delivered while addressing scenarios that have life-critical consequences for people and society. In short, how can trustworthy AI be achieved? This talk poses a new research agenda, from a formal methods perspective, to increase trust in AI systems.

10:15–11:00 a.m. | BREAK AND NETWORKING

11:00 a.m.–12:00 p.m. | RESEARCH TRACK PROGRAM

RESEARCH TRACK PROGRAM
The symposium research track features state-of-the-art research on AI, agentic AI, and Informatics spanning disciplines and domains. Abstracts for all session papers can be found at the end of this program.

Committee: Rajiv Kashyap (WPU) (Co-Chair), Jim Samuel (Rutgers) (Co-Chair), Hieu Nguyen (Rowan), Abhishek Tripathi (TCNJ), Sharath Kumar Jagannathan (St. Peters), Umashanger Thayasivam (Rowan), Mahmoud Daneshmand (Stevens), J.D Jayaraman (NJCU/Kean)

Research Session 1: Lightning Talks – AI and Human Society
Location: CSC 221 A/B/C
Moderator: Dr. Sonal Pandey, Rutgers University

Research Session 2: Industry Research – AI Applications
Location: CSC 144 A/B
Moderator: Dr. Jim Samuel, Rutgers University

Research Session 3: AI and Informatics
Location: CSC 129
Moderator: Dr. Cyril Ku, William Paterson University

Research Session 4: Agentic AI – Innovations & Future Trends
Location: CSC 127
Moderators: Dr. Rajiv Kashyap and Dr. Ana Christina Siquiera, William Paterson University

STUDENT POSTER SESSION
Location: 1st Floor Pit Area

Student Poster Committee:
-Hieu Nguyen (Chair), Rowan University
-Rajiv Kashyap, William Paterson University
-Ik Jae Lee, Rowan University

Poster Judging Committee:
-Rajiv Kashyap (Chair), William Paterson
-Zeeshan Ahmed, Rutgers
-Yanhong Jin, Rutgers
-Lathish Balaji, Rowan
-Stephen Betts, William Paterson
-Burt Brooks, PathAble AI
-Jin-A Choi, Montclair State
-Dhruv Chunawala, Middlesex
-Shen-Shyang Ho, Rowan
-Sho Islam, Middlesex County, NJ
-Nick Ivanov, Rowan
-Cyril Ku, William Paterson
-Ik Jae Lee, Rowan
-Connie Pascal, Rutgers
-Nick Picioccio, Middlesex
-Elliot Schwartz, Rowan
-Nan Wang, William Paterson
-Mahesh Yadav, Optima Global Solutions

PROGRAM: Afternoon Session

2nd Floor – Main Ballroom Area

12:00–1:00 p.m. | LUNCH, NETWORKING, EXHIBITS

12:45–1:00 p.m. | BEST POSTER AWARDS

Sponsored by Velocity Tech Solutions

1:00–1:45 p.m. | KEYNOTE ADDRESS

Keynote Introduction: **Dr. Uma Thayasivam** | Rowan University

Keynote Address: **Dr. Khalifeh Al Jadda** | Director of Data Science, Google
Co-Founder/VP, ATLytiCS, Inc.

"AI at Scale: The Next Industrial Revolution"

The technological breakthroughs that ignited the current era of Generative AI will be examined. The evolving economic landscape, industry's most significant trends, including multimodal systems and agentic AI, will be explored. Finally, the key risks and challenges accompanying these advancements will be assessed.

1:45–2:45 p.m. | INDUSTRY PANEL DISCUSSION 1

Developing Sustainable and Accessible AI EcoSystems: An Industry Perspective

This panel will explore from an industry perspective, the many complexities involved with developing sustainable and accessible AI ecosystems. These include environmental impacts of AI data centers, strategies to manage energy consumption, compute demands, and sustainability as systems scale; critical challenges organizations face in moving to production-grade systems; scaling AI in high-stakes environments such as security and transportation, where system failure carries real-world consequences; evolving role of humans in AI-driven decision-making; current gaps in the AI workforce, including skills most in demand and how universities can better prepare students; and approaches to ensure that AI technologies are developed with consideration for diverse populations, particularly individuals with disabilities.

Moderator - Dr. Nidhal Bouaynaya | Associate Vice Chancellor, Artificial Intelligence and Professor, Electrical and Computer Engineering, Rowan University
-Charles Antoine Beyney | Founder and President, DataOne
-Burt Brooks | Founder and CEO, Pathable AI
-Dr. Christopher Smith | Science and Technology Director, Transportation Security Lab, Dept. of Homeland Security
-Taylor Wilson | Vice President, Applied Statistics & Data Science, Reveal Global Consulting

2:45–3:00 p.m. | BREAK AND NETWORKING

3:00–4:00 p.m. | INDUSTRY PANEL DISCUSSION 2

Democratizing AI: Academic Leadership, Ethics, and Community Impact

This panel will explore how academic institutions are advancing AI through research, pedagogy, and partnerships that promote ethical design, inclusive access, and community impact. Panelists will discuss efforts to align AI development with democratic values and the symposium's core pillars: people, data, ethics, and infrastructure, highlighting higher education's role in shaping sustainable and socially responsible AI ecosystems.

Moderator - Dr. Forough Ghahramani | Assistant Vice President for Research, Innovation, and Sponsored Programs, Edge
-Dr. Nawal H. Ammar | Founding Dean, Ric Edelman College of Communication, Humanities & Social Sciences, Professor of Law and Justice, Rowan University
-Dr. Lauren Goodlad | Rutgers University, Chair, Critical AI @ Rutgers and Editor of Critical AI
-Dr. Andrea Salgian | Professor and Chair, Dept of Computer Science, The College of New Jersey
-Dr. Linda Scherr | NJCCC Chief Academic Officer - Established AI for Impact & NJ's first Data Scientist AI Apprenticeship programs
-Dr. Grace Wang | Distinguished Professor, Computer Science, Associate Dean for Research and External Relations, Ying Wu College of Computing, Founding Director, AI Center for Research, New Jersey Institute of Technology

4:00 p.m. | CLOSING REMARKS

Dr. Peggy Brennan Tonetta | Co-founder, Past President, and Executive Director, NJBDA
Dr. Uma Thayasivam | Professor and Department Head, Mathematics Dept., Rowan University

Explore more from NJBDA by scanning the QR code below.

Welcome Speakers

Stephen Kevin Burley, M.D., D.Phil. is an expert in structural biology, proteomics, data science, structure/fragment-based drug discovery, artificial intelligence/machine learning, and clinical medicine/oncology. Burley currently serves as President of the New Jersey Big Data Alliance. He is a University Professor and Henry Rutgers Chair, Founding Director of the Institute for Quantitative Biomedicine, Director of the RCSB Protein Data Bank, Tenured Member of the Department of Chemistry and Chemical Biology, and Director of the Rutgers Artificial Intelligence and Data Science Collaboratory at Rutgers, The State University of New Jersey. He is also a Member of the Rutgers Cancer Institute, where he co-leads the Cancer Pharmacology Research Program. Before joining Rutgers, Burley worked as a Distinguished Lilly Research Scholar at Eli Lilly and Company (2008-2012), Chief Scientific Officer at SGX Pharmaceuticals, Inc. (2002-2008), and in academe as a Chaired Professor at The Rockefeller University and Investigator in the Howard Hughes Medical Institute (1990-2002). Previously, he trained at the Brigham and Women's Hospital, Harvard Medical School, and Oxford University.

Kevin Dehmer is a veteran public-sector leader with over two decades of experience modernizing government institutions across New Jersey's education, workforce, and technology systems. Appointed in 2026 by Governor Mikie Sherrill as New Jersey's Chief Technology Officer, he leads the Office of Information Technology and oversees efforts to strengthen the state's digital infrastructure. Previously, Dehmer served as Commissioner of the New Jersey Department of Education, directing statewide policy for more than 600 districts and leading major upgrades to the state's educational data systems. His career includes senior leadership roles in public finance and school funding, guiding districts through crises such as the Great Recession, Superstorm Sandy, and the COVID-19 pandemic. He also served as Executive Director of the Heldrich Center for Workforce Development at Rutgers University and expanded New Jersey's Statewide Data System. Dehmer holds degrees from St. John's University and Rutgers University.

Peggy Brennan-Tonetta, Ph.D., is co-founder and past president of the NJBDA and currently serves as its Executive Director. She retired from Rutgers University in December 2024 after a distinguished 29-year career. At Rutgers, she was Senior Associate Director of the New Jersey Agricultural Experiment Station (NJAES) and Director of Resource and Economic Development, overseeing all off-campus research farms, marine stations, business incubators, and service laboratories. Peggy led major university-industry-government collaborations, expanded programmatic and capital resources, and helped build NJAES's business incubator system. She established Rutgers' first Office of Economic Development as Associate Vice President and co-founded the Rutgers Discovery Informatics Institute, the university's first supercomputing center. Throughout her career, she secured more than 50 grants totaling over $50 million, with her work recognized at university, state, and national levels. Peggy earned a B.A. in Economics, M.S. in Agricultural Economics, and Ph.D. in Planning and Public Policy from Rutgers University.

Dr. Ali A. Houshmand became Rowan University's seventh president in 2012 after serving for approximately six years as provost/senior vice president, CEO and interim president. Inaugurated Sept. 20, 2013, Houshmand is a dynamic leader whose personal connection with students, employees, alumni, government leaders, the business community and the public has become a hallmark of his presidency.

A lifelong believer in the power of education, Houshmand holds a master's degree in mathematical statistics, and master's and doctoral degrees in industrial and operations engineering. His approach to growing the University has focused on four goals: increasing access, improving quality, ensuring affordability and promoting economic development. Known for his entrepreneurial perspective and for challenging norms in higher education, Houshmand has been instrumental in fostering public-private partnerships and creating new opportunities to collaborate with business and industry. His success is evident. Since 2012, enrollment has more than doubled, making Rowan the fastest-growing public research university in the Northeast and among the top 10 fastest-growing in the nation.

Under Houshmand, Rowan has evolved from a well-regarded state school to a rising Carnegie-classified R2 (high research activity) national university with three medical schools, including New Jersey's first veterinary school. Ranked among the top 100 public research institutions in the nation, Rowan offers bachelor's through doctoral degree programs to nearly 24,500 students through its southern New Jersey campuses and online.

Vojislava "Voki" Pophristic, Ph.D., is provost and executive vice chancellor for Academic Affairs at Rowan University, where she oversees academics, student life, enrollment, research and faculty affairs.

Appointed July 1, 2025, she was previously dean of the College of Science & Mathematics and the School of Earth & Environment. Under her leadership, the college and school introduced new degree programs, expanded research activities and facilities, and achieved substantial growth in research funding—all while maintaining strong enrollment increases, particularly at the graduate level.

Before joining Rowan in 2021, Pophristic served as interim dean of the Misher College of Arts and Sciences at the University of the Sciences in Philadelphia, where she was also a professor in the Department of Chemistry and Biochemistry. A prolific researcher, she has earned major funding from the National Science Foundation, the National Institutes of Health and industry partners, and co-authored 40 publications.

She holds a B.S. in physical chemistry from the University of Belgrade and a Ph.D. in chemistry from Rutgers University–New Brunswick, followed by postdoctoral research at the University of Pennsylvania.

Keynote Speakers

Jeannette M. Wing is the Executive Vice President for Research and Professor of Computer Science at Columbia University. Prior to joining Columbia in 2017, she was Corporate Vice President of Microsoft Research, had been on the faculty at Carnegie Mellon University since 1985, and served as the Assistant Director of the Computer and Information Science and Engineering Directorate at the National Science Foundation. She received her S.B., S.M., and Ph.D. degrees in Computer Science, all from the Massachusetts Institute of Technology. She holds an honorary doctorate of technology from Linkoping University, Sweden. She is a Fellow of the American Academy of Arts and Sciences, American Association for the Advancement of Science, Association for Computing Machinery, Institute of Electrical and Electronic Engineers, and National Academy of Innovators. She is a member of the National Academy of Engineering and the MIT Corporation. Her current research focus is on trustworthy AI.

Khalifeh AlJadda holds a Ph.D. in Computer Science from the University of Georgia, specializing in machine learning, and his expertise lies in implementing large-scale, distributed machine learning algorithms to tackle complex challenges, from Bioinformatics to modern search and recommendation engines. Khalifeh is currently a Director of Data Science at Google. Before Google, he was the Sr. Director of Online Data Science at Home Depot, the largest home improvement company in the world. He is a prolific contributor to the data science community, with more than 20 published research papers and 9 granted US patents. Beyond his work at Google, Khalifeh is deeply committed to leveraging AI for social good, serving as the founder of the Optimized AI Conference (formerly Southern Data Science Conference) and a co-founder of ATLytiCS (Atlanta Analytics for Community Service), a non-profit organization dedicated to using data science to assist vulnerable populations.

Speaker Bios (listed in alphabetical order)

Nawal Ammar is Dean of the Ric Edelman College of Communication, Humanities, and Social Sciences at Rowan University and a social science and justice scholar with a focus on social impact and equity. Her research is grounded in a human-centered framework, examining how systems, policies, and institutions shape lived experiences, particularly for marginalized communities. She extends this perspective to data and analytics, emphasizing that emerging technologies, including AI, must be guided by human context, ethical responsibility, and social impact. Dr. Ammar has led cross-disciplinary initiatives that leverage data and applied analytics to inform policies and programs centered on people, equity, and accountability.

Charles-Antoine Beyney is a tech pioneer and CEO of DataOne, currently building the world's most ambitious Sustainable AI Factories. With over 2 decades of expertise—notably as a co-founder of Etix Everywhere and BSO—he is a leading authority in scaling global digital infrastructure. Today, he is the visionary behind a landmark project in the United States: a giga-scale AI campus in New Jersey designed for a staggering 350 MW of capacity. This facility is set to be the longest and most advanced sustainable AI factory in the world, utilizing innovative "behind-the-meter" power solutions to deliver high-performance compute at unprecedented speed. While making a massive impact in the U.S., Charles-Antoine is also scaling 400 MW of AI infrastructure across France. His approach bridges the gap between massive computing power and environmental stewardship, using closed-loop water systems and carbon-free energy to challenge traditional industry inefficiencies. Driven by a "family-spirit" leadership style, Charles-Antoine views the AI factory of the future as a high-trust ecosystem where cutting-edge technology and human values grow together.

Nidhal Carla Bouaynaya is the Associate Vice Chancellor for Artificial Intelligence at Rowan University and a Professor of Electrical and Computer Engineering. She holds a Ph.D. in Electrical and Computer Engineering and an M.S. in Pure Mathematics from the University of Illinois at Chicago. Her research focuses on trustworthy machine learning and artificial intelligence. She has co-authored more than 120 articles and received numerous Best Paper Awards, as well as the 2025 Edison Patent Award. Her students have also been recognized with Best Thesis and Doctoral Awards, as well as NSF CAREER awards. Dr. Bouaynaya is a co-founder of MRIMATH LLC, an FDA-cleared startup that uses artificial intelligence to improve oncology outcomes and treatment response.

Burt Brooks is a neurodiverse disability advocate, entrepreneur, and strategic communications leader whose path to the intersection of technology and disability equity began in the arts. A Rutgers-trained actor and award-winning filmmaker, he spent the early part of his career writing, directing, and producing independent films recognized by the Austin Film Festival and the Philadelphia International Film & Animation Festival. His creative foundation led him to Matheny Medical and Educational Center, where he oversaw the performing arts program for people with medically complex developmental disabilities — and helped transform it into a vocational initiative creating real career pathways for artists with disabilities. He joined Easterseals New Jersey, and rose to the position of Marketing Director, leading strategy to drive $100M in annual revenue. Today, he is the Founder and CEO of PathAble AI.

Forough Ghahramani is a senior executive leader in research, innovation, and advanced technology ecosystem development, with experience spanning industry, academia, and entrepreneurship. As Assistant Vice President for Research, Innovation, and Sponsored Programs at New Jersey Edge, she operates at the intersection of research infrastructure, economic development, workforce strategy, and public–private partnership building to strengthen regional competitiveness in AI, quantum, and emerging technologies. She serves as Principal Investigator on NSF-funded initiatives including an NAIRR EAGER project and the CC* Regional Networking award. A Senior Member of IEEE, she serves on the NSF Engineering Research Visioning Alliance Standing Council, is Vice President of the NJBDA's Advanced and Emerging Technologies Committee, serves on the Steering Committees of the Northeast Big Data Innovation Hub and the Ecosystem for Research Networking (ERN), and co-chairs the ERN Quantum Education Alliance. Ghahramani holds a doctorate from the University of Pennsylvania, an MBA from DePaul University, an MS in Computer Science from Villanova University, and a BS in Mathematics from Pennsylvania State University.

Lauren M. E. Goodlad is Distinguished Professor of English and Comparative Literature at Rutgers University, editor of *Critical AI* (published by Duke University Press), and chair of Critical AI @ Rutgers (an initiative supported by Rutgers University's Center for Cultural Analysis, Center for Cognitive Science, and the AI and Data Science Collaboratory). As PI or co-PI for collaborative grants in critical AI studies, Goodlad's work has been supported by the National Endowment for the Humanities (in a grant canceled by DOGE in April 2025), the National Science Foundation, and the Mellon Foundation (via CHCI). She is a lead organizer for DESIGN JUSTICE LABS, a public collaboration for the peer-review and publication of student-led research projects and educator resources for the teaching and cultivation of critical AI literacies. Her most recent column in *Critical AI*'s "Humanist in the Loop" feature appears in the journal's October 2025 issue.

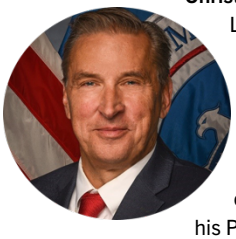
Rajiv Kashyap is Chair of the Department of Marketing, Management, and Professional Sales at William Paterson University, where he leads initiatives in AI integration and curriculum innovation. His research, spanning over 25 years, examines digital marketing strategy and the application of artifical intelligence in business and education. His work has been published in the Journal of Marketing and the International Journal of Information Management, with a forthcoming article on AI and strategy theory in the Journal of Big Data and AI.

Hieu Nguyen is a Professor in the Department of Mathematics at Rowan University. He holds a PhD in Mathematics from the University of California, Berkeley. His research involves developing smart drones and robotic vehicles with applications towards precision agriculture and autonomous systems.

Andrea Salgian is a Professor and Chair of the Department of Computer Science at The College of New Jersey. A specialist in computer vision, her primary research focuses on visual gesture recognition and human-computer interaction, topics in which she mentors undergraduate students, bridging the gap between advanced technical research and undergraduate education. Dr. Salgian recently expanded her work to address the pedagogical challenges of Artificial Intelligence, leading initiatives aimed at making AI literacy accessible to majors and non-majors alike.

Jim Samuel is the Executive Director, Informatics Programs, Associate Professor of Practice, Bloustein - Rutgers, is an expert in artificial intelligence (AI) strategy and AI innovation, especially in NLP applications. His research covers human enhancive AI, AI applications, healthcare AI & chatbots, agentic AI, and socioeconomic impacts of AI. He holds a Ph.D. from Baruch – CUNY, M.B.A. in international finance from Thunderbird -ASU, and AI-NLP training from Stanford University. Dr. Samuel has published extensively in academic journals and advises businesses on AI strategies. He is the chair of the Rethinking Artificial Intelligence for Shared Empowerment (RAISE) AI research initiative, Editor in Chief of the Journal of Big Data and Artificial Intelligence (JBDAI), Senior Member – IEEE USA; he leads AI strategy at AIXosphere LLC, a human-enhancive Artificial Intelligence (AI) strategy and AI innovation company, and advises organizations on AI strategy, productivity and risk management with AI.

Linda Scherr serves as the Chief Academic Officer at the New Jersey Council of County Colleges. In this role, she collaborates on statewide academic initiatives that support student success across New Jersey's community college sector. Her work focuses on advancing policies and practices that expand access, strengthen academic pathways, and improve outcomes and economic mobility for community college students across the state.



Christopher Smith became the Director of the Transportation Security Laboratory (TSL) in November 2016. Prior to this role, he served in numerous senior leadership positions including Chief Engineer at TSL overseeing Laboratory Operations, acting Division Director of the HSARPA Explosives Division, TSL's Chief Engineer, Conveyance Protection Product Lead, managed the FAA's Airworthiness Assurance Research Branch, and was appointed manager of the newly formed Aging Systems Research Program. Dr. Smith received his Ph.D. in Aerospace Engineering from Rutgers University in 1990 and is a graduate of the Harvard Kennedy School's Senior Executive Fellows Program. Dr. Smith is a DHS Acquisition Professional with a Level III Certificate in Test and Evaluation Management.

Umashanger Thayasivam is Professor of Statistics and Data Science and Head of the Department of Mathematics at Rowan University. A recognized leader in data science education and research, he serves on the New Jersey Big Data Alliance (NJBDA) Research Committee and is Senior Advisor to the Journal of Big Data and Artificial Intelligence. His research spans statistical learning, predictive modeling, educational data mining, recommender systems, and high-dimensional data analysis. He is committed to fostering interdisciplinary collaboration and advancing the responsible use of data and AI to address complex real-world challenges.

Guiling "Grace" Wang is a Distinguished Professor of Computer Science and the Associate Dean for Research and External Relations at the Ying Wu College of Computing at the New Jersey Institute of Technology (NJIT). She established the AI Center for Research at NJIT and serves as its Founding Director. Prof. Wang led the development of NJIT's M.S. in Artificial Intelligence program and the AI Certificate Program, both of which officially launched in 2023 as among the first AI programs in New Jersey. Beyond her academic achievements, Prof. Wang holds multiple governmental advisory roles. Since 2023, she has served as the sole academic representative on the New Jersey Supreme Court Committee on Artificial Intelligence and the Courts. She also contributed to the New Jersey Governor's AI Task Force Innovation Group in 2024–2025, again as the only university representative.

Taylor Wilson is a statistician by training whose work in the public sector has spanned several agencies. As the Vice President of Applied Statistics & Data Science with Reveal Global Consulting, he manages a team of innovative data scientists, statisticians, and analytical thinkers. He strives to create unique and powerful solutions for government agencies and other clients by leveraging best-in-class solutions for cloud, data science, artificial intelligence, and machine learning with a particular focus on open source technologies. His work has improved the speed and efficiency of data collection, processing, and dissemination of official statistics at the U.S. Census Bureau, enabled robust system testing workflows at U.S. DOT, automated natural language classification tasks at the Consumer Product Safety Commission, and developed new statistical weights for public use microdata at the U.S. Bureau of Labor Statistics.

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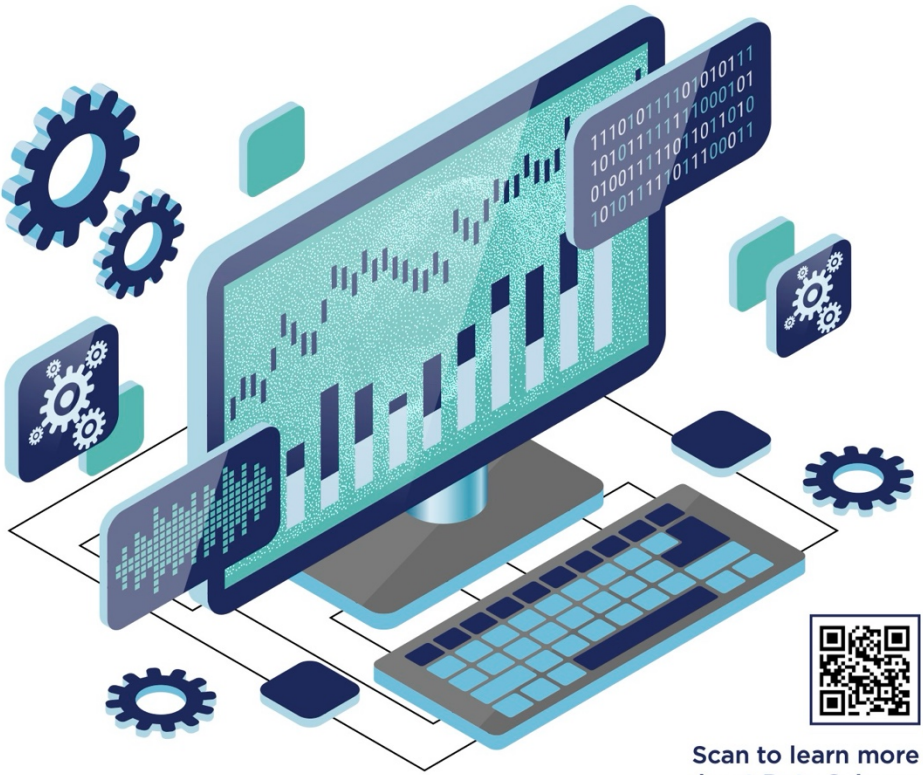

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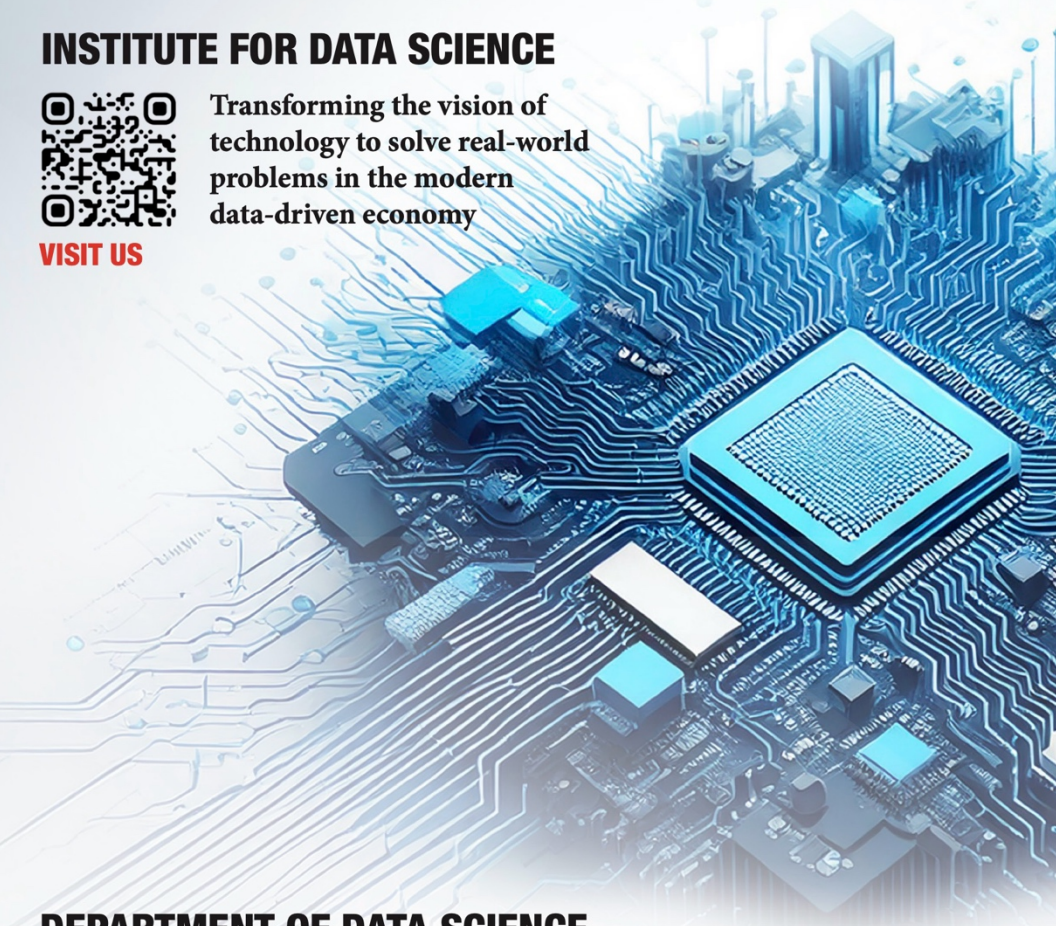

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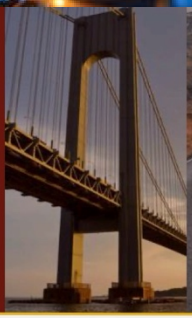

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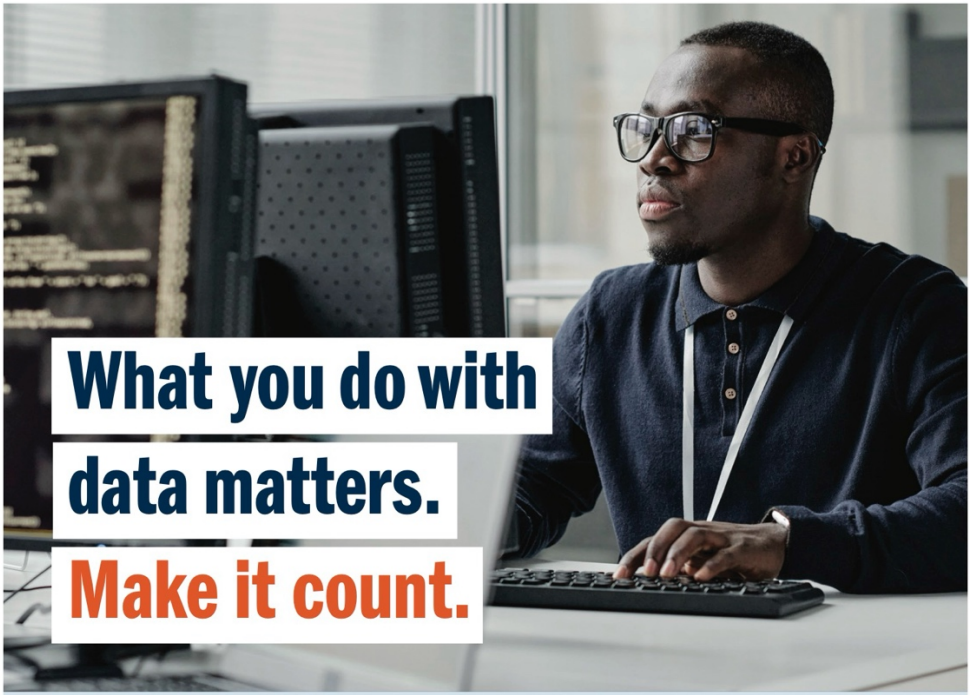

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Research Abstracts

RESEARCH SESSION 1: Lightning Talks - AI and Human Society

Automated Subregional Hippocampus Segmentation Using 3D CNNs: A Computational Framework for Brain Aging Biomarker Analysis

Author(s):
Eshaa Gogia (Rutgers), Arash Dehzangi (University of Texas-Dallas), Iman Dehzangi (Rutgers)

Abstract: This paper presents a fully automated computational framework for hippocampal subregion segmentation from 3D T1 weighted MRI using nnUNet a self-configuring deep learning model; the pipeline integrates preprocessing data standardization and volumetric analysis to enable accurate brain age estimation. It segments anterior and posterior regions, achieving robust performance with Dice score around 0.73; results demonstrate reliable anatomical delineation and clinically relevant biomarker extraction: supporting early detection of neurodegeneration and scalable neuroimaging analytics across heterogeneous datasets. The framework outperforms traditional atlas based and standard U Net methods, providing reproducible segmentation and interpretable volume metrics for research and clinical applications.

Comparative Study of LLM Models for Identifying Acronyms and Their Definitions in Scientific Literature

Author(s):
Petro Skrypnyk, Vasil Hnatyshin, Umashanger Thayasivam (all Rowan University)

Abstract: This work extends a prototype framework for automated acronym and definition extraction from scientific literature. The initial study applied OpenAI GPT-4o-mini with regular expressions on 200 papers; this work scales the project to 10,000 papers across multiple scientific domains. Key improvements include font-size-based PDF-to-text conversion, optimized text preprocessing, and an expanded model comparison, adding Google Gemini 2.0 Flash and Anthropic Claude Haiku 4.5. A fully automated pipeline supports regex pattern matching, regex

with LLM refinement, and direct LLM text extraction, with additional multimodal PDF submission to each model's API. Performance is assessed on acronym identification and definition quality using precision, recall, and F1-score against a manually curated ground truth.

Hybrid Deep Learning and Support Vector Data Description for Fraud Detection: A Bayesian-Enhanced Anomaly Detection Framework

Author(s):
Mehmet Turkoz, Rajiv Kashyap (all William Paterson University)

Abstract: Financial fraud imposes significant costs on economies worldwide. Traditional detection methods are inadequate for the increasingly complex and adaptive fraud patterns in high-dimensional data. This paper introduces a hybrid anomaly detection framework combining deep learning, Support Vector Data Description (SVDD), and Bayesian uncertainty. Our approach addresses three key limitations of existing systems: poor performance under extreme class imbalance, dependence on scarce or noisy labeled fraud data, and limited interpretability. By integrating advanced feature extraction and uncertainty estimation, the framework complies with GDPR requirements and aims to improve detection accuracy, robustness and explainability in modern fraud detection environments.

A Multi-Dimensional Quantitative Analysis of Learning Outcomes, Engagement, Accessibility, and Cultural Responsiveness

Author:
Sonal Pandey (Rutgers University)

Abstract: Study investigates student perceptions of artificial intelligence across ten dimensions of education, including learning outcomes, engagement, personalized learning, feedback, accessibility, and cultural responsiveness. Surveying 400 students with IRB approval, the research applies rigorous non-parametric statistical methods to test 26 theory-driven hypotheses, achieving an 84.6% confirmation rate. Findings demonstrate that students recognize AI's significant contributions to learning improvement, resource efficiency, policy awareness, and inclusive education. The strongest

association found links resource efficiency directly to accessibility, providing evidence-based support for equity-centered AI investment. This research offers actionable recommendations for educators, administrators, and policymakers advancing responsible AI integration in higher education.

Suspicion Level Quantification for Explainable AI in Smart Manufacturing

Author(s):
Parthkumar Patel, Joseph Cohen (All Rutgers University)

Abstract: Explainable artificial intelligence (XAI) techniques are increasingly used in smart manufacturing systems to detect faults, process deviations, and security threats. However, these explanations can themselves be unreliable, especially for rare anomalies. This talk presents SusXAI, a new framework for quantifying the suspicion level of model explanations. The method clusters similar explanations and analyzes their correlation structure to measure both local and global deviation from expected patterns. Demonstrated on real world manufacturing applications, SusXAI helps identify unusual explanations that may signal model drift, adversarial behavior, or rare operating conditions, improving trust and resilience in industrial AI systems.

Information Extraction from ESG Reports Using NLP: A ChatGPT Comparison

Author(s):
Steven Katz, Yu Gu, Lanxin Jiang (All Rutgers University)

Abstract: Natural Language Processing (NLP) has long been limited to extracting textual metadata, such as sentiment, from complex text. Reliably extracting specific information would be a boon to accounting professionals and investors who regularly peruse massive text corpora. Large Language Models (LLMs) offer a promising alternative to NLP, but suffer from unique flaws (e.g., hallucination, non-deterministic output). We compare the performance of a simple NLP information extraction method to an LLM by pulling basic information from ESG reports, which are notoriously long and unstructured texts. Results suggest LLMs and NLP have complementary weaknesses, and

mitigation efforts require further examination.

Hit Them Where They Eat: Adoption of Cybersecurity in Franchising from a Dynamic Capabilities Perspective

Author:
Andrey Kretinin (William Paterson University)

Abstract: Cybersecurity presents unique challenges in franchising systems, where decentralized operations coexist with centralized brand governance. This study examines how franchisors and franchisees adopt cybersecurity practices within this hybrid structure. Drawing on the resource-based view and dynamic capabilities framework, cybersecurity is conceptualized as an evolving organizational capability rather than a static compliance function. Using secondary data from franchising firms in technology-intensive industries, the study explores how firms sense, coordinate, and respond to cyber threats. The findings contribute to strategy and franchising literature by highlighting the importance of network-level capability orchestration for achieving cybersecurity resilience and sustaining long-term performance.

A Simple Model of Sea Spray

Author(s):
Mathew Umano, Samantha Donner, Peter March (All Rutgers University)

We present a stochastic model of sea spray using a shot noise process driven by a homogeneous Poisson point process with intensity F(r)drdt, where F(r) describes droplet generation. The model assumes droplets follow vertical trajectories determined by radius, no droplet-droplet interactions, constant initial velocity, and a steady vertical wind field. Under these assumptions, the total airborne spray mass below a height, z, is a stationary process with explicitly defined mean and covariance. Examples incorporate increasing physical realism, including gravity, drag, and evaporation, leading to an estimate of a spray layer depth at high wind speeds.

Regional Variations in Saree Preferences Across India: A Google Trends Data Analysis

Author(s):
Ankita Banik (NJCU), Diganto Singh (East West University, Bangladesh), J.D Jayaraman (NJCU/Kean)

Abstract: This study analyzes regional variations in saree preferences across India using Google Trends data. Focusing on Banarasi, Kanjivaram, Paithani, Jamdani, and Chikankari sarees, it examines search behavior across five major states from 2021 to 2026. The research identifies temporal and geographic demand patterns using search indices as proxies for consumer interest. It also uses keyword analysis to capture seasonal and festival-driven trends. To forecast demand, the study applies the Meta Prophet model and compares it with ARIMA and TimesFM. Results are presented via an interactive Power BI dashboard, offering actionable insights for retailers and enabling data-driven decisions in practice today.

Statistical Structure and Extreme Behavior of Rainfall Events Derived from MRMS Data

Author(s):
Ali Tavakoli (Rutgers), Weikang Qian (UFL), Yixin Wen (UFL), Ruo-Qian (Roger) Wang (Rutgers)

Abstract: This study examines the statistical structure and extreme behavior of rainfall events using high-resolution MRMS precipitation data from 2016 to 2025. Rainfall accumulations over 3-, 6-, and 24-hour windows exhibit strongly right-skewed, heavy-tailed distributions, showing that rare but intense storms play a dominant role. An event-based framework identified 146 distinct rainfall events and quantified their duration, peak intensity, and total accumulation. Results indicate that peak intensities are generally associated with short-duration storms, while the largest total rainfall arises from moderate-duration events with sustained intensity. Although interannual variability is substantial, long-term trends remain uncertain within the available observational record.

RESEARCH SESSION 2: Industry Research - AI Applications

Human-in-the-Loop Continuous Learning for Large-Scale AI Systems

Author(s):
Archit Sood, Adhiraj Sood (All Microsoft)

Abstract: This work presents a practical framework that positions human feedback as a control plane for managing reliability in continuously learning AI systems operating in real-world environments. Rather than introducing new algorithms, the framework focuses on how uncertainty-driven human intervention can stabilize model behavior, improve label efficiency, and reduce error amplification as data distributions evolve. Using applied natural language processing workloads as representative use cases, the study examines empirical system behavior across update cycles, including learning stability, annotation cost, and retraining safeguards. The goal is to help organizations design AI systems that remain robust, accountable, and trustworthy as they scale in production settings.

Building Sustainable AI Ecosystems: Learnings from Creating a Large Telecom Model and the Future of Intent-Based Networks

Author:
Rajeev Koodli (SoftBank)

Abstract: The shift to Intent-Based Autonomous Networks requires sustainable AI ecosystems. Analyzing the SoftBank Large Telecom Model (LTM), this research outlines four core industry challenges. First, Infrastructure sustainability requires domain-specific AI, which enables the LTM to cut network configuration times from days to minutes. Second, Data demands secure governance frameworks for domain-specific operational data, achieving LTM's over 90% accuracy while avoiding the ""noisy"" open web. Third, Ethics mandates strict operational guardrails to manage autonomous AI and prevent infrastructure failures. Finally, People must be retrained, as AI shifts human roles from rote configuration to strategic oversight. Solving these ensures responsible AI development.

AI: Problem or Solution? Assessing Its Potential to Decarbonize Global Freight Logistics

Author(s):
Gargi Madhok (Milora Tech Inc/WPU Alumni; Alekhya Nadimpalli (USC)

Abstract: Artificial intelligence is rapidly expanding its footprint across industries globally, but as data centers consume increasing shares of global electricity and water, how much of a climate threat does it actually pose? Can AI simultaneously contribute to both - the problem and the solution? This research investigates whether strategically designed AI systems can meaningfully support the decarbonization of global logistics, a sector responsible for roughly more than 7-8% of greenhouse gas emissions. By analyzing applications of AI across emissions tracking, route optimization, predictive analytics, and supply chain transparency, it asks whether well-governed AI solutions can result in emissions reductions that outweigh or nullify AI's own environmental costs?

RapidData AI Studio: A Practical Framework for Responsible and Scalable AI Adoption in Mid-Market Enterprises

Author:
Birender Saini (RapidData)

Abstract: RapidData AI Studio is an AI-native platform designed to help mid-market enterprises move from experimental AI pilots to scalable, enterprise-wide adoption. Built on a low-code, governed architecture, it enables organizations to design, deploy, and manage AI agents and workflows within existing systems, without the complexity of a ground-up build. Emphasizing human-in-the-loop design, it augments employee productivity rather than replacing it. With built-in security, integration, and a structured implementation approach, the platform accelerates time-to-value, improves efficiency by 2-5X, and ensures responsible, practical, and measurable AI-driven business outcomes.

AhaSphere: Agentic AI for Well-being and Behavioral Health Support

Author(s):
Jim Samuel (Rutgers & AIXosphere), Tanya Khanna, Julia Esguerra, Kushal Patel (All AIXosphere)

Abstract: AhaSphere addresses the under-served space between everyday well-being and formal behavioral healthcare by providing continuous, non-clinical micro-support and an optional pathway to deeper help. It combines mood-lifting interactions such as humor, motivation, and creativity with adaptive personalization, bounded support for sleep, low mood, and addiction-related challenges, and connections to trusted contacts, community programs, and specialists. Grounded in evidence on supportive AI and everyday emotional uplift, AhaSphere is designed to reduce stigma, lower friction in help-seeking, and normalize supportive interaction within daily life. Its aim is to make well-being support more approachable, continuous, and connected for users across diverse care settings.

Agentic AI: Autonomous Decision-Making Systems

Author(s):
Kalpan Dharamshi (Institute of Electrical and Electronics Engineers)

Abstract: The paper proposes a modular framework for designing and building autonomous agents for business applications. The foundation of autonomous decision-making is rooted in the reasoning capabilities and pre-trained knowledge base of LLMs. By leveraging reasoning strategies such as Chain-of-Thought, Tree-of-Thoughts and ReAct, the framework empowers business applications with adaptable and explainable decision-making. These capabilities are demonstrated through two distinct experiments: Anti-Money Laundering classification using Chain-of-Thought, and Reinforcement Learning optimization using ReAct approach. Although the results provide sufficient evidence of autonomous agents outperforming traditional manual and rule-based decision-making approaches, challenges pertaining to stochastic LLM behavior in edge-cases persist. These challenges

necessitate the adoption of a Centaurian (Human-AI symbiosis) approach for robust execution within enterprise applications.

Agentic AI: Autonomous Monitoring and Compliance

Author:
Kalpan Dharamshi (Institute of Electrical and Electronics Engineers)

Abstract: The paper presents a multi-agent framework designed to transform traditional manual and rule-based compliance systems into proactive autonomous agentic systems that are capable of extracting and interpreting ever-evolving compliance policies, proactively scanning application systems to identify violations, and proposing and implementing remediation plans with minimal human intervention. The framework is empirically validated for applications requiring adherence to Sonar compliance policies. While the agentic framework is able to outperform manual and rule-based approaches in operational efficiency and cost, challenges pertaining to LLM hallucination and providing partial resolutions to compliance violations persist, necessitating human oversight. The optimal balance of Human-AI symbiosis is the key to successful design and implementation of any autonomous system.

Multidimensional Cervical Spine Assessment: A Systematic Review with Quantitative Evidence Synthesis and Meta-Analysis of Conventional, Sensor-Based, and Artificial Intelligence-Driven Abstract

Author(s): Vijay Yadav (Brooklyn Health; University of New South Wales)

Abstract: Accurate, objective cervical spine assessment spanning structural, functional, neurological, and rehabilitative domains remains a central clinical challenge. We conducted a PRISMA 2020-compliant systematic review with quantitative evidence synthesis and meta-analysis across thirteen assessment modality domains, searching PubMed, Embase, IEEE Xplore, and Scopus through January 2025. Formal random-effects meta-analysis confirmed excellent wearable IMU reliability for cervical range-of-motion measurement, with a pooled ICC

of 0.933. AI-assisted imaging achieved radiologist-level diagnostic performance across eight independent studies. A conceptual framework guiding method selection across four clinical contexts is proposed, supporting integrated multimodal assessment ecosystems for scalable, patient-centered cervical spine care.

Hormonal Signatures of Metabolic Health: Tissue Cortisol Patterns Across Male BMI Groups

Author(s):
Vijay Yadav (Brooklyn Health; University of New South Wales)

Abstract: Cortisol, the body's stress hormone, plays a key role in metabolism and energy regulation. This study compared cortisol patterns in normal-weight and overweight men using a wearable device that continuously sampled hormone levels from belly fat. Advanced signal processing and statistical modeling were used to analyze the data. Results showed that both groups produced cortisol bursts at the same rate. However, overweight men cleared cortisol from fat tissue faster, resulting in lower overall hormone exposure. Normal-weight men also showed a stronger energy response after breakfast, suggesting that body weight affects how fat tissue processes cortisol rather than how the brain signals its release.

K-SENSE: A Knowledge-Guided Self-Augmented Encoder for Neuro- Semantic Evaluation of Mental Health Conditions on Social Media

Author(s):
Vijay Yadav (Brooklyn Health; University of New South Wales)

Abstract: Mental health detection from social media remains challenging due to figurative language, implicit expression, and noisy user-generated content. We propose K-SENSE, a framework combining external commonsense knowledge with internal self-augmentation for stress and depression detection. K-SENSE extracts inferential knowledge via COMET across five mental state dimensions, constructs a self-augmented semantic anchor through dual-pass encoding, and applies supervised contrastive learning to suppress irrelevant knowledge noise. A learned cross-space projection bridges representational gaps between

encoders. Evaluated on Dreaddit and Depression Mixed benchmarks, K-SENSE consistently outperforms prior baselines, with more pronounced gains on heterogeneous, multi-domain datasets where robust knowledge filtering provides the greatest leverage.

Efficient Estimation of Three-Way Partial Volume Under the ROC Surface for Multi-Class Disease Staging

Author(s):
Vijay Yadav (Brooklyn Health; University of New South Wales)

Abstract: Evaluating multi-class diagnostic systems within clinically constrained operating regions remains computationally prohibitive using traditional methods. We propose the Three-Way Partial Volume Under the ROC Surface (tpVUS), extending the O(n log n) binary partial AUC estimator to three-class disease staging. By applying the inclusion-exclusion principle to decompose the three-dimensional partial volume into efficiently computable components, our method achieves O(n log n) complexity. Validated on the CDC Diabetes Health Indicators dataset, the proposed estimator completed 1,000 bootstrap replications in 35.9 seconds, representing a 117,400-fold speedup over conventional approaches, making rigorous statistical inference for large-scale multi-class diagnostics computationally feasible.

RESEARCH SESSION 3: AI and Informatics

Automation Bias and Over-Reliance on Generative AI: Implications for Student Learning in Higher Education

Author(s):
Amirtha Giridhar, Elin M. Wicks (All Rutgers University)

Abstract: The adoption of generative artificial intelligence (GenAI) tools has rapidly changed the learning behaviors in university education amongst students. Although GenAI offers immediate access to problem solving, it raises a serious concern about over-reliance and diminished conceptual engagement. This study investigates these dynamics in a large undergraduate Engineering Economics course (N = 825) at a university, focusing on automation bias, false confidence, imposter

syndrome, and equity implications. Using a mixed-methods approach, the research examines patterns of AI tool usage, their psychological effects, and their relationship to conceptual mastery. Investigation predicts that both advantages and drawbacks will be prominent in the learning experience.

A Data-Driven Machine Learning Analysis of School Bus-Related Crashes in New Jersey

Author(s):
Md Sadman Islam (Rowan), Md Arifuzzaman Nayeem (STV Incorporated), Mohammad Jalayer (Rowan), Patrick Szary (Rutgers)

Abstract: This study presents a data-driven analysis of school bus–related crashes in New Jersey using advanced machine learning models, including XGBoost, Random Forest, Support Vector Machine, Decision Tree, and AdaBoost. Utilizing crash data from 2016 to 2024, the research identifies key factors influencing crash severity, categorized as property damage, injury, and fatal outcomes. XGBoost demonstrated the highest predictive performance, particularly for fatal crashes. SHAP analysis revealed that crash type and season significantly impact severity, with higher risks observed during winter mornings. The findings provide actionable insights to improve school bus safety and support data-driven transportation policies and interventions aimed at reducing crash risks.

How AI Chatbots See Companies: A Brand Visibility Index for Optimizing Digital Marketing Strategies in Generative AI Queries

Author(s):
Hieu Nguyen, Ashley Brower, Pedro Aisa, Umashanger Thayasivam, Dat Tran, Anthony Segrest (All Rowan); Udayan Bose (NetElixir), Nelton Raj (NetElixer)

Abstract: In digital marketing little is known about how Large Language Models (LLMs) prioritize company brands and products when querying generative AI chatbots such as ChatGPT or Gemini. To quantify this behavior and understand differences across chatbots so that businesses can optimize their digital marketing strategies in generative AI queries, we propose a Brand Visibility Index (BVI), an

analytics-based metric that computes a numerical score between 0 to 100 and reflects the relative visibility of a particular brand in LLM searches against its competitors. We discuss BVI scores for some well-known company brands and validate results against traditional Internet search.

CAFO: A Pilot Study on Convergence-Aware Feedback Orchestration for Self-Correcting LLM Pipelines

Author(s):
Muhammad Faizan Raza, Shuo (Luna) Yang, Satish Mahadevan Srinivasan (All Penn State University)

Abstract: Production RAG pipelines fail silently when upstream components degrade, yet existing self-correction methods only revise answers, leaving root causes untouched. We introduce CAFO, a closed-loop controller that diagnoses structural pipeline faults through 30-dimensional error fingerprints, clusters failing queries into error neighborhoods, and deploys learned remediation actions targeting specific components. Our novel Neighborhood-Distilled Correction Exemplars (NDCE) mechanism propagates successful fixes across semantically similar queries, creating compounding returns. On 100 Natural Questions queries under nine fault scenarios, CAFO+NDCE achieves 4.55 CCE, 2.6× above the oracle upper bound, while established self-correction baselines score near zero, demonstrating that structural repair and cross-query knowledge transfer are essential for reliable LLM pipelines.

Judgment Literacy as Infrastructure for Sustainable Artificial Intelligence Governance

Author(s):
Ken Howarth (Mercer County Community College)

Abstract: This article argues that responsible artificial-intelligence governance depends not just on technical performance, but on judgment literacy as a core institutional infrastructure. It distinguishes decisions from judgments, shows how first-generation artificial-intelligence failures often reflect deficits in oversight capacity rather than model failure alone, and proposes a layered “judgment stack” of

interpretive fluency, calibration, accountability, and normative foresight. Drawing on expertise studies, developmental epistemology, ethics, and governance research, it contends that sustainable deployment requires learning architectures, adequacy floors, and techno-moral forms of institutional preparation equal to the systems being deployed.

Synthetic Social Media Analytics: A Hybrid GAN-LLM Architecture for Platform-Specific Influencer Marketing Analysis

Author(s):
Jin-A Choi (Montclair University); Cyril S. Ku (William Paterson University)

Abstract: This study proposes a hybrid generative AI framework for analyzing platform-specific dynamics in influencer marketing. The architecture integrates Sequential Generative Adversarial Networks (SeqGAN) for synthetic social media text generation with transformer-based large language models (LLMs) for semantic and sentiment analysis. Using 331 real Facebook comments as seed data, SeqGAN generated 4,982 synthetic comments that preserved key linguistic and sentiment characteristics while expanding analytical capacity. The resulting synthetic corpus enables scalable analysis of discourse patterns across social media platforms. It supports the simulation of marketing scenarios, including influencer controversies and product launches, providing a privacy-conscious, scalable approach to computational marketing analytics.

Understanding AI in the Public Sphere: Multi-Level News Headlines Data for Public Informatics in Society and Policy

Author(s):
Siritha Chidipothu (Rutgers), Vidhi Vijay Gala (Rutgers) & Tanya Khanna (AIXosphere LLC)

Abstract: In recent years, artificial intelligence (AI) has emerged as a transformative force shaping public discourse, with news media playing a critical role in influencing perceptions through selective framing of opportunities, risks, and societal implications. This paper presents three complementary datasets comprising AI-related news headlines, designed to capture linguistic, temporal, and multi-

dimensional conceptual aspects of AI narratives. The datasets support a broad range of applications in machine learning (ML), natural language processing (NLP), and large language model (LLM) frameworks, including sentiment analysis, thematic classification, and multi-label modeling. By incorporating human-centered and interdisciplinary dimensions, these datasets enable systematic examination of ethical, social, and economic perspectives surrounding AI. Furthermore, they facilitate research on media framing, public perception, and policy discourse, thereby contributing to a more rigorous, transparent, and responsible understanding of AI's evolving societal impact.

RESEARCH SESSION 4: Agentic AI - Innovations & Future Trends

Orchestrating Sustainability: A Multi-Agent Approach to AI-Driven Environmental ESG Performance

Author(s): Rajiv Kashyap, Ana Christina Siquiera, Cyril S. Ku, Ali Mohammad Saghiri, Michael Aviles (All William Paterson University)

Abstract: How does AI translate environmental action into measurable firm performance? Synthesizing 149 studies through a dual-AI agentic pipeline with Claude as orchestrator and ChatGPT configured as five sequential specialist agents, this paper maps two distinct causal pathways. The Operational Eco-Efficiency Pathway (76%) shows that reinforcement learning and predictive analytics eliminate the trade-off between environmental improvement and financial performance. Both are the outcome of the same underlying operational intervention. The Informational Legitimacy Pathway (19%) shows NLP systems improving ESG disclosure, but only when verification infrastructure constrains greenwashing. The methodology is a proof-of-concept: a replicable human-in-the-loop, multi-agent architecture for large-scale research.

A Workflow for Creating Academic Introductions Using Agentic AI

Author(s):
Ayse Sert Oti (Rutgers University),

Jim Samuel (Rutgers University & AIXosphere)

Abstract: For this project, we built an agentic AI notebook that supports research writing in a more responsible and transparent way. The system follows the workflow of search, synthesize, write, evaluate, and revise to generate publication-style paper introductions across several test scenarios. I designed it to use structured outputs, verified citations, evaluation rubrics, and AI-usage logging so the process is more reproducible and auditable. We also plan to add an ideation homogenization detector to identify when evaluator scores become too repetitive. Overall, this work explores how agentic AI can assist research outputs while still keeping governance, citation verification, and human oversight at the center.

Stressed by AI: A Multiagent NLP Framework for Detecting Technostress Dimensions and Behavioral Signals in Reddit Discourse

Author:
Sina-Marie Mayer (Rutgers University)

Abstract: As AI becomes increasingly integrated in everyday life, its rapid adoption has fueled technostress, defined as a multidimensional form of psychological distress. While structured surveys have been shown to capture stated concerns, they frequently fail to account for spontaneous reactions found in everyday communication. This study presents an initial agentic application for the descriptive and qualitative analysis of AI-related discourse on Reddit. It explores how users express and collectively negotiate uncertainty and perceived threat. By examining naturalistic online interactions through an automated multi-agent pipeline, we trace how AI anxiety manifests in everyday language and aggregates into recognizable collective patterns.

An Agentic AI System for Automated Resume Evaluation in Human Resource Recruitment

Author(s):
Adnan Zia, Ahmad Shahbaz, Joshua Mendez, Alexander Cohen, Sina-Marie Meyer (All Rutgers University)

Abstract: Our project involves development and deployment of

an Agentic AI system that can be used to automate the process of resume evaluation at the enterprise level during the recruiting process. The current methods of screening resumes are more dependent on key word matching and they do not give insights of understanding of the candidate qualifications in context. The system suggested here is a variant of overcoming this weakness by a multi-stage agentic pipeline based on large language models (LLM), which uses automated logic and systematic human supervision to generate transparent, rubric-based candidate scoring at scale.

Use of Artificial Intelligence and AI Agents in Entrepreneurship and Sustainability Management

Author(s):
Ana Cristina O. Siqueira, Rajiv Kashyap, Ali Mohammad Saghiri, Cyril S. Ku, Michael Aviles (All William Paterson University)

Abstract: Artificial Intelligence (AI) and AI agents are emerging as a transformative force in entrepreneurship, enabling autonomous systems that interpret context, formulate goals, coordinate actions, and learn over time. In parallel, the shift toward corporate social responsibility and environmental sustainability increases the need for decision support in resource allocation and accountability. Such transitions demand reimagined organizational practices. This review synthesizes theoretical and empirical contributions from research addressing these intersecting developments. We advance an integrative framework that captures the current landscape of scholarship and articulates avenues for future inquiry.

Dynamic Policy Sandbox for Government Agentic AI: A Policy-Aware Agentic System for Pre-Deployment Testing in Health and Education

Author(s):
Abdul Kalam Mustaq (Rutgers), Ayse Sert Oti (Rutgers), Edward Yin (Rutgers), Terri-Ann Grant (Rutgers), Xinyi Zhao (Rutgers), Justin Trugman (BetterFutureLabs), Jim Samuel (Rutgers & AIXosphere), Richard Anderson (Rutgers)

Abstract: This project introduces the Dynamic Policy Sandbox, a testing environment designed to

evaluate agentic AI systems before they are deployed in government settings. Because these systems influence access to healthcare, education, benefits, and public services, failures can harm vulnerable populations. The sandbox uses eight coordinated AI agents to convert complex policy text into machine enforceable rules and stress test them through realistic simulations, including edge case eligibility and policy change scenarios. A built-in feedback loop detects risks such as bias, privacy leakage, or non-compliance and enables correction. The system measures performance across compliance, fairness, and adaptability to ensure AI respects policy and people first.

From Operational Data to Explainable Decisions: A Semantic, Agent-Ready Approach to Case Management in Patient Support Programs

Author(s):
Suman Attri (Saint Peter's University), Ankush Ahuja (Axtria Incorporated)

Abstract: Healthcare case managers often face complex decisions with limited visibility into operational risks. This research introduces a practical, explainable decision framework that transforms raw operational data into clear, auditable case priorities. By combining deterministic analytics with controlled AI assistance, the system improves transparency while maintaining governance and reproducibility. Instead of relying on black-box predictions, the approach emphasizes structured decision logic supported by interpretable risk signals. Results show how such architectures can reduce ambiguity in prioritization and support consistent decision-making. The work demonstrates how agent-driven systems can be safely introduced into healthcare operations while preserving trust, accountability, and operational reliability.

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