IEEE BALTIMORE TECHNICAL COLLOQUIUM

IEEE Baltimore Section

PROFESSIONAL DEVELOPMENT CONFERENCE

IEEE
Advancing Technology for Humanity

UNIVERSITY OF MARYLAND, BALTIMORE COUNTY

2 NOVEMBER 2024

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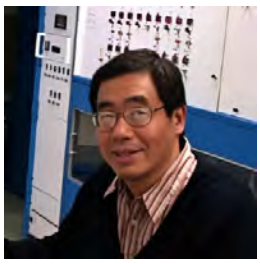

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Digital Media Specialist | Advisor
Neeta Basantkumar

SCHEDULE AT A GLANCE

SATURDAY, 2 NOVEMBER 2024				
8:00 AM – 12:00 PM	REGISTRATION			
8:15 AM – 9:15 AM	CONTINENTAL BREAKFAST			
8:45 AM - 8:55 AM	OPENING REMARKS & WELCOME NOTE			
8:55 AM - 9:05 AM	IEEE WELCOME REMARKS			
9:05 AM – 9:25 AM	KEYNOTE			
9:25 AM – 9:45 AM	KEYNOTE			
9:45 AM – 10:05 AM	KEYNOTE			
10:05 AM – 10:30 AM	COFFEE, NETWORKING, EXHIBITS, POSTERS & DEMOS MOVE TRUCK (STEM EXHIBIT)			
	TRACK 1: ENGINEERING IN MEDICINE & BIOLOGY RM 118	TRACK 2: POWER & ENERGY POWER ELECTRONICS RM 237	TRACK 3: COMMUNICATIONS COMPUTING RM 330	TRACK 4: POWER SKILLS DEVELOPMENT RM 101
10:30 AM – 10:55 AM	PRESENTATION	PRESENTATION	PRESENTATION	WORKSHOP
10:55 AM – 11:20 AM	PRESENTATION			
11:20 AM – 11:45 AM	PRESENTATION	PRESENTATION	PRESENTATION	PANEL
11:45 AM – 12:10 PM	PRESENTATION			
12:10 PM – 1:10 PM	LUNCH			
12:20 PM – 12:50 PM	KEYNOTE			
12:50 PM – 1:05 PM	KEYNOTE			
1:05 PM – 1:20 PM	BREAK TRANSITION & CONFERENCE ATTENDEES GROUP PHOTO			
	TRACK 1: ENGINEERING IN MEDICINE & BIOLOGY	TRACK 2: POWER & ENERGY POWER ELECTRONICS	TRACK 3: COMMUNICATIONS COMPUTING	TRACK 4: POWER SKILLS DEVELOPMENT
1:20 PM – 1:45 PM	PRESENTATION	PRESENTATION	PRESENTATION	PRESENTATION & PANEL
1:45 PM – 2:10 PM	PRESENTATION	WORKSHOP		
2:10 PM – 2:35 PM	PANEL	PRESENTATION	PRESENTATION	PRESENTATION
2:35 PM – 3:00 PM			PRESENTATION	PRESENTATION
3:00 PM – 3:20 PM	COFFEE, NETWORKING, EXHIBITS, POSTERS & DEMOS MOVE TRUCK (STEM EXHIBIT)			
3:20 PM – 3:45 PM	PRESENTATION	PRESENTATION	PRESENTATION	STUDENTS PROGRAM
3:45 PM – 4:10 PM	PRESENTATION		PRESENTATION	WORKSHOP
4:10 PM – 4:20 PM	BREAK TRANSITION			
4:20 PM – 4:50 PM	KEYNOTE			
4:50 PM – 5:00 PM	WRAP UP & ADJOURN			

DETAILED SCHEDULE

SATURDAY, 2 NOVEMBER 2024

8:00 AM – 12:00 PM — FOYER

REGISTRATION

8:15 AM – 9:15 AM — 116

CONTINENTAL BREAKFAST

8:45 AM – 8:55 AM — 116

OPENING REMARKS & WELCOME NOTE

Carole Carey| Conference Chair, 2024 IEEE Baltimore Technical Colloquium

8:55 AM – 9:05 AM — 116

IEEE WELCOME REMARKS

Drew Lowery | IEEE Region 2 Director

9:05 AM – 9:25 AM (KEYNOTE) — 116

MOVE WITH PURPOSE

Mary Ellen Randall | 2025 IEEE President-Elect | President and CEO | Ascot Technologies, Inc

Have you ever wondered how to take a seed of an idea to reality? The IEEE MOVE (Mobile Outreach utilizing Volunteer Engagement) Program started that way. That seed just celebrated its 8th anniversary of providing service to the community and is expanding internationally. MOVE volunteers support disaster relief agencies committed to assisting victims of natural disasters, such as hurricanes, forest fires, and flooding. MOVE brings assistance in terms of short-term communications, and power solutions, allowing those affected by these natural disasters to stay connected.

9:25 AM – 9:45 AM (KEYNOTE) — 116

AI AND CYBERSECURITY: THE TWAIN DO MEET AT UMBC

Anupam Joshi | Acting Dean and Oros Family Professor, College of Engineering & Technology | UMBC

UMBC's CoEIT is known for the expertise of its faculty in both Cybersecurity and AI. In this talk, we will describe a few threads of work where these two areas meet, leading to innovative research that leads to safer AI systems and more intelligent cyber security solutions.

9:45 AM – 10:05 AM (KEYNOTE) — 116

IS TECHNOLOGY MAKING US DUMBER?

Murty Polavarapu | President | Space Electronics Solutions LLC

With the explosive growth in the capabilities of Large Language Models (LLMs) and Artificial Intelligence (AI) assistants, the question of whether technology is making us smarter or dumber is on everyone's mind. There have been numerous reports of over-reliance on navigation tools resulting in serious accidents. Autonomous driving is coming (maybe). The latest smart phones are incorporating AI. Our learning habits have changed. ChatGPT is in classrooms. What does this mean to our cognitive capabilities? The latest research is not conclusive.

DETAILED SCHEDULE

SATURDAY, 2 NOVEMBER 2024

10:05 AM – 10:30 AM — **116**
COFFEE, NETWORKING, EXHIBITS, POSTERS & DEMOS

10:05 AM – 10:30 AM — **OUTSIDE GARAGE (COMMONS DRIVE)**
MOVE TRUCK (STEM EXHIBIT)

10:30 AM – 10:55 AM — **RM 118**

TRACK 1: ENGINEERING IN MEDICINE

QUANTITATIVE PSYCHOPHYSIOLOGY AS A MEASURE OF MIND-BODY FITNESS

Justin Brooks | Associate Professor, Computer Science and Electrical Engineering | UMBC

Mounting stress levels across generations have created an urgent need to explore the scientific basis of holistic, personalized, and non-pharmacological approaches to stress management. While many complementary and alternative medicine (CAM) practices, such as yoga, acupuncture, and mindfulness, demonstrate measurable physiological benefits, there remains a critical gap in understanding how mind-body balance can be effectively sustained over time.

10:30 AM – 11:20 AM — **RM 237**

TRACK 2: POWER, ENERGY & ELECTRONICS

DATA CENTERS AND ITS IMPACT ON THE BULK-POWER SYSTEM

Edvina Uzunovic | Associate Director of Power System Engineering | Worcester Polytechnic Institute

The electric power business is a regulated and the most capital-intensive industry. To provide economically efficient energy services, utilities build grids just big enough to deliver electricity to homes and businesses. With the rapid build-out of powerful data centers designed to run AI workloads, electricity demand is projected to grow at a tenfold increase rate from current levels through the end of the decade.

10:30 AM – 11:20 AM — **RM 230**

TRACK 3: COMMUNICATIONS COMPUTING

ENABLING ACCESS AND TOPOLOGY OPTIMIZATION OF UNDERWATER NETWORKS THROUGH AN AERIAL VEHICLE

Mohamed Younis | Professor and Chair, Department of Computer Science and Electrical Engineering | UMBC

Recent years have witnessed an increased interest in the applications of underwater networks (UNs). The conventional UN design: (i) employs acoustic signals for establishing communication links among submerged nodes, and (ii) deploys floating nodes to interface the UN through radio links to non-sea-based units and to correlate the node positions to a global coordinate system.

10:30 AM – 11:20 AM (WORKSHOP) — **RM 101**

TRACK 4: POWER SKILLS DEVELOPMENT

MASTERING THE ART OF NEGOTIATIONS: ACCELERATING YOUR CAREER

Donna Haire | CEO | The ERIAH Group, Inc.

In the fast-paced world of career advancement, those who master the art of negotiation set themselves apart. This dynamic session offers powerful techniques and strategies to transform the way you approach career development and seize opportunities.

DETAILED SCHEDULE

SATURDAY, 2 NOVEMBER 2024

10:55 AM – 11:20 AM **RM 118**

TRACK 1: ENGINEERING IN MEDICINE

WEARABLE ACOUSTIC MONITORING FOR COPD: EARLY DETECTION THROUGH BILATERAL SENSING AND AI

Lloyd Emokpae | Associate Professor, Computer Science and Electrical Engineering | UMBC

Chronic Obstructive Pulmonary Disease (COPD) is the third leading cause of death globally, with exacerbations significantly increasing morbidity, mortality, and healthcare costs due to frequent hospital readmissions. Early detection is crucial for timely interventions that can often be managed at home, reducing strain on healthcare systems and improving patient outcomes.

11:20 AM – 11:45 AM **RM 118**

TRACK 1: ENGINEERING IN MEDICINE

WIRELESS WEARABLE, IMPLANTABLE AND INGESTIBLE TECHNOLOGY IN HEALTHCARE: A PERSPECTIVE ON OPPORTUNITIES AND CHALLENGES

Kamran Sayrafian | Senior Scientist | National Institute for Standards and Technology (NIST) | Fellow Washington Academy of Sciences

Advances in miniature-sized microelectronics have created the opportunity to build ultra-small sensing & actuating devices that can be implanted, ingested or worn on the surface of the human body. Adding wireless communication capability to these devices enables the possibility of continuous delivery and processing of important health or physiological data.

11:20 AM – 12:10 PM **RM 237**

TRACK 2: POWER, ENERGY & ELECTRONICS

A ROAD TO FUSION POWER WITH THE CENTRIFUGAL MIRROR

Carlos Romero-Talamas | Associate Professor, Department of Mechanical Engineering | UMBC

Fusion energy, the combination of light nuclei that releases enormous amounts of energy while forming heavier elements, has long been considered the ultimate source of energy for its many benefits over other sources: abundant and virtually inexhaustible fuel, no generation of greenhouse gases, proliferation resistant, and no long-lived radioactive waste.

11:20 AM – 12:10 PM **RM 230**

TRACK 3: COMMUNICATIONS COMPUTING

NEURO-SYMBOLIC AI: THE THIRD WAVE OF AI

Houbing Herbert Song | Associate Professor | University of Maryland, Baltimore County

There are three waves of Artificial Intelligence. The first Wave of AI is Crafted Knowledge, which includes rule-based AI systems. The second wave of AI is Statistical Learning, which includes machines becoming intelligent by using statistical methods. The third wave of AI is contextual adaptation. In the third wave, instead of learning from data, intelligent machines will understand and perceive the world on its own and learn by understanding the world and reason with it.

DETAILED SCHEDULE

SATURDAY, 2 NOVEMBER 2024

11:20 AM – 12:10 PM (PANEL) **RM 101**

TRACK 4: POWER SKILLS DEVELOPMENT

BREAKING BARRIERS & SHAPING THE FUTURE: WOMEN LEADERS IN STEM

Moderator: Donna Haire | CEO | The ERIAH Group, Inc.
Panelists: Rhonda Farrell | CEO | Global Innovation Strategies
Mary Ellen Randall | 2025 IEEE President-Elect | President and CEO | Ascot Technologies, Inc
Girija Subramaniam | Founder & Consulting Partner | Forcing Function LLC
Edvina Uzunovic | Associate Director of Power System Engineering | Worcester Polytechnic Institute

Women in STEM have been at the forefront of groundbreaking innovations, from space exploration to artificial intelligence and genetic research. This panel will bring together distinguished women leaders in science, technology and engineering to discuss their journeys, challenges, and triumphs in fields traditionally dominated by men. Through a dynamic discussion, panelists will share insights into how they have navigated and transformed their industries, the role of mentorship and diversity in fostering innovation, and strategies for empowering the next generation of female STEM leaders. This session aims to highlight not only the remarkable achievements of women in STEM but also to explore actionable steps toward creating a more inclusive and equitable future in these critical fields. Attendees will leave inspired and equipped with a deeper understanding of how diverse leadership is shaping the future of STEM.

11:45 AM – 12:10 PM **RM 118**

TRACK 1: ENGINEERING IN MEDICINE

DE-CONFLICTING MEDIATION OF CLOSED-LOOP AUTOMATED CRITICAL CARE TREATMENTS

Jin-Oh Hahn | Professor, Mechanical Engineering | University of Maryland

Motivated by its potential to provide quality patient care while relieving the workload of clinicians, closed-loop automation is gaining an increasing interest in the domain of critical care medicine. To date, there have been notable advances in closed-loop automation of individual critical care treatments, such as fluid resuscitation and management, vasopressor therapy, anesthesia, and mechanical ventilation. However, how these individual closed-loop automated treatments will interact with each other when simultaneously used remains unknown.

12:10 PM – 1:10 PM **116**
LUNCH

12:20 PM – 12:50 PM (KEYNOTE) **116**

AI IN SECURITY: CHALLENGES AND OPPORTUNITIES

Vivek Shandilya | Professor, Department of Computer Science | Bowie State University

The recent increase in e-commerce, IOT, and online activities since COVID, has made cyber security critical. In the last decade the developments in deep learning have been revolutionary.
Many computational tasks which seemed hopeless have been accomplished beyond optimistic expectations. Many security mechanisms which were robust have started looking vulnerable. But many AI techniques are also being useful in hardening the security measures. A critical outline of this situation is being presented in this lecture.

12:50 PM – 1:05 PM (KEYNOTE) **116**

WHAT IS IEEE HTB (HUMANITARIAN TECHNOLOGIES BOARD) AND HOW CAN YOU GET INVOLVED?

Bhanu Sood | HTB Coordinator | IEEE Region 2

IEEE Humanitarian Technology Board (HTB) focuses on leveraging technology to address global humanitarian challenges. It supports projects that aim to improve quality of life in underserved communities, focusing on areas such as healthcare, education, energy, disaster response, and sustainable development. HTB encourages collaboration between engineers, technologists, and local stakeholders to develop affordable, scalable solutions.

DETAILED SCHEDULE

SATURDAY, 2 NOVEMBER 2024

1:05 PM – 1:20 PM — **FOYER**

BREAK TRANSITION & CONFERENCE ATTENDEES GROUP PHOTO

1:20 PM – 1:45 PM — **RM 118**

TRACK 1: ENGINEERING IN MEDICINE

SELF-SUPERVISED LEARNING FOR MEDICAL IMAGE ANALYSIS

Syed Anwar | Principal Investigator | Children's National Hospital

Chest X-Ray (CXR) is a widely used clinical imaging modality and has a pivotal role in the diagnosis and prognosis of various lung and heart related conditions. Conventional automated clinical diagnostic tool design strategies relying on radiology reads and supervised learning, entail the cumbersome requirement of high-quality annotated training data. To address this challenge, self-supervised pre-training has proven to outperform supervised pre-training in numerous downstream vision tasks, representing a significant breakthrough in the field.

1:20 PM – 2:10 PM — **RM 237**

TRACK 2: POWER, ENERGY & ELECTRONICS

COMMUNICATIONS AND POWER TRANSMISSION COMPARISONS

Sandeep Sadanandan | Regulatory support | The Federal Energy Regulatory Commission (FERC)

My proposal for the Baltimore IEEE Conference is a presentation on the technical overlap of electronic communications theory and power systems theory. In particular, the presentation will discuss transmission lines for these fields of electrical engineering. Transmission lines in communications are twisted pair cables and coax cables carrying RF (radio frequency) energy, while transmission lines in power systems are large conductors carrying high voltage power energy.

1:20 PM – 2:10 PM — **RM 230**

TRACK 3: COMMUNICATIONS COMPUTING

BEYOND THE CUTTING EDGE: UNLEASHING INNOVATION AND OPPORTUNITY FOR THE FUTURE OF SPACE EXPLORATION AND SCIENCE

Bhanu Sood | Deputy Chief Technologist | NASA Goddard Space Flight Center

Complex electronics have always played a crucial role in the successful implementation of any high reliability design. In the aerospace and space exploration context, as reliability moves from a process-based approach to one that is more rooted in the technical objectives of stakeholders, a successful mission execution will require frequent interactions of human, software, and hardware elements.

1:20 PM – 2:10 PM (PRESENTATION & PANEL) — **RM 101**

TRACK 4: POWER SKILLS DEVELOPMENT

HOW TO NAVIGATE THE JOB MARKET AS A YOUNG PROFESSIONAL & HOW TO STAND OUT AS A YOUNG PROFESSIONAL

Moderator: Chinonso Ezeobi | PhD Candidate | UMBC

Panelists: Don Herres | Student Activities Chair | IEEE Baltimore Section; Huguens Jean | Software Engineer | Google; Rowena Winkler | Assistant Director for Graduate Student Career Development | UMBC Career Center; Ashutosh Dutta |Chief 5G Strategist and APL Fellow| Johns Hopkins University's Applied Physics Labs

Presentation: In today's competitive job market, young professionals face the challenge of navigating a wide range of career options, industries, and networking opportunities. This talk offers strategic insights into the job search process, exploring essential topics such as effective networking, leveraging platforms like LinkedIn, and mastering interviews.

Panel: Standing out as a young professional in today's competitive job market requires a strategic combination of skill-building, networking, and personal branding. To differentiate yourself, young Professionals should focus on acquiring both technical and soft skills that are in high demand within their industry. The IEEE Baltimore Section presents a unique opportunity for young professionals to achieve these in the form of the First IEEE Baltimore Technical Colloquium and Professional Development Conference.

DETAILED SCHEDULE

SATURDAY, 2 NOVEMBER 2024

1:45 PM – 2:10 PM **RM 118**

TRACK 1: ENGINEERING IN MEDICINE

USE OF POLARIZED LIGHT FOR DIAGNOSTICS IN OPHTHALMOLOGY

Boris Gramatikov | | Associate Professor, Wilmer Eye Institute | The Johns Hopkins University

Nowadays polarized light is widely used in various fields, including optical fiber communications, polarization telescopes, LCD display, 3D movies, medical imaging, sunglasses with polarized Lenses, etc. This talk focuses on the applications of polarized light in ophthalmology. Of interest is the interaction of ophthalmic structures, such as the retina and the cornea, with polarized light. These structures are birefringent, meaning that they have different refractive indices depending on the polarization of light passing through or being reflected by them.

1:45 PM – 2:10 PM (WORKSHOP) **RM 237**

TRACK 2: POWER, ENERGY & ELECTRONICS

SOLAR ENERGY: CHANGING HOW WE POWER OUR HOMES

BethAnn Lederer | CEO | WorkingWonders

This workshop examines the benefits and challenges of widespread solar adoption in Maryland, emphasizing the role of professionals in advancing this technology. The presentation will highlight recent legislative successes, such as the Brighter Tomorrow Act, which extended tax exemptions for community solar projects and established a Solar Renewable Energy Credit multiplier.

2:10 PM – 3:00 PM (PANEL) **RM 118**

TRACK 1: ENGINEERING IN MEDICINE

A TRANSDISCIPLINARY FRAMEWORK FOR EFFECTIVE AND RELIABLE CONTINUUM OF CONNECTED HEALTH CARE

Moderator: Maria Palombini | Global Director, Healthcare & Life Sciences Practice | IEEE Standards Association

Panelists: Elizabeth White Baker | Associate Professor of Information Systems | Virginia Commonwealth University; Carole Carey | Founder | C3-Carey Consultants, LLC; Erkan Hassan | Founder | Transformational Views Consulting Group, Inc & Co-Founder | Sepsis Program Optimization, LLC; Narenda Mangra | Principal | GlobeNet LLC

Technology plays a crucial role in addressing society's most essential needs, such as the goal of providing equitable healthcare for all. Global healthcare systems, with their plurality of structures and management arrangements among several unrelated organizations with various goals, information sources, and payment models, are ill-equipped to handle the complex current environment in which their patients live.

A Transdisciplinary Framework for a continuum of care can provide a structured approach that integrates the healthcare ecosystem, networks, technologies, enablers, and governance functions for current and future considerations.

2:10 PM – 3:00 PM **RM 237**

TRACK 2: POWER, ENERGY & ELECTRONICS

ROLE OF ELECTRIC UTILITIES IN TRANSITION TOWARDS NET-ZERO EMISSIONS

Ritesh Kumar Singh | Utility Management Director for Global Markets | Tetra Tech

Our electrical grid is a stunning example of human ingenuity and engineering. It is the biggest just-in-time machine on the planet. Utilities do a tremendous job managing the delicate just-in-time balance of supply and demand. However, the utility systems are becoming increasingly complex and are facing new challenges and disruptions due to increased focus on just and clean energy transition; decarbonization goals; increasing penetration of variable energy resources; energy poverty and changing customer preferences; climate induced events and cyber and physical threats to critical infrastructure. Utilities need to find new approaches to plan, modernize and equip themselves to meet these challenges and prepare for the low carbon net-zero future. Building and leveraging demand flexibility, enhancing capability of utility personnel to understand and operate in future scenarios and making grid flexible and resilience will be cornerstones of these new approaches.

DETAILED SCHEDULE

SATURDAY, 2 NOVEMBER 2024

2:10 PM – 2:35 PM **RM 230**

TRACK 3: COMMUNICATIONS COMPUTING

OBJECT CLASSIFICATION AT THE SPEED OF LIGHT

Ergun Simsek | Assistant Professor of Computer Science and Electrical Engineering and Director of Graduate Data Science Programs | UMBC

Integrating neural networks and machine learning techniques has ushered in a revolution in various fields, including electromagnetic inversion, geophysical exploration, and microwave imaging. While these techniques have significantly improved image reconstruction and the resolution of complex inverse scattering problems, we will discuss a different research question: Can near-field electromagnetic waves be harnessed for object classification?

2:10 PM – 2:35 PM **RM 101**

TRACK 4: POWER SKILLS DEVELOPMENT

PROBLEM-SOLVING WITH GENERATIVE AI: EXPLORING THE SPECTRUM OF LLMs AND SLMs

Tom Cain | Director | Applied AI Lab and Technology Innovation

The vast majority of people who have interacted with Generative AI have only used familiar large foundation models such as ChatGPT, Claude, or Gemini via a web interface. Consequently, prompt engineering became popular and dominated many users' attention. Here at the AI Lab in the Center for Applied AI, we focus on building applications, solving problems, and gaining experience with a broader spectrum of tools and technologies.

2:35 PM – 3:00 PM **RM 230**

TRACK 3: COMMUNICATIONS COMPUTING

BEYOND THE DATA CENTER: THE UNSUNG HEROES OF CLOUD PERFORMANCE

Vinay Tripathi | Senior Network Engineer| Google

While data centers often take the spotlight in cloud discussions, the networks connecting them and enabling user access are the true unsung heroes of cloud performance. This presentation will explore the critical role of the three core networks – data center, private WAN, and public WAN – and showcase how their synergy drives superior cloud experiences.

2:35 PM – 3:00 PM **RM 101**

TRACK 4: POWER SKILLS DEVELOPMENT

FREELANCE CONSULTING FOR INTELLIGENT INTERDISCIPLINARY ENGINEERING SYSTEMS

Girija Subramaniam | Founder & Consulting Partner | Forcing Function LLC

This presentation will start by giving some practical "lessons learned" from running an independent consulting firm and how I benefited from having a P.E. licensure and membership in NSPE (National Society for Professional Engineers). I will then give an overview of the activities that are undertaken by NSPE and look into possible synergies between IEEE and NSPE activities that could be mutually beneficial. Finally, I will expand on one of the latest initiatives undertaken by NSPE for developing a certification for Systems Software Integrators.

3:00 PM – 3:20 PM **116**

COFFEE, NETWORKING, EXHIBITS, POSTERS & DEMOS

3:00 PM – 3:20 PM **OUTSIDE GARAGE (COMMONS DRIVE)**

MOVE TRUCK (STEM EXHIBIT)

DETAILED SCHEDULE

SATURDAY, 2 NOVEMBER 2024

3:20 PM – 3:45 PM **RM 118**

TRACK 1: ENGINEERING IN MEDICINE

MACHINE LEARNING IN BREAST CANCER TREATMENT FOR ENHANCED OUTCOMES WITH REGIONAL INDUCTIVE HYPERTHERMIA AND CHEMOTHERAPY

Balaji Singaram | Software Developer | Compunnel, LLC

This research focuses on deep learning applications in breast cancer diagnosis and prediction of treatment response to guide personalized therapeutic interventions. It investigates the performance of CNN and two well-known CNN models VGG19 and ResNet50 to identify breast cancer instances accurately and predict treatment outcomes. CNN demonstrated the best results providing 98.92% accuracy in distinguishing between cancerous and non-cancerous instances and relatively high specificity and sensitivity rates. Overall, VGG19 and ResNet50 models demonstrated similar performance by providing 95.45% and 92.12% accuracy rates. The DL models' results on classification allowed developing tailored treatment strategies including Moderate Hyperthermia and Neoadjuvant Chemotherapy based on DL-driven cancer stage and treatment response predictions.

Without knowing the outcome of chemotherapy for cancer might result in patient's agony of undergoing treatment for prolong time and result in death eventually.

In such a way, the current research provides evidence of the potential of DL-driven predictive analytics based on simple interpretation of images using DL models to transform breast cancer management to personalized and precise medicine. As a result, clinicians can reduce the risk of adverse effects of therapies and improve patients' outcomes by using predictive DL models. At the same time, further research is required to improve architectures and performance and increase the sample size and validate the results in larger clinical cohorts.

Overall, the research further supports the transformation of breast cancer diagnosis, treatment, and prognosis by shifting to precision medicine and personalized treatment and providing patients with more effective strategies to improve their outcomes and increase their quality of life.

3:20 PM – 4:10 PM **RM 237**

TRACK 2: POWER, ENERGY & ELECTRONICS

SMALL BUT MIGHTY: HARVESTING VIBRATIONAL ENERGY FOR SELF-SUSTAINED SENSING SYSTEMS THROUGH SMART MATERIALS AND INNOVATIVE DESIGNS

Soobum Lee | Associate Professor and Undergraduate Program Director | UMBC

In this invited talk, we will delve into the cutting-edge advancements in vibrational energy harvesting technology, with a particular focus on the design and integration of smart materials and structural systems. Vibrational energy, available in various environments, has emerged as one of the compelling alternative energy sources, offering the potential to power sensors and small electronics without the need for traditional battery replacement or external power supplies.

DETAILED SCHEDULE

3:20 PM – 3:45 PM **RM 230**

TRACK 3: COMMUNICATIONS COMPUTING

BUILDING AND BENCHMARKING SELF-DRIVING CAPABILITIES IN ROBOTS

Johann Mission | Student | UMBC

Programmable robots with self-driving capabilities are employed for a growing number of tasks, such as food delivery, traffic safety, and security. Such systems often struggle to safely navigate complex new environments. To better understand how and why they struggle we have built a benchmark consisting of a complete autonomous navigation system and a set of target environments. Building and benchmarking this system requires substantial data collection, training, and testing. Towards achieving this goal, we collected 60 runs of data spanning 11 hours from a human driver operating a Husarion ROSbot XL robot in a series of hallways, totalling over 30,000 observations.

Each observation includes images, LiDAR sensor readings, and speed. Raw data was cleaned to remove failed instances such as controller malfunctions and crashes, and programmatically augmented by flipping, saturating, and shadowing the images to double the amount and variety of useful data for successful training. We selected the DAVE2 model, trained it, and deployed it in a hallway to operate autonomously. Preliminary results after 3 hours of successful deployments show that the robot can avoid collisions while navigating hallways, as well as successfully detour around a person or obstacle. However, the sensors and trained model fail to accurately detect glass walls and thin obstacles such as table legs and cables. Planned studies will provide a more significant assessment including multiple environments. These findings and lessons learned, together with the benchmark, will enable researchers to build autonomous systems that can provide safer operations in new environments.

3:20 PM – 3:45 PM (STUDENTS PROGRAM) **RM 101**

TRACK 4: POWER SKILLS DEVELOPMENT

LIGHTNING TALKS

Facilitators: Yuji Zhang | UMSoM &

Fow-Sen Choa | Professor of Computer Science and Electrical Engineering | University of Maryland Baltimore County (UMBC)

During this lightning talk session, poster student authors will give a 3-minutes presentation on their research work. This allows authors to garner feedback, gain exposure, practice presenting, and meet potential collaborators.

3:45 PM – 4:10 PM **RM 118**

TRACK 1: ENGINEERING IN MEDICINE

EXTRACTING FUNCTIONAL CONNECTIVITY SIGNATURES IN SUBSTANCE USE DISORDER USING ENERGY LANDSCAPE ANALYSIS

Sravani Varanasi | Graduate Student | UMBC

Substance Use Disorder (SUD) significantly impacts brain function, and deciphering the altered patterns of brain connectivity in SUD patients is vital for understanding the neurological basis of the disorder. In my proposed presentation, I will discuss the functional connectivity signatures identified between SUD patients and healthy controls (HCs) using a data-driven approach known as Energy Landscape Analysis (ELA).

A key challenge with ELA is selecting the right Regions of Interests (ROIs) from an extensive brain atlas. In this study, we employed the ROI-ROI connectivity (RRC) measure, which was calculated using the CONN toolbox. This approach allowed us to identify relevant ROIs and overcome the limitation of analyzing only a subset of ROIs. The dataset included resting-state fMRI data from 52 cocaine users and 53 age- and sex-matched healthy controls.

DETAILED SCHEDULE

SATURDAY, 2 NOVEMBER 2024

3:45 PM – 4:10 PM **RM 230**

TRACK 3: COMMUNICATIONS COMPUTING

OPTIMIZING ECOMMERCE SUPPLY CHAIN WITH AI AND ADVANCED ANALYTICS

Jubin Thomas | Technical Architect | Signet Jewelers

Orchestrating omnichannel order fulfillment is complex for retailers operating across physical and digital channels. Inaccurate inventory visibility and sub-optimal sourcing lead to high shipping costs and missed deliveries. In this presentation, the speaker will discuss how advanced analytics, and AI can optimize omnichannel order flows. He will outline real-world solutions he architected that leveraged artificial intelligence and machine learning to increase omnichannel efficiency by over 20% for leading apparel retailers.

The key takeaways which the presenter will discuss in detail are:

- Building a central inventory visibility system using AI and predictive algorithms.
- Using machine learning to optimize order sourcing and routing.
- Predictive analytics to allocate omni-channel inventory dynamically.
- Reinforcement learning to optimize allocation across fulfillment centers.

3:45 PM – 4:10 PM (WORKSHOP) **RM 101**

TRACK 4: POWER SKILLS DEVELOPMENT

RESUME RUSH: 5-MINUTE SPEED REVIEWS

Resume Reviewers: Neeta Basantkumar | Test Engineering Manager | Northrop Grumman
Donna Haire | CEO | The ERIAH Group, Inc.
Victor Hare | Licensed Civil Engineer | Department of Homeland Security
Drew Lowery | Senior System Engineer | Volvo Group
Jeanni Nseir | Electronics Engineering Manager | Northrop Grumman
Bhanu Sood | Deputy Chief Technologist | NASA

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4:10 PM – 4:20 PM

BREAK TRANSITION

4:20 PM – 4:50 PM (KEYNOTE) **116**

SLEEP FRAGMENTATION DETERMINATION AND MICRO-CORTICAL AROUSAL INFERENCE BY CHARACTERIZING LEG MOVEMENTS DURING SLEEP

Nilanjan Banerjee | Professor of Computer Science and Electrical Engineering | UMBC
CEO & CSO | Tanzen Medical, Inc. | LifePlus, Inc.

Clinical and animal studies indicate frequent small micro-arousals (McA) fragment sleep leading to health complications. McA in humans is defined by changes in EEG and EMG during sleep. Complex EEG recordings during the night are usually required to detect McA limiting large-scale, prospective studies on McA and their impact on health. Even with the use of EEG, reliably measuring McA can be difficult because of low inter-scorer reliability. Surrogate measures in place of EEG could provide easier and possibly more reliable measures of McA.

4:50 PM – 5:00 PM **116**

WRAP UP & ADJOURN

Carole Carey| Conference Chair, 2024 IEEE Baltimore Technical Colloquium

CONFERENCE KEYNOTES

NILANJAN BANERJEE

Professor of Computer Science and Electrical Engineering | UMBC

CEO & CSO | Tanzen Medical, Inc. | LifePlus, Inc.

Nilanjan Banerjee is a professor of Computer Science and Electrical Engineering at University of Maryland Baltimore County. He is the CEO and CSO of two startup companies, Tanzen Medical, Inc. and Lifeplus Inc., that focus on developing sensors systems for physiological monitoring. He is an NSF Career Awardee, a Microsoft Research Software Engineering Innovations Awardee, and has received few awards for his entrepreneurship endeavors. His research focuses on two diverse areas: sensor system design for physiological monitoring and cybersecurity as it relates to manufacturing systems.

ANUPAM JOSHI

Acting Dean and Oros Family Professor, College of Engineering & Technology | UMBC

Dr. Joshi's research interests are in the broad area of networked computing and intelligent systems. His primary focus has been on data management and security/privacy in mobile/pervasive computing environments, and policy-driven approaches to security and privacy. More recently, he worked on applying AI to security and securing AI-based systems. He is also interested in Semantic Web and Data/Text/Web Analytics, especially their applications to (cyber) security. He has published over 275 technical papers with an h-index of 79 and over 23750 citations (per Google Scholar), been granted nine patents, and has obtained research support from National Science Foundation (NSF), NASA, Defense Advanced Research Projects Agency (DARPA), US Dept of Defense (DoD), NIST, IBM, Microsoft, Qualcomm, Northrop Grumman, and Lockheed Martin amongst others.

MURTY POLAVARAPU

President | Space Electronics Solutions LLC

Murty Polavarapu is engaged in developing advanced semiconductor memory and logic products for defense and aerospace markets, especially for space applications. His primary customer is BAE Systems, a large defense/aerospace enterprise.

He also serves as the Managing Director of Virginia Microelectronics Consortium, bringing the academic institutions and microelectronic industries together in the state of Virginia.

He has been an active IEEE volunteer for over twenty years with service at Chapter, Section, Region, MGA, TA, IEEE-USA and IEEE levels. He is currently the President-Elect of IEEE Society on Social Implications of Technology, Secretary of IEEE Electron Devices Society and MGA Vice Chair of Geographic Activities. He is also serving on IEEE Conference Committee's Technical Program Integrity Committee.

His technical contributions were vital to the development of successive generations of radiation-hardened devices for many satellite programs of US Department of Defense and NASA. Murty also worked in the commercial semiconductor sector bringing advanced generations of DRAM and Flash memory products to high volume manufacturing. His career includes management and technical leadership roles at various companies including BAE Systems, IBM, Lockheed Martin, Micron, and Toshiba.

He holds eleven patents and received numerous honors including the BAE Systems Chairman's Silver Award, Dominion Semiconductor President's Award (Toshiba), Lockheed Martin Executive Award, IBM Outstanding Technical Achievement Award and IBM Invention Achievement Award.

His IEEE recognitions include 2024 IEEE Region 2 Outstanding Service Award, IEEE Regional Activities Achievement Award, Northern Virginia Section James F. Strother Meritorious Service Award and Volunteer of the Year Award, among others.

On a two-year leave of absence from IBM, he served as a United States Peace Corps volunteer in rural Fiji teaching physics and mathematics at high school level. He also co-founded TEE Charity, a nonprofit organization to help bring computers to schools in Ethiopia.

Murty earned his master's in electrical engineering from Howard University and master's in technology management from University of Pennsylvania.

CONFERENCE KEYNOTES

MARY ELLEN RANDALL

2025 IEEE President-Elect | IEEE | President and CEO | Ascot Technologies, Inc

Mary Ellen Randall is an IEEE Fellow and member of the IEEE-Eta Kappa Nu honor society. She held technical and management positions in IBM, including an international assignment, hardware and software development, digital video chips, client/server services, network management, operating systems, and test design automation. She routinely managed projects on an international scale. Mary Ellen served on the IEEE Board of Directors as IEEE Treasurer, IEEE Vice President of MGA (Member Geographic Activities), Region 3 Director, and served as IEEE WIE (Women in Engineering) Committee Chair among other leadership positions. She founded and developed the IEEE MOVE International Community Outreach Program for Disaster Relief and STEM education. She received awards for this work, including the IEEE Haraden Pratt Award. As an entrepreneur, Mary Ellen founded Ascot Technologies, Inc. in Cary, North Carolina. She was named top "Woman In Business" in the Research Triangle North Carolina area and made Business Leader Magazine's "Impact 100" List.

VIVEK SHANDILYA

Professor Department of Computer Science | Bowie State University

Dr. Vivek Shandilya is assistant professor in the department of computer science and the director of SOPSS Lab (sopss.org) at Bowie State University. He got his bachelor's egree in Electronics and Communication Engineering from Bangalore University, MS and PhD in Computer Science from University of Memphis. His work involves investigating and establishing the structures in the interaction of intelligent agents with conflicting & mutually unknown motivations in stochastic systems. This problem manifests in optimization & security situations of computational, biological, and socio-economic systems. His current projects are related to the cyber security, data science, recommendation systems and security of cloud and IOT in healthcare applications.

BHANU SOOD

Deputy Chief Technologist | NASA Goddard Space Flight Center

Dr. Bhanu Sood manages NASA Goddard's Internal Research and Development program, which strategically invests in advanced technologies for NASA's future science and exploration missions. In this role, Dr. Sood helps develop and infuse innovative aerospace technologies, instruments leveraging quantum sciences, artificial intelligence, autonomy, space optical communication, edge computing and other investments in space systems that are crucial for NASA's science and exploration goals. As Deputy Chief Technologist, he works closely with the NASA Agency Chief Technologist, the Office of Technology Policy and Strategy (OTPS) and other NASA Center technologists in formulating technology strategies for a sustainable and responsible exploration of space. Dr. Sood's other roles at NASA have included Division Chief Engineer, Program Manager for Agency Workmanship Standards & Training, and the Risk Assessment process owner for microelectronic technologies used in Goddard's flight projects.

Prior to joining NASA, Dr. Sood served as the Laboratory Director at University of Maryland's Center for Advanced Life Cycle Engineering. At CALCE Dr. Sood lead efforts towards the acceleration of U.S. leadership within the semiconductor industry, developed partnerships with global electronics industry participants across a complex ecosystem of microelectronics supply chains, chip fabricators, fabless companies, packaging, designers and tool manufacturers, to target growth and increased reliability for product manufacturers serving communications, healthcare, automotive, aerospace, and defense industries. Previously, he developed laser-based 3-D printing processes and materials at the U.S. Naval Research Laboratory in Washington DC. He holds five patents, is an IEEE senior member, a member of ASM, and holds a doctorate in electronics reliability, master's degrees in metallurgy and materials science, and a bachelor's degree in mechanical engineering. Dr. Sood serves on the Board of Directors of ASM, the Humanitarian Technologies Board rep for IEEE Region 2, and a member of the Board of University of Maryland's Engineering Alumni Network.

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CONFERENCE SPEAKERS

SYED MUHAMMAD ANWAR

Principal Investigator | Children's National Hospital

Dr. Anwar is principal investigator at Children's National Hospital and Associate Professor of Radiology and Pediatrics at the George Washington University School of Medicine and Health Sciences. Within the hospital, he is associated with the Sheikh Zayed Institute (SZI) for Pediatric Surgical Innovation doing cutting edge research in surgical planning, treatment and device innovation. Prior to this, Dr. Anwar was associated with the University of Engineering and Technology, Taxila as associate professor (Tenured) in the Department of Software Engineering and was a Fulbright Research Fellow at the Center for Research in Computer Vision (CRCV) at the University of Central Florida. CRCV is one of the top-ranked computer vision centers in the world. Dr. Anwar's research interests include developing computational & engineering solutions for healthcare systems that benefit from computer vision, signal processing and artificial intelligence. He has expertise in a wide range of application areas related to machine learning, image and signal processing, and biomedical engineering.

ELIZABETH WHITE BAKER

Associate Professor of Information Systems | Virginia Commonwealth University

Dr. Elizabeth White Baker is an Associate Professor of Information Systems at Virginia Commonwealth University. She completed a fellowship at the Massachusetts Institute of Technology in Systems Design and Management. Her research includes adoption and diffusion of technology, as well as telehealth, cybersecurity, ethics, and safety engineering in healthcare organizations. Her work has been quoted in the New York Times and published in journals such as the Journal of Strategic Information Systems, Communications of the Association for Information Systems, Information Systems Frontiers, and IEEE Transactions on Engineering Management.

NEETA BASANTKUMAR

Antenna Test Engineering Manager | Northrop Grumman

Neeta Basantkumar is currently an Antenna Test Engineering Manager at Northrop Grumman. She was previously a Process Engineering Manager at Northrop Grumman's Advanced Technology Laboratories (ATL). Prior to that, she supported the trusted foundry as a Process Integration Engineer. She also worked at Lockheed Martin as a Research Engineer after completing her rotations as Engineering Leadership Development Program (ELDP) participant.

She is the IEEE Region 2 secretary. She served as a volunteer and chair of the IEEE WIE Forum East since 2015. She currently serves as an advisor on the forum committee. She is now excited to serve on the IEEE Baltimore Technical Colloquium as an advisor. Her other volunteer activities include volunteering at the local Baltimore schools, and APPN (The Asian Pacific Professional Network) an inclusive Employee Resource Group (ERG). She enjoys teaching STEM to young women through hands-on learning activities.

Neeta has a professional degree from Columbia University, master's from University of Minnesota, and bachelor's from Widener University all in electrical engineering. You can connect with her through https://www.linkedin.com/in/ateenjar!

CONFERENCE SPEAKERS

JUSTIN BROOKS

Associate Professor, Computer Science and Electrical Engineering | University of Maryland Baltimore County (UMBC) & at the University of Maryland Institute for Health Computing

Justin Brooks, M.D., Ph.D. is a physician-engineer and scientist. He has academic appointments as an Associate Professor of Computer Science and Electrical Engineering at UMBC and at the University of Maryland Institute for Health Computing. In the private sector, Dr. Brooks works with D-Prime LLC to develop biomedical engineering solutions for psychophysiologic analysis, Tanzen Medical to develop an FDA-designated breakthrough device for sleep medicine, and Clinilabs Corporation for AI/Device integration. Prior to these positions, Dr. Brooks has served as a Medical Director at a publicly traded pharmaceutical company and as a civilian scientist at the Army Research Laboratory leading multimillion dollar applied research initiatives.

TOM CAIN

Director | Applied AI Lab and Technology Innovation

Tom Cain directs the AI Lab within the Center for Applied AI at UMBC Training Centers. He focuses on Generative AI applications for business efficiency, leveraging foundation models and in-house fine-tuned solutions. He currently leads a team of AI Engineers in evaluating and benchmarking cutting-edge AI tools and technologies, with a focus on LLMs, SLMs, RAG strategies, Vector DBs, and embedding models for impactful proof-of-concept applications. His team has produced whitepapers on Generative AI that contribute to industry education and best practices.

With 15 years of experience across three successful software startups, Cain has held diverse roles including product training, customer success, and data engineering. He has also authored dozens of technical courses in programming languages and software development and published scholarly articles and whitepapers.

An accomplished speaker and educator, Cain has taught hundreds of Computer Science and IT training classes and delivered webinars and conference talks internationally. He holds advanced degrees in Mathematics and Computer Science from Penn State and UMBC, providing a strong theoretical foundation for his practical expertise in AI and software development.

CAROLE CAREY

Founder | C3-Carey Consultants, LLC

Carole chairs the First IEEE Baltimore Technical Colloquium and Professional Development Conference, 2024. She is a long time IEEE member volunteer and served in leadership roles at the Section and Region levels, Women in Engineering, IEEE USA, Engineering in Medicine and Biology (EMB), and the Consumer Technology (CTSoc) societies. She is active in IEEE SA Industry Connections (IC) and a member of the Neurotechnologies for Brain-Machine Interfacing (BMI) activity. The output of this activity is publication of Standards Roadmap: Neurotechnologies for Brain-Machine Interfacing (2020) and an article in OJEMB, "Standardization of Neurotechnology for Brain-Machine Interfacing: State of the Art and Recommendations" (2021). Ongoing is the Clinical Trial Technology Modernization Network IC activity.

Carole is Founder of C3-Carey Consultants, LLC, a medical devices consultancy that provides regulatory intelligence and strategy to assist regulated industry bring innovative, safe and effective medical products to market. Earlier, she worked at US FDA Medical Device Program, Center for Devices and Radiological Health (CDRH) as peer-reviewed Expert Regulatory Review Scientist. As a member of FDA's AED (automated external defibrillator) Task Force, she made significant contributions to the AED Early Defibrillation and Public Access Program. As a Mansfield Fellow, Carole was a visiting regulatory scientist in Japan's Ministry of Health, and the Pharmaceutical and Medical Devices Agency. Post fellowship, she served as International Advisor and Director of International Staff at CDRH. She has authored several book chapters on medical device regulations.

She has a bachelor's in electrical engineering from Johns Hopkins University and Master of Engineering Science with concentrations in Computer Engineering from Loyola University, Maryland.

CONFERENCE SPEAKERS

FOW-SEN CHOA

Professor of Computer Science and Electrical Engineering | University of Maryland Baltimore City (UMBC)

Prof. Choa received his B. S. degree from National Taiwan University, and his M. S. and Ph. D. degrees from SUNY at Buffalo. After his Ph. D. work on femtosecond long-wavelength near infrared lasers in 1988 he joined AT&T Bell Labs at Holmdel and Murray Hill, NJ and worked in the area of photonic integrated circuits and chemical beam epitaxy. Since joining UMBC in 1991, he has been working in the areas of III-V compound semiconductor material growth & processing, broadband WDM switches and networks, RF-photonic components and systems, quantum cascade lasers, photon counting avalanche photodiodes and arrays, photoacoustic sensing, imaging, and acoustic array signal transmissions-receiving, photoacoustic aerial-undersea communications, silicon photonic integrations, bio-inspired nanostructures, and meta-materials – devices, EEG, fMRI brain imaging analysis and brain stimulations. Since 1991, Prof. Choa has sponsored and co-sponsored a total of more than $20 million in research funding from different sources, including MOCVD crystal growth facility built at UMBC. He has authored and co-authored more than 430 refereed publications. He is a Fellow of Optica (OSA) and a fellow of SPIE. He has served as Topical Editor of Optics Letters, Associate Editor of the Journal of High-Speed Networks, and Editorial Board of the Journal: Sensors.

ASHUTOSH DUTTA

Chief 5G Strategist & APL Fellow | Johns Hopkins University's Applied Physics Labs

Ashutosh Dutta is Chief 5G Strategist and APL Fellow at Johns Hopkins University's Applied Physics Labs, USA. He serves as the director of Doctor of Engineering at Johns Hopkins University. In the past, he served as the chair of ECE department of Engineering for Professionals at JHU, Director of Technology Security at AT&T, CTO of Wireless at NIKSUN, Senior Scientist in Telcordia Research, Director of Central Research Facility at Columbia University, and Computer Engineer with TATA Motors. He has authored more than 110 technical papers, one book published by John and Wiley, and 5 book chapters, and has 31 issued patents. Ashutosh is recipient of IEEE MGA's 2009 Leadership Award, IEEE-USA's 2010 Professional Leadership Award, 2022 IEEE-USA George F. McClure Citation of Honor and 2022 IEEE North American Region Exceptional Service Award. Ashutosh served as Member-At-Large for IEEE Communications Society for 2020-2025 and Distinguished Lecturer from 2018-2021. He co-founded the IEEE STEM conference (ISEC) in 2011 and has served as its co-chair since then. Ashutosh currently serves as the Chair for IEEE Industry Connection's O-RAN activities and 6G. As the Founding co-chair of IEEE Future Networks, he led technology roadmap, publications, standardization, testbed, education, industry engagement, conferences and workshops in the area of 5G and 6G, while keeping a focus on humanitarian needs. Ashutosh is a Distinguished Alumnus of NIT Rourkela with a BS in Electrical Engineering, MS in Computer Science from NJIT, and a Ph.D. in EE from Columbia University. Ashutosh is an IEEE Fellow and an ACM Distinguished member.

CONFERENCE SPEAKERS

LLOYD EMOKPAE

CEO, CTO, & co-founder | LASARRUS Clinic and Research Center

Dr. Lloyd Emokpae is the CEO, CTO, and co-founder of LASARRUS Clinic and Research Center. With a specialized background in acoustical engineering and signal processing, he received his Ph.D. in Computer Engineering from the University of Maryland Baltimore County in 2013. Starting his career as an Electrical Engineer at the U.S. Army Aberdeen Test Center (ATC) in Aberdeen Proving Ground, Maryland, Dr. Emokpae pioneered the development of novel data acquisition technologies tailored for automotive, C4ISR, and body armor applications. He later transitioned to the Naval Research Laboratory as a senior research scientist and Electrical Engineer, leading the development of communication systems for undersea acoustic applications and earning a research publication award from the U.S. Navy in 2019 for his work in acoustic communications. Dr. Emokpae has over seventeen years of experience with over 20 publications, 2 issued patents, and 4 pending patents. He led the team in the design of the novel smart wearable that won the global Intel contest in 2018. His current entrepreneurship and research endeavors in wearable acoustic technology are a natural progression from his earlier work, aiming to create significant societal and commercial impacts.

CHINONSO EZEOBI

Ph. D Candidate in Electrical Engineering | University of Maryland Baltimore County (UMBC)

Mr. Ezeobi is a Ph.D. student in Electrical Engineering at the University of Maryland Baltimore County (UMBC). My academic journey began with a B.S. in Electrical/Electronic Engineering from Nnamdi Azikiwe University, Nigeria 2001. He pursued an M.S. in Science and Technology from the University of Vaasa, Finland 2015, followed by another M.S. from UMBC in 2022. He is a G-RISE (Graduate Research Training Initiative for Student Enhancement) scholar at UMBC, conducting research at the Center for Advanced Studies in Photonics Research (CASPR). His research focuses on photonics and optics, specifically the nonlinear properties of semiconductor materials and fiber optics, using techniques such as induced grating autocorrelation (IGA) and Z-scan.

He was part of the first cohort of the PROMISE Engineering Institutes, a collaboration between UMBC and the University of California Davis, to support graduate students from underrepresented minorities aspiring to academia. He has 15 years of experience in telecommunications, working as an engineering manager with Airtel and Telecommunication vendors like LMN Erickson and Huawei. He founded the Nigeria Graduate Student Organization and the African Graduate Student Association, supporting newly admitted and returning UMBC students. He is the past president of the UMBC Optica student chapter and currently serve as the secretary IEEE Baltimore (2023 and 2024) and the secretary of the First IEEE Baltimore Technical Colloquium and Professional Development Conference, 2024. He is the current Chair of the Young Professional affinity group of IEEE Baltimore Section. He enjoys outdoor activities and plays soccer every Saturday unless he has commitments.

CONFERENCE SPEAKERS

RHONDA FARRELL
CEO | Global Innovation Strategies

Dr. Rhonda Farrell, CEO of Global Innovation Strategies, supplies senior executive advisory and professional consulting services focused on driving value-laden and impactful change and strategic growth for organizations. Her commercial and government-oriented professional background in enterprise transformation, organizational excellence, governance, risk, policy, process improvement, cybersecurity, AI, and innovation enables her to offer a unique perspective that seamlessly blends technical expertise with a profound understanding of business dynamics. Throughout her career, she has successfully led numerous high-stakes projects and initiatives, consistently delivering measurable results that align strategically and mission-wise with organizational goals. Her approach is rooted in a thorough needs analysis, collecting current state, co-creating an envisioned future state, co-joint identification of capability gaps and improvement opportunities, and identification of innovative people, process, and technological solutions that foster efficiency, productivity, stronger governance, and sustainable growth.
As a Baltimore-based veteran who proudly served in the US Marine Corps, she brings a disciplined, resilient, and mission-focused approach to her work. The core values instilled in her during military service — honor, courage, commitment, service, excellence, and integrity — continue to guide her professional journey. These values, coupled with strategic vision and leadership capabilities, have allowed her to navigate complex challenges and drive transformational change effectively.
She earned her D.Sc. In Cybersecurity from the University of Fairfax, J.D. In Technology from Purdue Global Law School [Formerly Concord Law School], and her MBA in Strategic Management from CSU Hayward. She is certified in Change Management, Cybersecurity, Organizational Excellence, Quality Management and is a SAFe Agilist.

BORIS GRAMATIKOV
Associate Professor | Wilmer Eye Institute of The Johns Hopkins University

Boris Gramatikov obtained his *Dipl.-Ing.* degree in Biomedical Engineering in Germany, and his *Ph.D.* in Bulgaria. He has completed several postdoctoral studies in Germany, Italy and the United States. He joined the faculty of the Biomedical Engineering Department of The Johns Hopkins University in 1996 and has been working in the Laboratory of Ophthalmic Instrumentation Development at The Wilmer Eye Institute since 2000. His areas of expertise include electronics, optoelectronics, computers, computer modeling, signal/image processing, data analysis and diagnostic classification, instrumentation design, biophotonics, ophthalmic and biomedical optics, polarization optics, all applied to the development of diagnostic methods and devices for ophthalmology and vision research. His team has developed a series of pediatric vision screeners. He has authored 148 publications, 49 of which in high-impact peer-reviewed journals, and one book chapter. He serves as a reviewer and editorial board member with several technical and medical journals. Boris is the Director for Continuous Electrical Engineering Education (CEEE) at the Baltimore Section of the IEEE. He is the inventor or co-inventor on six issued U.S. patents. His professional achievements have been recognized through several major awards. Dr. Gramatikov currently holds the position of Associate Professor at the Wilmer Eye Institute of The Johns Hopkins University.

CONFERENCE SPEAKERS

JIN-OH HAHN

Professor | University of Maryland

Jin-Oh Hahn (Senior Member, IEEE) received the B.S. and M.S. degrees in mechanical engineering from Seoul National University, in 1997 and 1999, respectively, and the Ph.D. degree in mechanical engineering from Massachusetts Institute of Technology (MIT), in 2008. He is currently with the University of Maryland, where he is a Professor in the Department of Mechanical Engineering, a Fischell Fellow of the Robert E. Fischell Institute for Biomedical Devices, and a Faculty Affiliate of the Applied Mathematics, Statistics, and Scientific Computation (AMSC) Program. His current research interests include applications of dynamical systems, control, machine learning theory to health monitoring, fault diagnostics, and maintenance and treatment of dynamical systems, with an emphasis on health and medicine. He was a recipient of the NIBIB Trailblazer Award from the National Institutes of Health (NIH), in 2023, the IEEE EMBS Most Impactful Paper Award from the IEEE Engineering in Medicine and Biology Society, in 2019, the Faculty Early Career Development (CARRER) Award from the National Science Foundation (NSF), in 2018, the Young Investigator Program Award from the Office of Naval Research (ONR), in 2014, the Young Investigator Grant Award from Korean–American Scientists and Engineers Association (KSEA), in 2013, and the Outstanding Gemstone Mentor Award from the Gemstone Honors Program with the University of Maryland, in 2019. He is an Associate Editor of Journal of Dynamic Systems, Measurement, and Control (ASME) and ACM Transactions on Computing for Healthcare.

DONNA HAIRE

CEO | The Eriah Group, Inc.

Donna Haire is CEO of The Eriah Group, Inc. which specializes in global regulatory, quality, clinical and medical affairs consulting services for drugs, biologics, medical devices/in vitro diagnostics, and combination products. She is a Board Member at both FluoGuide A/S and Sedana Medical AB and is a seasoned executive with over 30 years of experience in healthcare, pharmaceutical, and medical device industries. Donna Haire has extensive experience in regulatory, quality, clinical affairs, operations, business development, and R&D.

She has held positions as the Executive Vice President, Regulatory and Quality at On Target Laboratories, Vice President, Head of Medical Care Global Regulatory Affairs at Bayer, Senior Vice President of Regulatory, Quality, Clinical, and Medical Affairs at AngioDynamics and has held senior level positions at Philips Healthcare and Medtronic. She was an Adjunct Professor at the University of Akron School of Law. She served as an AdvaMed Technical and Regulatory Board Committee Member and a Board of Directors Authorized Representative.

Donna Haire was designated a U.S. regulatory expert to lead multiple international trade negotiations in regulatory convergence. She has been a keynote speaker and panelist for numerous regulatory and compliance events worldwide. She holds an M.S. in Biology from Cleveland State University and a B.S. in Biology from The University of Akron.

VICTOR HARE

Licensed Civil Engineer | Department of Homeland Security (DHS)

Mr. Hare is a licensed, professional civil engineer who has worked for the Federal government for the last nine years. Currently, he writes new job announcements, reviews résumés, conducts interviews, and makes hiring recommendations. He works with engineers, architects, and lawyers providing technical advice to promote disaster damaged public facilities being repaired or replaced in a more resilient manner. Previously, he owned a consulting engineering business for 35 years which provided building inspections and structural repair designs. He hired, evaluated and promoted engineers and administrative staff for his business.

He received his bachelor's degree in civil engineering from Purdue University in West Lafayette, Indiana and a master's degree in legal studies from the University of Baltimore, Maryland.

CONFERENCE SPEAKERS

ERKAN HASSAN

Founder | Transformational Views Consulting Group, Inc & Co-Founder | Sepsis Program Optimization, LLC

Erkan Hassan, Pharm.D., FCCM is a clinician and transformational healthcare executive with 20+ years' experience developing innovative solutions to improve clinical outcomes, enhance provider experience and increase revenue.

As the founder of Transformational Views Consulting Group, Inc and Co-Founder of the Sepsis Program Optimization, LLC, Dr. Hassan aids health systems and providers by making telemedicine a reality as well as improving the process of difficult clinical challenges using evidence based clinical data creating and optimizing intelligent ecosystems to generate validated patient centered clinical and financial outcomes.

He holds:

- 2 patents on acute patient deterioration
- 60 abstracts; 40 publications; 8 book chapters
- Editorial board of Telehealth and Medicine Today Journal
- Managing Partner of Virtual Care for ProNexus Advisors

You can reach Erkan at dr.erkanhassan@gmail.com

DON HERRES

Student Activities Chair | IEEE Baltimore Section

Don is the Student Activities Chair of the IEEE Baltimore Section. He is also Director of the Baltimore Robot Challenge sponsored by the Section and Baltimore Museum of Industry. This is an educational outreach for High School and Middle School students to build simple robots from scratch while learning skills including soldering, woodworking or 3D CAD modeling, basic wiring, artistic design, project management and report writing.

Don is an electronics design engineer doing contract work for industry and commercial projects.

HUGUENS JEAN

Software Engineer | Google

Huguens Jean is a Software Engineer at Google with an extensive background in computer vision, electrical engineering, and AI. He holds a Ph.D. in Electrical Engineering from the University of Maryland, Baltimore County (UMBC), graduating cum laude and earning a place in the UMBC Hall of Fame as a standout NCAA Division I track and field athlete.

Huguens has worked in diverse roles, including as a research engineer at NASA Goddard Space Flight Center, where he contributed to advanced imaging technologies. He also gained significant experience at several startups, such as Amethyst Technologies, where he led the development of mobile surveillance systems, and Lift Up LLC, where he directed a documentary film. His diverse startup experiences have equipped him with a unique perspective on AI applications across various domains.

At Synaptiq.ai, Huguens applied his expertise in AI-driven solutions under the guidance of his Ph.D. advisor, Tim Oates. Now at Google, Huguens continues to lead impactful projects at the intersection of AI and cloud technology, constantly pushing the boundaries of innovation.

CONFERENCE SPEAKERS

BETHANN LEDERER

CEO | WorkingWonders

In 2006, BethAnn transitioned her diverse background in marketing, retail, health education, and advocacy, along with her experience founding two non-profit organizations, into a forward-thinking home products company. From the outset, her mission has been to bridge product design and consumerism with health and sustainability. In 2010, to enhance her ability to vet products that improve indoor air quality, BethAnn earned her professional credentials as a LEED AP (Leadership in Energy and Environmental Design Accredited Professional). The LEED professional credentials are administered by the Green Business Certification Inc. (GBCI) based on the U.S. Green Building Council LEED Rating Systems. In January 2023, she expanded WorkingWonders™ to include solar energy consulting. Since then, her primary focus has been on promoting the adoption of solar energy by increasing public awareness and comfort with clean energy solutions. BethAnn is a graduate of University of Maryland, Baltimore County with a degree in B.A. English.

SOOBUM LEE

Associate Professor, Mechanical Engineering | University of Maryland, Baltimore County (UMBC)

Dr. Soobum Lee obtained his Ph.D. in Mechanical Engineering from Korea Advanced Institute of Science and Technology (KAIST) in 2007. He has worked as a postdoctoral researcher at the Korea Atomic Energy Research Institute (KAERI) and the University of Maryland, College Park; and as a research assistant professor at the University of Notre Dame. He is currently an associate professor at the University of Maryland, Baltimore County (UMBC) in the Department of Mechanical Engineering. His main research interests include energy harvester design, topology optimization, robust design, reliability-based design optimization, and machine learning based engineering system design. His portfolio includes authorship of more than 100 international peer-reviewed publications, and he is currently the principal investigator of the Energy Harvesting & Design Optimization Lab (EDLab) at UMBC.

DREW LOWERY

Senior System Engineer | Volvo Group

Andrew D. Lowery has received degrees of Doctor of Philosophy in Mechanical Engineering (2012), Master of Science in Mechanical Engineering (2006) and dual Bachelor of Science degrees in Computer and Electrical Engineering (2004) from the College of Engineering and Mineral Resources at West Virginia University (WVU). To date, he has published 30 scholarly publications and has been awarded 5 US patents, along with filing, as inventor, for 35 pending US and global patents.

He has previous experience in academia as a visiting scholar and research in the alternative energy field, in the startup community as a lead scientist for advanced microwave internal combustion, and in industry as future products developer in heavy duty transportation. He is currently a Senior System Engineer at the Volvo Group in Hagerstown, Maryland.

Dr. Lowery has been an IEEE member since 2001, Eta Kappa Nu since 2004, and is an IEEE Senior Member in the Washington Section. He has been the Past Pittsburgh Section Chair (2017), Vice Chair (2016), and Treasurer (2015), the Past Region 2 Student Activities Coordinator, and a past member of the MGA Student Activities Committee (2017-2020) and Young Professionals Committee (2021-2023).

Currently, he is a member of the MGA Training Committee (2024), member of the MGA ad hoc Committee for Local unit Risks (2024), member and subcommittee lead of the MGA ad hoc committee for Regional Realignment (2021-2024), and member and subcommittee lead for the IEEE ad hoc Committee on Leadership Continuity and Efficiency (2024).

He is currently serving on the IEEE Board of Directors, MGA Board, and IEEE-USA Board as the Region 2 Director.

CONFERENCE SPEAKERS

NARENDA MANGRA
Principal | GlobeNet LLC

Narendra Mangra is a Principal at GlobeNet LLC and provides advisory and consulting services. across industry, government, and academia. His diverse experience spans strategy development, roadmap development, spectrum management, mobile network planning and system deployments, enterprise-wide modernization, program management, and education. He is an Adjunct Professor at George Mason University. Narendra also leads several IEEE initiatives such as the Future Networks INGR, P1950.1 smart cities architecture standards development, Public Safety Technology Initiative, and the Telehealth and Transdisciplinary Framework Industry Connections. His current interests include comprehensive transdisciplinary frameworks, 5G and future networks, digital transformation, smart communities, and related ecosystems.

JOHANN MISSION
Student | UMBC

Johann Mission is a second-year undergraduate student at the University of Maryland, Baltimore County (UMBC) majoring in computer engineering. In summer of 2024, he conducted research in the LESS Lab at the University of Virginia focusing on benchmarking autonomous robot systems. Johann aspires to obtain a Ph.D. in electrical and engineering with a focus on robot and automobile safety systems.

JEANNI NSEIR
Electronics Engineering Manager | Northrop Grumman

Jeanni Nseir is currently an Electronics Engineering Manager at Northrop Grumman. She was previously Digital Technology Manager and IPT lead in digital hardware design and firmware design. Her background is in leading design, system, and test development activities for superconducting electronics development. She also worked at Lockheed Martin and has experience leading software team, created and developed sequence diagrams and state diagrams for different type of missiles.
Ms. Nseir has experience providing coaching and training, workload alignment, performance reviews and promotions. Her experience also included recruiting, hiring and mentoring new hires.

CONFERENCE SPEAKERS

MARIA PALOMBINI

Global Director, Healthcare & Life Sciences Practice | IEEE Standards Association

As the practice leader, Maria is focused on engaging and leading a global community of multi-disciplinary stakeholders to openly collaborate and develop solutions to enable trust in and validation of breakthrough technologies/applications that will enable sustainable equitable access to quality care, privacy, and protection for ALL individuals. Working with volunteer experts to develop frameworks to address significant societal challenges of security, privacy, validation, compatibility, feasibility and accessibility of digital technologies in all areas of the healthcare value chain through technology standardization.

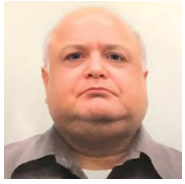
Maria is an entrepreneur having founded various companies including DisruptiveRx™ Media, the first information company to explain viable use cases of emerging digital technologies such as blockchain/DLTs, AI, etc to address inefficiencies in the bio/pharma value chain. Maria's professional highlights include global brand and communications director for one of the world's largest mining investment platforms in Africa; and bringing innovative communication and information products to global markets and various industries including financial, bio/pharmaceutical, agriculture, natural resources, and telecommunications.

Maria currently holds an MBA from the Rutgers Graduate School of Business and a BA and BS from Rutgers College at Rutgers University, the State University of New Jersey.

CARLOS ROMERO TALAMAS

Associate Professor, Department of Mechanical Engineering | University of Maryland Baltimore County (UMBC)

Carlos A. Romero-Talamás received his B.S. in Engineering Physics from the Instituto Technológico y de Estudios Superiores de Monterrey, México in 1995; a Master of Space Studies from the International Space University, Strasbourg, France in 1998; a Ph.D. in Mechanical Engineering with a minor in Applied Physics from the California Institute of Technology in 2005. He worked as a postdoctoral scholar on the Sustained Spheromak Physics Experiment (SSPX) at the Lawrence Livermore National Laboratory until 2008. That year he joined the University of Maryland's Institute for Research in Applied Physics as a Research Scientist working on experimental plasma physics, including high-temperature plasma confinement on the Maryland Centrifugal Experiment (MCX), and on atmospheric plasmas created by lasers and terahertz electromagnetic radiation. Since 2013 he has been at the University of Maryland, Baltimore County (UMBC) where he is an associate professor and has served in various roles, including as Graduate Program director in the department of Mechanical Engineering. In 2014 he received the DARPA Young Faculty Award for Alternate Fusion Concepts, and in 2015 received the University System of Maryland's PROMISE AGEP Outstanding Faculty Mentor award, and in 2023 the *Mid-Career Faculty Excellence Award* for the College of Engineering and Information Technology at UMBC. Romero-Talamás is currently the PI of several projects, including the Centrifugal Mirror Fusion Experiment, aimed at advancing the performance of a lower-cost fusion energy concept. His research interests also include dusty plasmas, plasma diagnostics, magnetic self-organization, and plasma-facing components for engineering applications.



SANDEEP SADANANDAN

Regulatory support | The Federal Energy Regulatory Commission (FERC)

Mr. Sandeep Sada (Sadanandan) has worked in the power engineering field for 30 years. His work experience includes the Tennessee Valley Authority in Chattanooga, Tennessee, where he worked in the Control Center and supported the SCADA/EMS system for the System Operators. He currently works at the FERC in Washington DC and provides regulatory support for the bulk power system. He has bachelor's and master's degrees in electrical engineering. His goals are to provide quality academic literature for use by professionals and students.

CONFERENCE SPEAKERS

KAMRAN SAYRAFIAN

Senior Scientist | National Institute for Standards and Technology (NIST) Fellow | Washington Academy of Sciences

Kamran Sayrafian is a Senior Scientist at the Information Technology Laboratory of the National Institute of Standards and Technology (NIST) located in Gaithersburg, Maryland where he leads a strategic program related to the application of the Internet-of-Things (IoT) in healthcare. He is also an affiliate Associate Prof. of Concordia University in Montreal, Canada since 2016 and the co-chair of the Vertical Track on Health and Well-Being at the COST CA20120 "Intelligence-Enabling Radio Communications for Seamless Inclusive Interactions". Prior to joining NIST, he was the cofounder of Zagros Networks, Inc. a fabless semiconductor company based in Rockville, Maryland where he served as the President and senior member of the architecture team. Dr. Sayrafian has served as the Technical Program Committee and Executive Co-Chair of the IEEE PIMRC 2014 and organizer of several other IEEE Communication Society Conferences and international workshops focused on the applications of wireless communication in healthcare. He was also a member of the Editorial Board of the IEEE Wireless Communication Magazine from 2016 to 2020. His current research interests include body area networks, micro energy-harvesting, automatic exposure notification, and IoT technology in healthcare. He has published over 140 conference and journal papers, and book chapters, and has been the recipient of several best paper awards. Dr. Sayrafian was a major contributor to the development of the IEEE802.15.6 international standard on Body Area Networks; and the recipient of the 2015 U.S. Department of Commerce Bronze Medal for his contribution to this emerging field. In 2014, he also served as the U.S. Embassy Science Fellow in Croatia. Dr. Sayrafian is the co-inventor/inventor of four U.S. patents and a Fellow of the Washington Academy of Sciences.

ERGUN SIMSEK

Assistant Professor of Computer Science and Electrical Engineering and Director of Graduate Data Science Programs | University of Maryland, Baltimore County (UMBC)

Dr. Simsek received a B.S. degree in Electrical and Electronics Engineering from Bilkent University in 2001 and an M.S. and Ph.D. in Electrical and Computer Engineering from the University of Massachusetts Dartmouth and Duke University in 2003 and 2006, respectively. After working as a postdoctoral research associate at Schlumberger-Doll Research and a faculty member at Bahcesehir University and George Washington University, he joined the University of Maryland Baltimore County in 2018, where currently he is an Assistant Professor and the Director of Graduate Data Science Programs.

BALAJI SINGARAM

Balaji Singaram | Software Developer | Compunnel, LLC

Over 18+ years of IT experience in Software Development and Engineer in Test of web, IoT, Instrumentation and client-server-based applications. Has been a senior IEEE member, ORCID Member and IAEME Fellowship member. Selected for the prestigious collector's selection "The Global Game Changers 2024" of the most remarkable personalities globally from Passion Vista for September 2024 Magazine Edition. Passion Vista - Magazine Is a Luxury Lifestyle & Business... Global Magazine with over one million+ readers across Asia, Europe, Africa, North America, South America & Australia. Reviving the quintessential print media, Passion Vista's content is Global, Provocative, and Inclusive. Exploring and implementing the AI related tools for maintaining Quality in the software.

RITESH KUMAR SINGH

Utility Management Director for Global Markets | Tetra Tech

As Utility Management Director for Global Markets at Tetra Tech, Mr. Singh leads the utility management and sector reform practice across clients and geographies. He specializes in energy sector reform and restructuring, regulatory and policy advocacy, renewable project development and smart grid initiatives. He has worked in more than fifteen countries across North America, Asia, the Middle East, and Africa.

CONFERENCE SPEAKERS

HOUBING HERBERT SONG

Associate Professor | University of Maryland, Baltimore County

Houbing Herbert Song (F'23) received the Ph.D. degree in electrical engineering from the University of Virginia, Charlottesville, VA, in August 2012.

He is currently an Associate Professor, the Founding Director of the NSF Center for Aviation Big Data Analytics, the Associate Director for Leadership of the DOT Transportation Cybersecurity Center for Advanced Research and Education (Tier 1 Center), and the Director of the Security and Optimization for Networked Globe Laboratory (SONG Lab, www.SONGLab.us), University of Maryland, Baltimore County (UMBC), Baltimore, MD. He has been the Founding Chair of Trustworthy Internet of Things (TRUST-IoT) Working Group within IEEE IoT Technical Community since 2024. He is a Distinguished Visiting Fellow of the Scottish Informatics and Computer Science Alliance (SICSA). He serves as an Associate Editor for IEEE Transactions on Artificial Intelligence (TAI) (2023-present), IEEE Internet of Things Journal (2020-present), IEEE Transactions on Intelligent Transportation Systems (2021-present), and IEEE Journal on Miniaturization for Air and Space Systems (J-MASS) (2020-present). His research interests include AI/machine learning/big data analytics, cyber-physical systems/internet of things, and cybersecurity and privacy. His research has been sponsored by federal agencies (including National Science Foundation, National Aeronautics and Space Administration, US Department of Transportation, and Federal Aviation Administration, among others) and industry.

Dr. Song is an IEEE Fellow, an Asia-Pacific Artificial Intelligence Association (AAIA) Fellow, an ACM Distinguished Member, and a Full Member of Sigma Xi. Dr. Song has been a Highly Cited Researcher identified by Web of Science since 2021. Dr. Song received Research.com Rising Star of Science Award in 2022, IEEE 2021 Harry Rowe Mimno Award, and 10+ Best Paper Awards from major international conferences. He has been an IEEE Impact Creator since 2023.

GIRIJA SUBRAMANIAM

Founder & Consulting Partner | Forcing Function LLC

Girija is the founder of a specialist consulting company, Forcing Function LLC with over 25 years of experience in the technology sector in the USA, UK, Canada and India. A practicing engineer, her working experience spans 2 major industries – telecommunications and transportation. She is currently using her unique cross-disciplinary experience to collaborate with startups and research agencies to design solutions for transportation. Girija has an undergraduate degree in Electronics Engineering from the University of Bombay and a graduate degree in Signal Processing and Communication Systems for the University of Virginia. Girija is a member of National Society of Professional Engineers (NSPE) Emerging Technology Committee and Artificial Intelligence (AI) Workgroup Lead She is licensed in Maryland and California and is the outgoing President and Social Media chair of her local engineering chapter, Potomac chapter of Maryland Society of Professional Engineers (MDSPE).

JUBIN THOMAS

Jubin Thomas | Technical Architect |Signet Jewelers

Jubin Thomas, a seasoned Technical Architect at Signet Jewelers with over 14 years of experience in IT and ECommerce Supply Chain, resides in Philadelphia, USA. With a strong track record in spearheading transformative technology initiatives, he also serves as an Independent Researcher specializing in the integration of Machine Learning with Supply Chain operations, having published over 13 research papers and holding multiple UK patents. Jubin is the author of Revolutionizing Supply Chains with Industry 4.0: Harnessing AI and Big Data Analytics for Optimization, available on Amazon.

As a senior IEEE member and frequent technical speaker, he has presented at renowned technical conferences, including IEEE conferences, the Voice & AI Conference, LambdaConf, Conf42 Machine Learning, and the BlackIsTech Conference. Jubin has been honored with the esteemed GRA Award and the Titan Business Award for excellence in ECommerce and is a respected judge for numerous hackathons, including the IEEE Hackathon.

CONFERENCE SPEAKERS

VINAY TRIPATHI

Senior Network Engineer | Google

Vinay Tripathi is a highly accomplished Network Engineering leader with over 19 years of experience, driving innovation and operational excellence in network infrastructure. Proven ability to lead complex projects, optimize network performance, and deliver customer-centric solutions. Expertise in a wide range of networking technologies, including routing protocols (ISIS, OSPF, BGP), MPLS, VPNs, automation (Python, Golang), and data center technologies (EVPN/VXLAN). Holds three JNCIE certifications and multiple patents for innovative networking technologies. Active in the professional community as a Senior Member of IEEE and Treasurer of the IEEE Northern Virginia section. Passionate about building robust, scalable, and secure networks for the next generation.

EDVINA UZUNOVIC

Associate Director of Power System Engineering | Worcester Polytechnic Institute

Dr. Edvina Uzunovic has over 25 years of experience with a range of responsibilities in power systems industry and academia. Edvina has a B.Sc. from the University of Sarajevo, Bosnia and Herzegovina, M.Sc., and doctorate degree in electrical and computer engineering from the University of Waterloo, Ontario, Canada. She is very active in her volunteer work with the IEEE Power and Energy Society, 2016 – 2020 served as IEEE PES Vice President Education, nominated for IEEE PES President Elect in 2021, and currently involved in numerous IEEE PES Committees.

SRAVANI VARANASI

Ph.D. Candidate | University of Maryland, Baltimore County (UMBC)

Sravani Varanasi is a dedicated PhD student in Computer Engineering at University of Maryland Baltimore County, working under the supervision of Dr. Fow-Sen Choa. Her research primarily focuses on advancing our understanding of brain internal networks through sophisticated data analysis techniques using fMRI and EEG datasets. Driven by a passion to unravel the complexities of the human brain, her work aims to identify functional connectivity patterns that correlate with neurological disorders, like substance use disorder.

Her research leverages advanced fMRI and EEG processing tools, employing an energy-based approach rooted in the maximum entropy model estimation. This approach helps in deciphering the intricate functional connectivity between selected regions of interest, enabling a deeper insight into the brain's network dynamics and potential markers for neurological disorders. With a strong foundation in computational analysis and neural engineering, she is committed to contributing to breakthroughs in neuroimaging research that may inform more effective interventions for substance use and other related disorders.

ROWENA WINKLER

Assistant Director for Graduate Student Career Development | UMBC Career Center

Dr. Rowena Winkler is the Assistant Director for Graduate Student Career Development at the UMBC Career Center, where she provides career guidance and support to graduate students through appointments, group sessions, workshops, and programs. She uses her Ph.D. in Communication, along with her 15+ years of experience in marketing and communication, to help individuals gain clarity in their jobs, businesses, and lives through more authentic communication practices. As an award-winning teacher and scholar, Rowena presented at international conferences and mentored hundreds of undergraduate and graduate students. She then made a career pivot from academia to industry, leading communication teams and managing marketing projects. Now as a career and empowerment coach, Rowena's methods enable clients and students to build confidence, get unstuck, and land their dream careers.

CONFERENCE SPEAKERS

MOHAMED YOUNIS

Professor and Chair, Department of Computer Science and Electrical Engineering | University of Maryland, Baltimore County

Mohamed F. Younis is currently a professor and chair of the department of computer science and electrical engineering at the University of Maryland Baltimore County (UMBC). Before joining UMBC, he was with Honeywell International Inc., where he led multiple projects for building dependable computing infrastructure. He also participated in the development of the Redundancy Management System, which is a key component of the Vehicle and Mission Computer for NASA's X-33 space launch vehicle. Dr. Younis' technical interest includes network architectures and protocols, applications of artificial intelligence, cyber-physical systems, intelligent transportation systems, secure communication and IoT networks. He has published over 350 technical papers in refereed conferences and journals. His contribution to science and engineering is acknowledged by the large number of (over 26 thousands) citations of his work and his high h-index (62). He is also deemed among the top 2% of world scientists in the 2024 rankings by Stanford University. Dr. Younis has nine granted and three pending patents. In addition, he serves/served on the editorial board of multiple journals and the organizing and technical program committees of numerous conferences. Dr. Younis is a Fellow of the IEEE and the IEEE communications society.

YUJI ZHANG

Professor and Lead Bioinformatician | University of Maryland School of Medicine

Dr. Yuji Zhang is Professor and Lead Bioinformatician at the University of Maryland School of Medicine. She also serves as the Co-Chair of Informatics Working Group for the My Healthy Maryland Research Program (https://www.marylandprecisionhealth.org/en). Dr. Zhang's primary research interest focuses on developing translational biostatistics and informatics approaches to reveal novel human disease mechanisms. She has over 20 years of research experience in integrative analysis of multi-source high-dimensional biological data, leading to over 80 peer-reviewed publications in renowned international journals. She has extensive collaborative research experience in medical informatics, ontology, software engineering, biomedical and basic science fields. Her research mission is to leverage the gap between the analytical needs arising from multi-source biological "big" data in biomedical research and advanced informatics approaches. She has Dr. Zhang has been serving as co-principal investigator/co-investigator leading the bioinformatics and statistical analyses in numerous federal funded research projects in various disease areas. Dr. Zhang has also been actively mentoring numerous graduate students and postdoctoral fellows over the years. She has also been chairing/organizing several international workshops in the informatics field since 2012. Dr. Zhang is a member of several professional societies, including the Institute of Electrical and Electronics Engineers (IEEE), American Medical Informatics Association (AMIA) and the International Society for Computational Biology (ISCB). She currently is the Chair of Women in Engineering Affinity Group in Baltimore Section of IEEE.

NOTES

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3. COMMUNICATIONS COMPUTING
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