



Contents

- *Chair's Corner* 2
- *2024 IEEE Colloquium in Western Pennsylvania* 3
- *Optical Fiber based Acoustic Sensor System for Utilities Monitoring* 9
- *Overview of Semiconductor Manufacturing and Career Opportunities* 9
- *IEEE Robot Car Race 2025 - Call for Volunteers* 10
- *Seeking Nominations for The Outstanding Volunteer of The Year Award* 10
- *Pittsburgh Section ExCom Members attend IEEE R1/R2 ExCom Meeting in Stamford, CT* 11
- *After Event Post: Heinz History Museum Guided Tour* 12

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All announcements for publication in a particular month's bulletin are due to the Editor by the 20th of the previous month. The accuracy of the published material is not guaranteed. If there is any error, please bring it to the Editor's attention. The Section's web site, [webinabox Pittsburgh.](http://webinabox.Pittsburgh.), has recent issues of the bulletin and lots of other useful information.

• Chair's Corner

Welcome to the December Edition of the Pittsburgh Bulletin.

Happy Holidays, everyone! We've made it to the end of the year, for better or for worse. Looking back, we had an incredibly active year. Looking back, some of the highlights of 2024 included receiving the "Region 2 Exemplary Section Award for 2024". The awards committee chose Pittsburgh out of the 20 sections in Region 2. This award really acknowledges all of the good work that we had going on this year! We had some amazing events that I got to personally attend, including the Westinghouse tour in June, Heinz History Center in November, and the Cybersecurity talk in August. I'm always amazed at the meetings our members coordinate and the connections we have to bring new events into the area. With 60+ events in 2024, I can't wait to see what 2025 has in store for us.

Moving into the new year, the Pittsburgh Section Officer Election is coming soon! Please participate and learn about the candidate slate for 2025. If you're new and want to volunteer, reach out to any of us, we'd be thrilled to have you, even if someone is listed as a chair. We can have multiple officers for each branch.

This is also a great time to remind everyone to renew your membership for 2025, if you haven't already done so. With renewal, you keep access to all of your favorite IEEE benefits, more information here: <https://www.ieee.org/membership/renew.html>

Wishing everyone a safe and successful 2025!

Jenna Price

2024 Pittsburgh Chair

jprice@ieee.org

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Electromagnetic Compatibility Society - Chair: Mike Oliver

Magnetics Society – Chair: Dr. Simran Singh - simranjs@andrew.cmu.edu

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Signal Processing & Control Systems Societies – Chair: Danson Garcia P.E., dansongarcia@ieee.org; Vice Chair: Jesse Mahn, jesse.mahn@outlook.com

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ThomasJDionise@eaton.com

- **2024 IEEE Colloquium in Western Pennsylvania**

Program: (All times in eastern time zone)

8:00 am: Registration & breakfast

9:00 am (Presentation 1)

Speaker's Name: Vinay Tripathi
Title: Senior Network Engineer
Organization: Google

Title: Topic 1. Cloud Network Infrastructure – **25 minutes**; Topic 2. Enhance Cloud Network Performance and Reliability by BGP Optimization – **25 minutes**; First topic will establish the background and then the second topic will follow.

Abstract: Border Gateway Protocol (BGP) plays a critical role in the routing infrastructure of cloud networks. BGP determines the best path to use for data transmission across the internet. The Internet consists of thousands of private, public, corporate and government networks linked together through standardized protocols, devices, and communication technologies. However, its inherent limitations, such as slow convergence and suboptimal path selection, can impact performance and reliability. Proposed presentation will explore strategies to optimize BGP for cloud environments. We will discuss techniques like BGP path reduction, configuration optimization, peer group optimization, and traffic engineering to improve network efficiency and reduce latency. We will also explore best practices to monitor and migrate the BGP related issues in the large networks. Additionally, we will delve into BGP security mechanisms and best practices to mitigate risks like route hijacking and DDoS attacks. By implementing these optimizations, network operators can achieve superior performance, scalability, and resilience.

Speaker's Biography: 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, and data center technologies (EVPN/VXLAN). Proficient in automation with Golang and Python. Key achievements include leading Google's core network BGP optimization and reliability testing initiatives. Holds three JNCIE certifications and multiple patents for innovative networking solutions. Active in the professional community as a Senior Member of IEEE and Treasurer of the IEEE NoVA section. Passionate about building robust, scalable, and secure networks for the next generation.

10:00 am (Presentation 2)

Speaker's Name: Jingzhe Wang
Title: PhD Student
Organization: University of Pittsburgh

Title: PR-TDR: Privacy-preserving and Reliable Timed Data Release

Abstract: Timed Data Release (TDR) is a practical security mechanism that safeguards data until a prescribed time has elapsed. However, existing TDR frameworks do not focus on reliability guarantees and lack formal security analysis. To this end, we propose PR-TDR, a novel framework that supports privacy-preserving and reliable timed data release while providing provable security properties. PR-TDR includes two novel contributions: a formal privacy-preserving design for TDR, named P-TDR and a reliable lifetime secret key management built on top of P-TDR that systematically empowers P-TDR with reliability. P-TDR prevents adversaries from accessing the data prior to the prescribed release time. At the core of the design of P-TDR, a group of decentralized peers, which operates under an honest-majority assumption, collaboratively takes charge of managing the lifetime secret key. Each peer stores a key share of the secret key. The proposed reliability layer that empowers P-TDR with reliability guarantees incorporates two carefully designed protocols that operate before the prescribed release time, namely the lifetime secret key auditing protocol and the lifetime secret key share recovery protocol. The auditing protocol enables a semi-honest auditor to confirm the availability of the lifetime secret key with the peers while not gaining any knowledge about the secret key itself. The recovery protocol allows peers that have lost their respective shares of the lifetime secret key to recover them with the help of other peers, ensuring that the lifetime secret key remains private. We provide formal security proof to demonstrate that PR-TDR satisfies the desired security properties. We implement our framework using Ethereum and our performance evaluations confirm that PR-TDR not only embodies the desired security properties but also operates efficiently.

Speaker's Biography: Jingzhe Wang is a PhD candidate in the School of Computing and Information at the University of Pittsburgh. His research interests lie in applied cryptography, with a current focus on developing practical cryptographic methods to safeguard blockchain-based timed data release.

10:30 am (Presentation 3)

Speaker's Name: Abdulrahman Alhaidari
Title: PhD Student
Organization: University of Pittsburgh

Title: Digital Twin-based Dynamic Task Assignment for Smart Home Maintenance

Abstract: The integration of Augmented Reality (AR), Virtual Reality (VR), and Digital Twin (DT) technologies has shown significant promise in enhancing remote collaboration, enabling synchronization between virtual and physical assets. In complex smart home environments, identifying faults in physical systems and finding service providers with the precise skills remotely required for maintenance is a significant challenge. Current remote services rely on traditional communication methods, such as video calls, which provide limited interaction between remote service providers and physical machines where maintenance problems are located. The Metaverse could bridge this gap by linking virtual and physical spaces using DTs to improve task assignment and the remote service process. We present a framework for Metaverse-oriented remote servicing based on DT that maps fault identification to task allocation. Identified faults serve as the basis for the task assignment optimization model, which aims to improve skill matching between service providers and DTs for people-digital twin task allocation within the remote service for smart homes. The proposed approach considers multi-objective factors by extending the Hungarian algorithm to accommodate task scheduling for dynamic DT task allocation. We evaluated the potential of our approach using remote home maintenance in a use-case of Heating, Ventilation, and Air conditioning (HVAC) systems. We show that integrating DT improves the skill relevance of the assigned service providers and the reputation of the service providers compared to two baseline methods.

Speaker's Biography: Abdulrahman Alhaidari is a Ph.D. student in the Department of Informatics and Networked Systems at the University of Pittsburgh. His research interests include digital twin integration with the Metaverse and the security of blockchain, with a focus on attack mitigation in decentralized finance (DeFi).

11:00 am (Presentation 4)

Speaker's Name: John Mazurowski, M.S. (Physics)
Title: Research Engineer
Chair, IEEE Photonics Standards Committee
Organization: Penn State Applied Research Laboratory- EOE Division

Title: IEEE Photonics Standards

Abstract: This presentation will cover mostly technical aspects of the IEEE Photonics Standards Committee. The committee scope covers standards development in, but not limited to the following areas of interest: lasers, optical devices, optical fibers, and associated lightwave technologies, and their applications in systems and subsystems, in which the quantum electronic devices are key elements. The committee is relatively new, having issued three standards, with nine under development. We meet quarterly at various times to encourage global participation. The IEEE has established procedures for assuring potential standard value to the industry, avoiding internal and external duplication, that the authors can provide the necessary detail / rigor, and approvals for incremental stages. Finally, we'll look at other contiguous photonic standards organizations, the environments, and applications that they cover. This includes industrial and government organizations, classification of environments in which they work, and categories of the photonics applications in which they are involved.

Speaker's Biography: John Mazurowski is the Chair of the IEEE Photonics Standards Committee, and the Director of the Navy ManTech Electronics Manufacturing Center, and former Department Head of the Fiber Optics and Photonics Department, ARL Electro-Optics and Electronics (EOE) Division, Freeport PA. Mr. Mazurowski has forty years of experience in the development of microwave, millimeter wave, optical, and photonic devices. He joined the Penn State Electro-Optics Center (EOC) in January 2005. Previously, Mr. Mazurowski held positions at Corning Photonics Division, the GE Electronics Laboratory, and Harris RF Communications. Mr. Mazurowski's research interests are in systems engineering for sensors and networks, heterogeneous integration, and electronics manufacturing. Mr. Mazurowski has over forty publications and presentations and holds three patents in optoelectronics. He is a senior member of the IEEE, chair of the IEEE Pittsburgh Electronic Packaging / Electron Devices Society, and past chair of the SAE AS-3A Fiber Optics and Photonic Applications Committee.

Noon: Lunch

1:00 pm (Presentation 5)

Speaker's Name: Aboubakr Salem, PhD
Title: Lead Power Electronics Engineer
Organization: Eaton Corporation

Title: Power Electronic Devices in Solid-State/Hybrid Circuit Breakers: Current Status and Future Trends

Abstract: Conventional electromechanical circuit breakers (CBs) are well-established for circuit protection, but new power distribution systems, like DC microgrids, demand faster interruption capabilities. This shift has led to increased focus on solid-state circuit breakers (SSCBs) and hybrid circuit breakers (HCBs), particularly with advancements in power semiconductor technologies. This presentation reviews the current status of SSCBs and HCBs, examining their advantages and limitations, especially in relation to wide-bandgap devices. It categorizes SSCBs and HCBs based on critical aspects, such as power semiconductor devices, main circuit configurations, voltage clamping methods, gate drivers, fault detection, and commutation strategies. Additionally, it addresses the design challenges faced in power-electronics-based circuit breakers and explores emerging trends in semiconductor power devices for SSCB and HCB applications across different voltage and power levels, as well as unique performance demands.

Speaker's Biography: Dr. Salem, Member IEEE '14, is a Lead Power Electronics Engineer with Eaton Corporation. He received his B.Sc. and M.Sc. degrees in Electrical Engineering from Helwan University, Egypt, in 2004 and 2009, respectively, and his Ph.D. in Electromechanical Engineering from Ghent University, Belgium, in 2015. Dr. Salem has 19 years of experience in academia and industry. Dr. Salem's research interests include power electronic converters' design applied to protection and control systems, electric drives, electric vehicles, renewable energy, and smart grid applications. Dr. Salem's funded research includes several international projects, with more than \$30 million. He has 40+ publications in reputable journals and conferences and five patents in power electronic converter design and control. Dr. Salem supervised and graduated many master's and Ph.D. students. Additionally, he is a reviewer in many reputable journals, i.e., Industrial Electronics and Power Electronics IEEE Transactions. Dr. Salem has served as IEEE West Virginia Section Vice-Chair since 2023.

1:30 pm (Presentation 6)

Speakers: Thomas Dionise, PE, IEEE Fellow, Principal Engineer
Sam Morellow, PE, IEEE Senior Member

Organization: Eaton Corporation, Advanced Power Systems

Title: Sizing Reactive Compensation for a Steel Plant to Support a New Descaler With Large Motors

Abstract: A steel plant with two plate mills is adding new medium voltage 5000 HP motor loads to their existing power system in association with the new descaler project. These new inductive loads will increase the voltage drop and decrease the existing power factor at the 13.8 kV Turnip Hill Substation and the 138 kV point of common coupling with the utility. This paper first describes the investigation into the available options for supplying electrical power to the proposed new descale pumps at the 140 inch mill, supporting simultaneous operation with the 206 inch mill and the reasoning behind the chosen design. Next, the projected power flows to the descaler for various operating load levels of the mill are used to size reactive compensation. Several options for capacitor banks and filter banks of multiple steps are analyzed to determine the harmonic duty on the banks and reduction in harmonic distortion at the point of common coupling. A specification is given for the recommended filter bank as well as the solution that was implemented. Finally, performance data for the installed filter bank were given.

Speakers Biography: Thomas J. Dionise, PE, (S'79-M'82-F'19) B.S.E.E. degree from The Pennsylvania State University, University Park, in 1982, and the M.S.E.E. degree with the Power Option from Carnegie Mellon University, Pittsburgh, PA, in 1984. He is currently a Principal Engineer in the Advanced Power Systems Department, Eaton Corporation, Warrendale. He has over 40 years of power system experience involving analytical studies and power quality investigations of industrial and commercial power systems. In the metals industry, he has specialized in power quality investigations, harmonic analysis and harmonic filter design for electric arc furnaces, rectifiers and VFD applications. He has co-authored over 40 papers, several of which received IAS Transactions, Magazine, and conference Prize Paper Awards. Mr. Dionise is the past Chair of the IEEE Metal Industry Committee and member of the Generator Grounding Working Group. He is a licensed Professional Engineer in Pennsylvania.

Speakers Biography: Sam Morello, PE, received a B.S.E.E. degree from The University of Pittsburgh, Pittsburgh, PA, in 1981, and a MBA degree from the Indiana University of PA, Indiana, PA, in 1986. Mr. Morello is a practicing engineer and manager serving a broad-based clientele for over 40 years. He has provided expertise to solve problems and implement solutions with the best choice of available technologies. Mr. Morello was formerly President and presently Principal Engineer of Arm EnerTech Associates, LLC, ARM CAMCO, LLC and ARM AEC, LLC which deliver electrical/mechanical engineering/repair services to a predominantly industrial clientele and employ approximately 100 people. The companies also design and manufactures process control systems and provide electrical field service/testing. In the metals industry, through prior engagement with Bethlehem Steel Corporation, he has specialized knowledge in a number of processes, including electric arc furnaces, continuous casting and rolling mills. Mr. Morello is a member of the IEEE Metal Industry Committee and an active member of the University of Pittsburgh at Johnstown Industrial Advisory Board to the Department of Engineering. He is a licensed Professional Engineer in the states of PA, CA, CT, DC, DE, FL, HI, MA, MD, NC, NH, NJ, NY, OH, OK, SC, TX, VA, and WV.

2:00 pm (Presentation 7)

Speaker: Kalyan K. Sen, PhD, PE, MBA, IEEE Fellow

Title: Fulbright Scholar (U.S.), GIAN Scholar (India), IEEE PES Distinguished Lecturer

Organization: President & CTO, Sen Engineering Solutions, Inc., Adjunct Teaching Professor, WPI

Titles: Topic 1. Opportunities and Challenges in Power Flow Control in a Modern Grid – **90 minutes**;
Topic 2. Commissioning World's First Commercial-Grade Sen Transformer – **30 minutes**; First topic will establish the background and then the second topic will follow.

Abstracts: Topic 1 – Electric power grid around the world is being modernized to integrate renewable energy sources, such as wind and solar in an unprecedented scale. This brings unforeseen challenges in integration of inertia-less and intermittent renewable energy sources with a legacy grid that was built with rotating machinery. An opportunity lies ahead to upgrade the power flow controllers from the traditional reactance regulator and phase angle regulator to a modern-day impedance regulator that is capable of regulating the line voltage and controlling the active and reactive power flows in the line independently.

The presentation is designed to provide the basic principles of power flow control theory, an overview of the most commonly used power flow controllers, and future trends. The audience will hear from an expert who actually designed and commissioned a number of power electronics-based FACTS controllers since their inceptions in the 1990s.

Topic 2 – A prototype Sen Transformer was designed to regulate ± 6.5 MVA power in a 33 kV line. The unit was manufactured and tested to demonstrate the proof of concept. The test results were as shown in textbooks.

Speaker's Biography: Kalyan Sen is the President & Chief Technology Officer of Sen Engineering Solutions, Inc. (www.sentransformer.com) that specializes in developing SMART power flow controllers—a functional requirements-based and cost-effective solution. He is also an Adjunct Teaching Professor at WPI. Kalyan worked 33 years in academia and industry. He was a key member of the Flexible Alternating Current Transmission Systems (FACTS) development team at the Westinghouse Science & Technology Center for which he became a Westinghouse Fellow Engineer. He contributed to concept development, simulation, design, and commissioning of FACTS projects at Westinghouse. He conceived some of the basic concepts in power flow control technology for which he was elevated to the IEEE Fellow grade with the citation: *for the development and application of power flow control technology*. He is the Co-inventor of the Sen Transformer.

4:00 pm: adjourn

Here are the details of this hybrid event.

Place: 4350 Northern Pike, Monroeville, PA 15146; **Hybrid meeting.** Please RSVP and the meeting link will be emailed to you by the day before the meeting.

RSVP: Required at <https://events.vtools.ieee.org/m/434998> by December 2, 2024, 5:00 PM Eastern Time. **Please make sure to enter your email address while registering to receive the meeting link.** If you are an IEEE member, please enter your membership number in the RSVP for accurate meeting reporting.

PDH: If you would like to receive PDH, please send an email after the event to Dr. Kalyan Sen at senkk@ieee.org. Please include your IEEE membership number. You will receive a reply which will serve the same purpose as the signed page for in-person meetings. A non-member who would like to receive PDH is required to pay \$10 to “IEEE Pittsburgh Section.”

Directions to site: From Pittsburgh take Interstate 376 East (Parkway East). Take Exit 84A to Monroeville. Cross Business Rt 22 at the traffic light and proceed on Rt 48 South (Moss Side Blvd) approx. ½ mile (two traffic lights). The 2nd traffic light is at a 4-way intersection with a Marathon station on the right and a Sunoco station on the left. Turn left onto Northern Pike. Proceed approx. 0.2 miles and turn right at the 1st traffic light onto Westinghouse Dr. Travel 0.7 miles to the 3 flags where the building's main entrance is located. Parking in the evening will be plentiful. Use the main entrance and check and sign-in with the security guards inside. You will be directed to the proper room for your meeting.

From the PA Turnpike, take Exit 57 (Monroeville). After the toll plaza, get in the left lane to get on Business Rt 22 West. At the first light, turn left onto Rt 48 South (Moss Side Blvd) and follow the above directions.

- ***Optical Fiber based Acoustic Sensor System for Utilities Monitoring***

Speaker: Dr. Kevin Chen, the University of Pittsburgh
Date: December 9, 2024
Time: 6:30 pm – 9:00 pm
Place: University of Pittsburgh Benedum Hall (EE) Room to be Announced
Registration: Please see <https://events.vtools.ieee.org/m/447511>
Sponsor: Electronics Packaging/Electron Devices Societies
Agenda: 6:30 Light Dinner
7:00 Presentation
8:00 Demonstration

Description: Professor Kevin Chen will present the results of developing an optical fiber-based acoustic sensor system and perform a live demonstration on the laser reel-to-reel fabrication of fiber sensors. The user can monitor a specified sound, ascertain its spectral content with respect to time, frequency, or amplitude, or view its location on a map. The system can be installed anywhere an optical fiber can be run-along other cables, in buildings, cable raceways, pipes tunnels, etc. and can be used to identify events based on the type of sound emitted. This would be particularly useful for utilities monitoring structures for indicators of impending faults.

The distributed fiber sensors use the entire length of optical fiber to monitor acoustic signals (10Hz to 30kHz, 3-m spatial resolution, 50-pico-strain sensitivity) along the entire fiber length. It also monitors temperature, strain, and load (force) with different fiber packaging. The distributed fiber sensor is fully integrated with the UAV and online GIS system.

We will discuss the application of fiber sensors for infrastructure monitoring and energy system (electricity, oil, gas, renewable). The meeting begins with a light dinner, then a presentation, and then a demonstration of the system in operation.

Biography: Dr. Kevin Chen is the Paul E. Lego Professor of Electrical Engineering at the University of Pittsburgh. He joined Pitt in 2002 after completing his PhD training at the University of Toronto. Kevin’s group performs interdisciplinary photonics research for energy, electronics, and manufacturing applications. His group produced 22 PhD students, over one dozen patents, and over 300 technical publications. Dr. Chen’s group receive multiple awards, best paper awards, and student competitions including R&D100 awards, the Carnegie Science Award for energy, and the NSF career award.



- ***Overview of Semiconductor Manufacturing and Career Opportunities***

Date: Wednesday, December 18, 2024
Time: 12:00-1:00pm
In-Person: Hamerschlag Hall (Tentative - see website for details)
Zoom: <https://cmu.zoom.us/j/91736782767?pwd=B0oSIlb3CmRvV9OWYMgTvPV8FfmK4bBK.1>
Organizer: Nanotechnology Council
RSVP: **Required** by December 18, 2024 via <https://events.vtools.ieee.org/m/447548>

Abstract: Join us for an overview of semiconductor manufacturing and career opportunities by Carnegie Mellon University Alumni and Nanofabrication Process Engineer Bennet Clark.

Bio: Bennet Clark graduated from CMU with a B.S. in Material Science and Engineering in 2017 with a concentration in computer science while interning at Air Force Research Laboratory where he worked on additive manufacturing and characterization. After graduation, he became a Principal Process Engineer at Global Foundries (now onSemi) where he was process owner of 80 thin film deposition tools including installation, process development, and quality improvements. In 2023, Bennet returned to CMU where he works in his current role as a process engineer in the Bertucci Nanotechnology Laboratory.

Agenda:

12:00 - Lunch + Presentation

12:30 - Q & A

- **IEEE Robot Car Race 2025 - Call for Volunteers**

IEEE will host the annual Robot Car Race called the IndEEE 500cm at Eaton Power System Experience Center on Saturday, February 22, 2025, in conjunction with Engineer's Week. Ten to twelve teams of 8th graders from local schools will build a robot car using Lego NXT kits and program it to negotiate a 500cm track with some challenges along the way. The Saturday program starts at noon and is over by 5 PM. Volunteers arrive around 10:00 AM to setup. We will hold workshops in January and February for volunteers to prepare for the race. If working with children, sharing your profession and explaining electrical concepts capture your interest, then consider volunteering for the IEEE Robot Car Race. Watch for more details in the January bulletin.

To volunteer to help with the Robot Car Race, just email tom.dionise@ieee.org, and you will be given more details and included in future mailings.

- **Seeking Nominations for The Outstanding Volunteer of The Year Award**

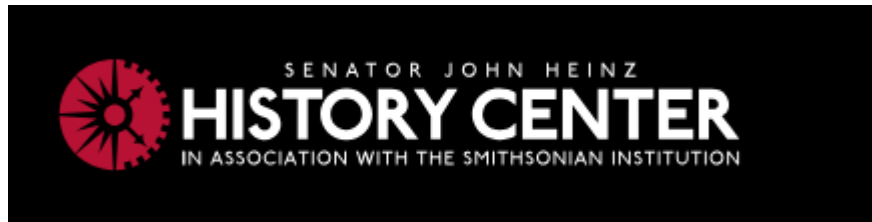
Dear members at large, we are seeking nominations for the 2025 IEEE Pittsburgh Section Outstanding Volunteer of the year award. This award seeks to honor an IEEE member or members who have demonstrated exemplary levels of dedication and service to IEEE in general and the Pittsburgh Section in particular over the 2024 calendar year. In order to qualify, the recipient must be an active IEEE member or student member volunteer that has contributed to IEEE in a demonstrable way. To nominate someone, please submit their name, IEEE number and a brief summary (250 words or less) highlighting their service and contributions in 2024. Nominations may be submitted via email to: jebeck@ieee.org. The cut-off date for nominations is March 31st, 2025. All nominations will be reviewed by the awards committee, and the recipient will be honored at the 2025 IEEE Pittsburgh Section's annual history and awards dinner which will be held next Spring (details to follow).

- **IEEE Pittsburgh Section ExCom Members attend IEEE R1/R2 ExCom Meeting in Stamford, CT**



L- R under arrows, Kal Sen, Joe Kalasky and Jim Beck as Members of the IEEE Region 2 EXCOM participated in a joint meeting of the Executive Committees of IEEE Regions 1 and 2 in Stamford, Connecticut during November 8 through 10. Also in attendance but not pictured was Pittsburgh section member Alexis Gorgacz. The purpose of the meeting was to exchange ideas and practices for the merger of the two Regions on Jan 1, 2028.

- ***After Event Post: Heinz History Museum Guided Tour***



The IEEE Pittsburgh Section Joint Chapter for Signal Processing Society (SPS) and Control Systems Society (CSS) together with the IEEE Pittsburgh Section Young Professionals Affinity Group held an in-person activity at the Senator John Heinz History Center on Saturday, November 16, 2024. With an attendance of 17 IEEE members and guests, the group had an enjoyable time learning about the contributions of the Pittsburgh region to the growth of US Culture and Innovation from past, present and beyond. The guided tour was a very enlightening and engaging experience. We hope to continue arranging similar events in the coming years and hope to see you then.



2024 Calendar – Meetings of IEEE Pittsburgh Section

	Jan	Feb	Mar	Apr	May	June	July	August	Sept	Oct	Nov	Dec
<u>Executive Committee (AdCom)</u>	18 Virtual	15 Virtual	21 Virtual	18 Nextier	16 DLC	20 Pitt	18 Monroeville	15 Mt. Lebanon	19 Pitt	17 WVU	21 PSEC	19 Edgewood CC
<u>Section</u>		15 – Meetings 101; 24 Robot Car		2-3 Science Fair	3 History Dinner	1 Museum Tour	13 Picnic	24 Pirates		1 IEEE-USA		7 Colloquium
<u>Communi- cations</u>			1 Voice	2 – Singing in Sync			19 Math AI*			9– Online; 10-Cell net		
<u>Computer</u>						24-28 AI school		29 data warehouse				
<u>EMBS</u>		5 Data Analyt- ics	25 GPT				8 HERL		5 Alzheimer's*	29 Surgery		
<u>EMCS</u>												
<u>Power Electronics</u>								28 Flow Control				
<u>PES/IAS</u>						11 Recycling	18 Nuclear Tour	28 Flow Control				
<u>Magnetics</u>												
<u>Nanotech- nology</u>											4 Lab Tour	18 Semi Manu
<u>Robotics</u>					13 Amp'd Robotics			20 Ice cream so- cial		1 IEEE-USA 29-Surgery		
<u>SPS/CSS</u>			1 - Voice 4 Fingerprints	22 Holographic*	6 Next G	12 Congestion				5 Generative AI	16 History Center	
<u>EPS/ED</u>		6 Fiber Attach		2 – Singing in Sync 18 - Glass						10, 24 Silicon Photonics		9 Optical Fiber
<u>Education</u>							11 ECE Curr					
<u>Social Impl Technology</u>							18 Nuclear Tour	22 Cybersecure		10 Coal		
<u>Upper Mon</u>		5 Data Analyt- ics	4 Fingerprints 25 GPT	1 Database Migration						7, 14,17, 21 - Semi- nars	11 NASA 18 Dist. Grid	
<u>Women in Eng'ing</u>										10 Coal		
<u>Young Pros</u>						12 Congestion				5 Gen AI	16 History	
<u>Life Mem- bers</u>						11 Recycling	8 HERL					
<u>PACE</u>								22 Cybersecure				
<u>Student Act</u>												

* This meeting was not published in the Pittsburgh Bulletin