



THE IEEE NORTH JERSEY SECTION NEWSLETTER

VOL. 69, NO. 01

JANUARY 2023

Message from the IEEE North Jersey Section Chair Prof. Hong Zhao

Happy New Year to you all! I hope everyone had a relaxing and enjoyable holiday break and wish you a healthy, happy, and prosperous 2023!

I am honored to have this opportunity to serve as the chair of North Jersey Section starting January 1, 2023.

2023, the first year of the post-pandemic era, is full of wide-open possibilities for us to explore, to serve our local members and community via workshops and seminars on emerging technologies, and networking events. This year, we will continue to conduct our flagship events - APP/MTT Mini-show, NJACS, and Awards Banquet. Along with that more technical and social events are expected.



Here, I would like to take this opportunity to thank our past section chair Dr. Ajay Poddar for his leadership and dedication to the Section during his term 2021-2022. Our section now is one of the most dynamic and vibrant sections. I am looking forward to working with our members, chapter officers, committee members, past chairs, technical council chairs, and our new terrific executive team:

First Vice-Chair: Emad Farag
Second Vice-Chair: Anisha Apte
Secretary: Adriaan van Wijngaarden
Treasurer: Avimanyou Vatsa
Member-at-Large: Naresh Chand, Alfredo Tan, Har Dayal
Let us work together to make North Jersey Section a unique Section!

**Best wishes,
Hong Zhao,
IEEE North Jersey Section Chair**

We Note the passing of Carl L. Sulzberger



Carl L. Sulzberger of Livingston, New Jersey, and a proud 1957 graduate of Livingston's first high school graduation class, passed away peacefully on January 7, 2023, with his loving wife Virginia at his side. He was 83 years old. Deepest condolences on behalf of the IEEE North Jersey section, of which Carl was a member.

Carl was the recipient of an IEEE award, "**Enhancement of the IEEE and Engineering Profession's Image with the Public**" in 2018 for his active and valuable contribution and volunteer services, for "**Outstanding contributions to the history of the IEEE Power and Energy and for recognizing the Engineering Achievements in the New York Metropolitan Area**"

Carl L. Sulzberger had more than 55 years of significant performance in the IEEE designated fields of engineering, technical communications, education, management, law and policy. He received a B.Sc. degree (honors program) and a M.Sc. degree in Electrical Engineering from the Newark College of Engineering (now NJIT, Newark, New Jersey, in 1962 and 1966, respectively. In 1973, he received a Juris Doctor degree (with honors) from Rutgers University of Law, Newark, New Jersey. He was with Public Service Electric and Gas (PSE&G) Company in New Jersey from 1962 until his retirement in 2002. He began his career at PSE&G in the Electric System Planning and Development Department and held several engineering and management positions. In 1973, after obtaining a JD from Rutgers University and passing the New Jersey Bar Exam, he transferred to the PSE&G Law Department, where he was actively engaged in PSE&G's management, law, and policy until his retirement in 2002 as PSE&G's Associate General Attorney.

After his retirement, he served IEEE, as an Associate Editor for Power and Energy Society's Magazine from 2002 until 2016. Carl Sulzberger started working for the IEEE Milestones program from 2006 for the IEEE History Center. He prepared and submitted a Milestone nomination for the Edison West Orange Labs and Factories, (1887) dedicated in Oct. 2008; in West Orange and Western Meters (1887-1893), dedicated in Sep. 2016 at NJIT, working with IEEE North Jersey Section in collaboration with Howard Leach and Ken Oexle of IEEE North Jersey Section.

Carl Sulzberger served as the IEEE Milestones Coordinator and from 2008, worked as a manager on the IEEE History Committee of the IEEE's overall Milestones program. He worked with the Milestones prospective proposers of a number of IEEE Milestone nominations and provided support, information, advice, and other questions and answers. Carl Sulzberger effectively combined his roles as an Associate Editor - History for the Power and Energy Magazine for the 14-year period from 2003 through 2016 with the IEEE Milestone program. He had interactions with about 35 successful Milestone projects. There were five IEEE Milestones dedicated during 2008 to 2016, for which he provided significant contributions in bringing the Milestones to completion.

Carl will be dearly missed. The obituary, and other information about the services and sending condolences to the family can be found by clicking the link below. <https://obits.nj.com/us/obituaries/starledger/name/carl-sulzberger-obituary?id=38613916>

You do not have to be an IEEE member, but prior registration is encouraged to attend any event. [IEEE North Jersey Section Website](#) [The Section Executive Committee Roster](#)

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JANUARY 2023

IEEE – IMPORTANT EVENTS, ARTICLES, ANNOUNCEMENTS AND REMINDERS:

- **This Month's Communications Society News from Around the World**
- **“Lesser-Known Edison Inventions” - An article by Harry Roman for the January Newsletter**

Lesser-Known Thomas Edison Inventions

In 1881, Edison filed for a patent for a method to preserve fruits, vegetables and other organic substances in a glass vessel. The vessel was filled with the items to be preserved, and then all the air was sucked from it with an air pump. The vessel tube was sealed with another piece of glass. This invention came about from his work with vacuum pumps while developing long-life incandescent light bulbs.

Made with air-impregnated foam to keep the weight at only one-and-a-half times that of wooden furniture, Edison's line of concrete furnishings would be sanded and smoothed into a mirror-like finish or stained to look like wood grain. He claimed he could furnish an entire house for less than \$200. In 1911, Edison's company molded a piano, bathtub and cabinets that could house Edison's phonographs. Patented in 1890, Edison developed miniature phonographs and inserted them into dolls. The phonograph was enclosed in a tin casing that comprised the doll's chest, then pre-made arms and legs were attached, along with a bisque head made in Germany. The talking dollies sold for about \$10.

In 1877, Thomas Edison first suggested using the word "hello." Before this, telephone users would often pick up the phone with phrases like, "Do I get you?" and, "Are you there?" But Edison found "hello" to be much more efficient, and the word caught on quickly - much to the dismay of Alexander Graham Bell. The inventor of the telephone preferred using the seafarer's phrase "ahoy" to begin a conversation instead.

In the early 1880's, Edison discovered what is known today as thermionic emission, as a by-product of his work with improving early incandescent light bulbs. He patented the "Edison Effect" and actually used it as part of his first electric utility system in NYC. However, later this discovery became the basis for the diode and triode vacuum tubes that lead to modern technology we know today like radio, television and even phones! In the 1920's, Edison's company released a line of luxury kitchen appliances, one of which was the automatic toaster. Many cheaper toasters were being invented and sold around this time, but what made these unique was that it used two compartments for the toast that opened automatically when it was done, instead of the springs popping the bread up. It was marketed for its speed - Toasting 2 slices of bread at once to the degree of toasted you set it at (and never burning)!

And you thought you knew all about Edison's inventions!

Talk to you again soon...

- Harry

Harry T. Roman: Life Senior Member (htroman49@aol.com)

(Author & Advisor, Edison Innovation Foundation), (Retired-PSE&G Co.), (htroman49@aol.com)

IEEE EDS/CASS - One Day Tutorial on Neuromorphic Computing & AI

- A report by Prof. Durga Misra, CAS/ED Chapter Chair, and Prof. Shaahin Angizi, Chapter Vice-Chair, IEEE North Jersey Section

On November 16, 2022, the ED/CAS joint Chapter of the North Jersey Section conducted an educational event on Neuromorphic Computing and Artificial Intelligence (AI) at the New Jersey Institute of Technology (NJIT). The event was publicized by website and the participant registration was also done through the website. Thirty-eight undergraduate and graduate students were registered for the event. The program started with breakfast and coffee followed by a poster session where the poster presenters described their posters for five minutes. The posters were ReD-LUT: Reconfigurable In-DRAM LUTs Enabling Massive Parallel Computation” and “Power Reduction and Conductance Quantization by Process Optimization in HfO₂-Based RRAM Devices for In-Memory Computing.”

Poster Presentation

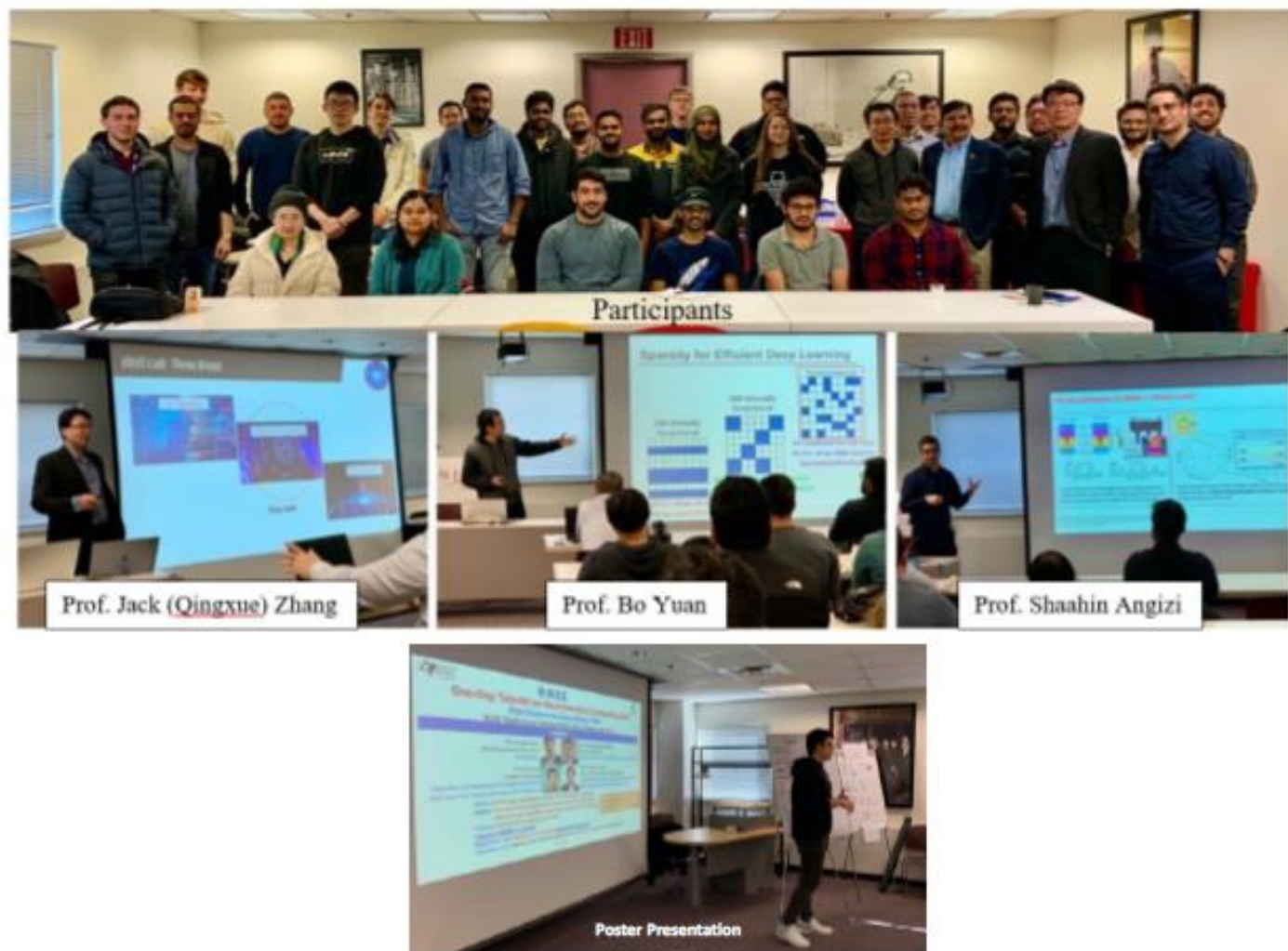


Fig. 1: IEEE EDS/CASS - One Day Tutorial on Neuromorphic Computing & AI

Following the poster presentation, the tutorial session started. An introduction of IEEE CASS's activities and the membership benefits was provided by Prof. Durga Misra, Chapter Chair of the ED/CAS Chapter and Chair of the Electrical and Computer Engineering Department of NJIT. The first tutorial was given by Prof. Jack (Qingxue) Zhang of Purdue University on "Brain-Inspired AI on the Edge for Precision Medicine" where he discussed how uniquely combining AI theories, neuromorphic learning algorithms, efficient computing, and wearable/IoT monitoring, can target the smart health. He also highlighted the efforts on both efficient learning and neuromorphic learning for wearable big data applications. The second tutorial was given by Prof. Bo Yuan of Rutgers University on "Algorithm and Hardware Co-Design for Efficient Deep Learning: Sparse and Low-rank Perspective" where he introduced the algorithm/hardware co-design works for energy-efficient deep neural networks (DNN) from both the sparse and low-rank perspectives. He also demonstrated the benefit of using structured and unstructured sparsity of DNN for designing low-latency and low-power DNN hardware accelerators. The third tutorial was given by Prof. Shaahin Angizi of the New Jersey Institute of Technology on "Toward Opportunistic and Fast Integrated Sensing and Computing for Edge Imaging Systems" where he described the cross-layer (device/circuit/architecture/application) co-design of energy-efficient and high-performance processing-in-sensor and processing-in-memory platforms. This enables a smooth transition from the current cloud-centric IoT approach to a data-centric approach, whereby the mobile edge devices can opportunistically perform computation close to the sensor by repurposing the sensor/cache to a data-parallel processing unit remarkably reducing the power consumption and latency of data transmission to a back-end processor. At the end of the tutorials, an additional question-and-answer session was conducted for general discussion. The program ended with a lunch for all the participants.

Calendar of Events

Events for the month of January 2023

Title	Date/Time	Hosts	Location
Digital Predistortion of Wireless Transmitters Using Machine Learning: North Jersey Section Jt Chapter, AP03/MTT17	10 Jan 2023 12:00 PM	CH01092 - North Jersey Section Jt Chapter, AP03/MTT17, CH01178 - North Jersey Section Chapter, PHO36	Virtual
LabVIEW vs. Python: Why Not Both: North Jersey Section Chapter, EMC27/PSE43	11 Jan 2023 01:00 PM	CH01265 - North Jersey Section Chapter, EMC27/PSE43	Virtual
IEEE North Jersey Section EXCOM - Meeting 6:30PM: North Jersey Section	11 Jan 2023 06:30 PM	R10327 - North Jersey Section	Teaneck, New Jersey
How high-precision GNSS enables new automotive applications: North Jersey Section Jt Chapter, AP03/MTT17	17 Jan 2023 11:00 AM	CH01092 - North Jersey Section Jt Chapter, AP03/MTT17, CH01184 - North Jersey Section Jt Chapter, CAS04/ED15, SIGHT177 - North Jersey Section SIGHT, CH01178 - North Jersey Section Chapter, PHO36, CH01153 - North Jersey Section Chapter, VT06	Virtual
Testing Avionic Digital Bus Architectures: North Jersey Section Jt Chapter, AP03/MTT17	18 Jan 2023 11:00 AM	CH01092 - North Jersey Section Jt Chapter, AP03/MTT17, CH01184 - North Jersey Section Jt Chapter, CAS04/ED15, SIGHT177 - North Jersey Section SIGHT, CH01178 - North Jersey Section Chapter, PHO36, CH01153 - North Jersey Section Chapter, VT06	Virtual
5G network slicing - all you need to know: North Jersey Section Jt Chapter, AP03/MTT17	18 Jan 2023 01:00 PM	CH01092 - North Jersey Section Jt Chapter, AP03/MTT17, CH01184 - North Jersey Section Jt Chapter, CAS04/ED15, SIGHT177 - North Jersey Section SIGHT, CH01178 - North Jersey Section Chapter, PHO36, CH01153 - North Jersey Section Chapter, VT06	Virtual
AI-based Claims Solutions for the Auto Insurance Industry: North Jersey Section Jt Chapter, AP03/MTT17	18 Jan 2023 06:30 PM	CH01092 - North Jersey Section Jt Chapter, AP03/MTT17, CH01184 - North Jersey Section Jt Chapter, CAS04/ED15, CH01178 - North Jersey Section Chapter, PHO36, CH01081 - North Jersey Section, EMB18, CH01285 - North Jersey Section Chapter, SIT30	Virtual
Multi Domain Operations Modernization - a Lunch & Learn Event: North Jersey Section Chapter, AES10	24 Jan 2023 11:30 AM	CH01215 - North Jersey Section Chapter, AES10, CH01092 - North Jersey Section Jt Chapter, AP03/MTT17, CH01178 - North Jersey Section Chapter, PHO36	Clifton, New Jersey
Capturing your share of \$1.3 Trillion in consulting opportunities: North Jersey Section Affinity Group, CN	26 Jan 2023 06:30 PM	CN10327 - North Jersey Section Affinity Group, CN	Virtual

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Electrical Safety and Predictive Maintenance - Ground Fault detection and location systems for Grounded, Ungrounded, and Resistance Grounded electrical systems: North Jersey Section Chapter, PE31	27 Jan 2023 09:00 AM	CH01097 - North Jersey Section Chapter, PE31, CH01092 - North Jersey Section Jt Chapter, AP03/MTT17	South Plainfield, New Jersey
Developing optical elastography techniques for intraoperative breast cancer detection: North Jersey Section Jt Chapter, CAS04/ED15	13 Feb 2023 04:30 PM	CH01184 - North Jersey Section Jt Chapter, CAS04/ED15, CH01092 - North Jersey Section Jt Chapter, AP03/MTT17, CH01178 - North Jersey Section Chapter, PHO36, CH01081 - North Jersey Section, EMB18	Newark, New Jersey
RF Design for Sustainability: North Jersey Section Jt Chapter, AP03/MTT17	14 Feb 2023 12:00 PM	CH01092 - North Jersey Section Jt Chapter, AP03/MTT17, CH01178 - North Jersey Section Chapter, PHO36, CH01184 - North Jersey Section Jt Chapter, CAS04/ED15, SIGHT177 - North Jersey Section SIGHT	Virtual
Communications and Networking in LEO Mega-Constellations: North Jersey Section Affinity Group, CN	16 Feb 2023 07:30 PM	CN10327 - North Jersey Section Affinity Group, CN	Virtual
Lead Generation for Consultants: North Jersey Section Affinity Group, CN	16 Mar 2023 06:30 PM	CN10327 - North Jersey Section Affinity Group, CN	Virtual



GRADUATE SCHOOL VIRTUAL OPEN HOUSE!

Wednesday, January 18, 2023, 5 p.m.

Fairleigh Dickinson University

Gildart Haase School of Computer Sciences & Engineering (GHSCSE)

Cybersecurity Leadership: "National Center of Academic Excellence for Cyber Defense Education (CAE-CDE)" by NSA

18 cutting-edge labs, among the best in the North and Mid-Atlantic Regions

Offers 6 Masters of Science (MS) Programs

- *Cybersecurity & Information Assurance
- *Management Information Systems
- *Electrical Engineering
- *Computer Engineering
- *E-Commerce
- *Computer Science (Data Science, Cloud Computing and more)

Scan Zoom Registration



Scan Grad Program Info



GRADUATE SCHOOL VIRTUAL OPEN HOUSE!

Wednesday, February 15, 2023, 5 p.m.

Fairleigh Dickinson University

Gildart Haase School of Computer Sciences & Engineering (GHSCSE)

Cybersecurity Leadership: "National Center of Academic Excellence for Cyber Defense Education (CAE-CDE)" by NSA

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- *Computer Engineering
- *E-Commerce
- *Computer Science (Data Science, Cloud Computing and more)

Scan Zoom Registration



Scan Grad Program Info



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Second Vice-Chair – Anisha Apte
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