

# IEEE North Jersey Section

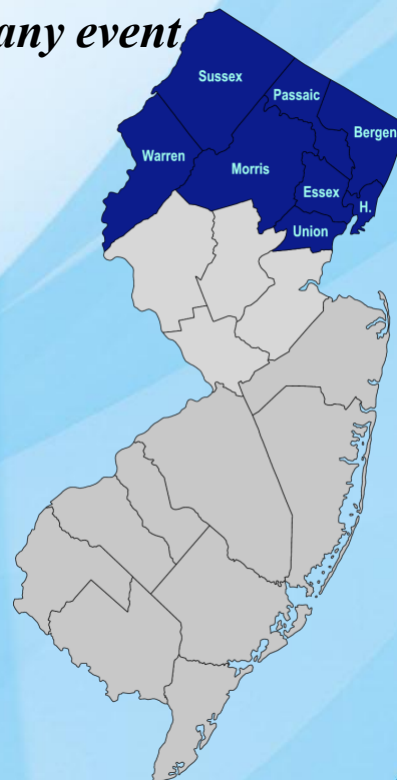
## IEEE North Jersey Section

**VOL. 71, NO. 08    Issue: September 2025**

*Prior registration is highly encouraged to attend any event*

**IEEE North Jersey Section Website**

**IEEE North Jersey Section - Roster**





## Chair's Note - A Message from the IEEE North Jersey Section Chair, Dr. Emad Farag

As we welcome the arrival of fall, there is a renewed sense of energy and purpose in the air. The changing leaves remind us that transformation brings opportunity—and after the slower pace of summer, I hope you all feel recharged and ready to dive into the exciting season ahead. This is a wonderful time to reconnect, collaborate, and contribute to the vibrant community that defines our IEEE North Jersey Section.

October brings several major technical events that reflect the spirit and mission of IEEE, especially as we celebrate IEEE Day—a global recognition of the day in 1884 when engineers first came together to share ideas that would shape the future. IEEE Day is more than a celebration of our history; it's a reminder of our shared responsibility to leverage technology for a better tomorrow and for the advancement of humanity. Learn more about IEEE Day and how it is celebrated worldwide at [ieeeday.org](http://ieeeday.org).

Among the highlights is the 39th IEEE North Jersey Annual Symposium and Mini-Show on October 9th, which will feature an impressive lineup of distinguished lectures in the area of wireless technologies. We're also excited to host exhibitors from leading tech companies who will showcase their latest innovations—making this an excellent opportunity to engage with cutting-edge developments in the field.

We are also proud to announce the inauguration of three new IEEE AP-S student branch chapters at Montclair State University (MSU), New Jersey Institute of Technology (NJIT), and Stevens Institute of Technology. These chapters represent the next generation of innovators, and we look forward to supporting their growth and initiatives.

Another key event this season is the 2025 IEEE International Workshop on Intelligent Systems and Interdisciplinary Applications (ISIA).

In addition, we are gearing up for a Milestone Celebration at Nokia Bell Labs, where we will recognize seven significant achievements that have shaped the technological landscape.

Alongside this, our Section continues to host a variety of technical talks and workshops across multiple venues—providing ample opportunities for professional development and networking.

I encourage all of you to take full advantage of these offerings. Whether you are a student, researcher, or industry professional, there is something for everyone. Stay active, stay curious, and stay engaged—because it's through our collective efforts that we continue to grow and make a meaningful impact.

Looking forward to seeing you at our upcoming events!

Emad Farag, IEEE North Jersey Section Chair

**Schedule for the 2025 ExCom Meetings:**

Month	Meeting Date	Venue
January	Wed: 08-Jan-25	Zoom Meeting
February	Wed: 05-Feb-25	Fairleigh Dickinson University, Teaneck + Zoom
March	Wed: 05-Mar-25	NJIT, Newark + Zoom
April	Wed: 02-Apr-25	Montclair State University, Montclair + Zoom
May	Sun: 04-May-25	Awards Banquet: Hanover Manor (no Zoom)
June	Wed: 04-Jun-25	Zoom Meeting
August	Sat: 02-Aug-25	Picnic: Duke Island Park, Bridgewater (no Zoom)
September	Wed: 03-Sep-25	Fairleigh Dickinson University, Teaneck + Zoom
October	Wed: 01-Oct-25	NJIT, Newark + Zoom
November	Wed: 05-Nov-25	Nokia Bell Labs, New Providence + Zoom
December	Tue: 02-Dec-25	End of the year: Hanover Manor, East Hanover (no Zoom)

**Miller Reese Hutchinson-Edison Chief Engineer- *An article by Harry Roman***

He worked for Thomas Edison from 1909 to 1918, becoming his chief engineer in 1912. As a boy, Miller Reese Hutchinson, or "Hutch" as Edison nicknamed him, long dreamed of working for Mr. Edison. Like Edison, Hutch was a triple threat--an accomplished inventor, entrepreneur and promoter-- which supercharged their discussions and the course of possible new products, often making for flamboyant claims and vibrant newsprint.

Hutch had many patents in his lifetime, including the first electrical hearing aid and the highly recognizable horn known as the Klaxon. While still in school he invented and patented a lightning arrester for telegraph lines. In our current environmentally aware world here are two of his inventions that would be well received:

--Reduction of carbon dioxide emissions from gasoline

--Oxygen sensor for drivers / pilots to use to improve combustion and reduce emissions

In June 1913 he was awarded an honorary Electrical Engineer degree from Auburn, and in June 1914 an honorary Ph.D. from Spring Hill College. In 1936, Hutch was admitted to Alabama's hall of fame, with his number of patents estimated to be over 1000, a remarkable accomplishment considering Edison had recorded 1093 domestic patents (but Edison had even more foreign patents to his record, bringing his grand total to 2,332).

Talk to you again soon...

Harry T. Roman, Life Senior Member

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

## IEEE North Jersey Section's Education Committee Technology Review Series:

- **Article for September 2025**

### **Introduction to Artificial Neural Networks - Part 2: Deep Learning and Convolutional Neural Networks with TensorFlow**

This article reviews deep learning neural networks using the TensorFlow and Keras libraries. The details of different architecture features that can be encoded into the layers of a network are examined. Methods for hyperparameter tuning are introduced best suited to NN. A completely new architecture and processing scheme is introduced for image data.

Image data analysis requires convolutional neural network architectures. The key features of image data and kernels to execute convolution are discussed in the context of a DL NN that can analyze the input images.

The datasets used are suited for both regression and classification. The NN are tailored to either problem. The TensorFlow and Keras libraries are used to construct the DL NNs using built in library methods. Functionality of the libraries allow for building different numbers of neurons in different hidden layers and using different layers tailored for images.

Lastly, loss curves associated with model training and final output scores for model evaluation on test data are examined. This is to show when the models are converging and how they are performing on the test datasets. This allows comparing different NN architectures to see which ones are the best.

[Full Article](#)

**Contact:** Amit Patel email: [a.j.patel@ieee.org](mailto:a.j.patel@ieee.org)

## Multimodal Deep Learning for Alzheimer's Disease Prediction: Integrating Clinical Biomarkers and NLP Embeddings

Alzheimer's disease (AD) is the leading cause of dementia worldwide, yet current diagnoses are often made too late, limiting treatment effectiveness. The purpose of this research is to improve early detection of AD using artificial intelligence methods. Prior work has applied AI models to structured data or text separately, but fewer approaches have integrated both modalities for prediction.

Our approach combines structured clinical biomarkers with natural language processing embeddings from patient summaries. Two datasets were used: a preprocessed Kaggle dataset and a raw ADNI dataset requiring custom preprocessing. DistilBERT was applied for the Kaggle data, while BioBERT was used for the ADNI data. Challenges addressed include class imbalance, managed using SMOTE, and integration of multimodal data.

Experimental results show that combining structured and text data achieved up to 91% accuracy and 93% recall, outperforming clinical-data-only models. These findings indicate that multimodal deep learning can support earlier and more reliable AD prediction and improve patient recruitment for clinical trials. Future work will focus on fine-tuning biomedical language models, enhancing synthetic data generation, and extending the approach to other neurodegenerative diseases.

[Full Article](#)

**Contact:** Dinithi Samarakoon email: [dsamarak@stevens.edu](mailto:dsamarak@stevens.edu)

## SOME UPDATES FROM IEEE Women in Engineering 2025 IEEE WIE FORUM EAST



The IEEE Women in Engineering (WIE) Forum USA East is dedicated to fostering leadership development for professionals at every career stage. Rotating between IEEE Region 1 and Region 2 in the Northeast USA, our forum offers attendees the chance to gain inspiration and empowerment from renowned leaders. Through dynamic workshops and engaging panel discussions, participants will explore emerging technologies and innovative STEM outreach initiatives.



**THE INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS, INC.**

**IEEE NORTH JERSEY SECTION  
MTT-Society and AP-Society Joint Chapter  
PRESENTS**

**39<sup>th</sup> ANNUAL SYMPOSIUM AND MINI-SHOW**

**FOCUS:**

**SELECTED TOPICS IN RF AND MICROWAVE TECHNOLOGIES FOR  
COMMERCIAL AND MILITARY APPLICATIONS**

**DATE: THURSDAY, OCTOBER 9, 2025**

**PLACE: Hanover Manor, 16 Eagle Rock Ave., E. Hanover, NJ 07936. Ph#973-992-7425**

**SCHEDULE OF EVENTS**

**9:00 AM TO 4:30 PM**

**TECHNICAL SESSIONS**

**10 –12 LECTURES FEATURING SPEAKERS FROM LEADING  
COMPANIES, WITH EMPHASIS ON MILITARY ELECTRONICS,  
WIRELESS TECHNOLOGIES AND MICROWAVE COMMUNICATIONS.**

**MINI SHOW FEATURING LATEST PRODUCTS  
(APPX. 30-40 EXHIBITORS)**

**(COMPLIMENTARY LUNCH SERVED)**

**Details of the schedule and speakers and the topics will be posted on the IEEE North Jersey  
section website by September 2023.**

**Registration:**

**ATTENDEES: <https://events.vtools.ieee.org/m/482537>**

**EXHIBITORS: <https://events.vtools.ieee.org/m/473821>**

**For further information contact:**

**CHAIR - GENERAL-EXHIBITION: KIRIT DIXIT (201-669-7599), [kdixit@ieee.org](mailto:kdixit@ieee.org)**

**CHAIR – TECHNICAL PROGRAMS: GEORGE KANNELL (973-284-  
3682), [george.kannell@L3harris.com](mailto:george.kannell@L3harris.com)**

**THERE IS NO CHARGE TO ATTEND THE SYMPOSIUM OR SHOW.**

**SEE DETAILED PROGRAM BELOW**





THE INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS, INC.

NORTH JERSEY SECTION

MTT-Society & AP-Society Joint Chapters PRESENTS

### 39th ANNUAL SYMPOSIUM AND MINI-SHOW

**THURSDAY, OCTOBER 9, 2025**

Hanover Manor, 16 Eagle Rock Ave., East Hanover, NJ 07936. 973-992-7425

**TECHNICAL SYMPOSIUM** from 8:20 AM - 5:00 PM

**MINI SHOW** featuring the latest products 9:00 AM - 4:30 PM

Registration is on-site. Section Home page: <http://sites.ieee.org/northjersey/>

Time	Topic	Speaker	Title	Affiliation
8:20	Opening Remarks	George Kannell	Technical Chair IEEE MTT/AP	L3Harris
8:30-9:00	Direct RF Digitizer Technology Transforms Aerospace and Defense Systems	Rodger Hosking	Director of Sales	Mercury Systems
9:00-9:30	Electromagnetics as a Common Thread between Emerging Apps in AP, MTT, BioMed, & GRS	Dr. Branislav Notaros	AP-S President and Chair Distinguished Lecturer	IEEE MTT-S/AP Colorado State
9:30-10:00	Global Markets, Global Technology, & Global Students?	Dr. Ulrich L Rohde	Visiting Scientist at MIT.MTL President & Chairman	University of Joint Forces DE, Synergy Microwave
10:00	BREAK			
10:30-11:00	Electromagnetic Wave Propagation Modeling and Simulation	Dr. Levent Sevgi	Chair IEEE AP-S DL Professor	Istanbul Technical University (Emeritus)
11:00-11:30	Role of Electromagnetic Simulations and Digital Twins in Commercial Product Design	Dr. C. J. Reddy	Fellow IEEE, VP BD	Altair, IEEE AP-S
11:30-12:00	AI Enabled Electromagnetics for Humanity and Societal Advancement	R. Muralidharan	Prof-of-Practice & CTO	Tata Advanced Systems, IEEE AP-S
12:00	LUNCH			
1:00-1:30	Phase Shifters for Radar & Wireless Communication Systems	Dr. Shiban Koul	IIT Delhi, India IEEE Inter-Society, (AP-MTT-EMC)	Honorary Professor the Indian Institute of Technology
1:30-2:00	Implanted Coils & Antennas for Biomedical Wireless Power Transfer	Dr. Sima Noghianian	Distinguished Hardware Engineer AP-S Distinguished Lecturer	CommScope Ruckus Networks
2:00-2:30	Beaming Beyond Limits: Emerging Microwave Power Transfer Technologies	Dr. Ifana Mahbub	Associate Professor	University of Texas at Dallas
2:30-3:00	AI Based Digital Predistortion Design	Tim Reeves	Principal Application Engineer	MathWorks
3:00	BREAK			
3:30-4:00	Untold History of Specialty Electronics in Search & Rescue Efforts at the World Trade Center	Dr. John Kosinski	Principal Deputy for Technology (Chief Scientist), retired	U.S. Army I2WD circa 2001
4:00-4:30	Design & Development of Flat Panel Phased Array Antennas for Wireless & Satellite Comms	Dr. Satish Shrama	Professor AP-S DL Distinguished Lecturer	College of Engineering San Diego State University
4:30-5:00	RF Detection and Identification Systems in Area Surveillance for Unmanned Aerial System (UAS)	Dr. David Padi	Business Relationship Manager	United Nations retired
5:00	Closing remarks	Kirit Dixit	Chair MTT/AP Symposium	Microcom Sales

**ALL ARE WELCOME (IEEE Membership not required). REGISTRATION IS ON-SITE**

**THERE IS NO CHARGE TO ATTEND THE SYMPOSIUM OR SHOW.**

**COMPLIMENTARY BREAKFAST / LUNCH INCLUDED FOR ALL**

#### FURTHER INFORMATION

General Event Chair	Kirit Dixit	201-669-7599	kdixit@microcomsales.com
Technical Program Chair	George Kannell	973-284-3682	george.kannell@L3Harris.com
Co-Chair AP/MTT Chapter	Dr. Anisha Apte		anisha_apte@ieee.org
Chair AP/MTT Chapter	Dr. Ajay Poddar	201-560-3806	akpoddar@ieee.org
Vice-Chair AP/MTT Chapter	Professor Edip Niver	973-596-3542	edip.niver@njit.edu
Chair North Jersey	Dr. Emad Farag		enfarag@ieee.org

#### EVENT COORDINATORS

Ken Oexle	k.oexle@ieee.org	Russell Pepe	rpepe@att.net
Howard Leach	h.leach@ieee.org	Mike Newell	
Dr. Hong Zhao	zhao@fdu.edu	Har Dayal	dayalhar@gmail.com

## Calendar of Events

### Upcoming Events: September 2025 Onwards

Title	Date	Location
2025 IEEE North Jersey Section September ExCom Meeting: North Jersey Section	03 Sep 2025 06:30 PM EDT	Teaneck, New Jersey Hybrid
"Electromagnetic Twins: Physics-Based Digital Twins for Communications and Sensing" webinar: IEEE Future Networks Community	09 Sep 2025 03:00 PM EDT	Virtual
Optics, Photonics, Imaging, & Wireless AT&T 100 Years of Research & Innovation: Careers in Technology: New Jersey Coast Section Jt. Chapter, IM09/C16	10 Sep 2025 10:00 AM EDT	Middletown, New Jersey
IEEE NJACS 2025 - 13th Annual IEEE North Jersey Advanced Communications Symposium - Themes: Communications, Sensing, and AI (Zoom): North Jersey Section, EMB18	13 Sep 2025 01:00 PM EDT	Virtual
Beyond 5G: A Multi-Year Technology Roadmap for the 6G Era: IEEE Future Networks Community	17 Sep 2025 11:00 AM EDT	Virtual
Cybersecurity in the Age of AI: North Jersey Section Chapter, TEM14	17 Sep 2025 05:30 PM EDT	Virtual
ALLSTaR - Automated LLM-Driven Scheduler Generation and Testing for Intent-Based RAN: Philadelphia Section	18 Sep 2025 08:00 AM EDT	Virtual
Detectus EMC Scanner - EMI Troubleshooting Made Easy: North Jersey Section Chapter, EMC27/PSE43	19 Sep 2025 01:00 PM EDT	Virtual
Practical Generative AI: A Hands-On Introduction for Technical Professionals: North Jersey Section Chapter, COM 19	20 Sep 2025 01:30 PM EDT	Teaneck, New Jersey



Women in AI Series 2025 - Empowering LLMs for Scalable and Efficient Machine Programming: Guixiang Ma: Lehigh Valley Section Affinity Group, WIE	23 Sep 2025 07:00 PM EDT	Virtual
EMP, A Practical Approach to Protecting Critical Infrastructure: North Jersey Section Chapter, PE31	25 Sep 2025 09:00 AM EDT	South Plainfield, New Jersey
IEEE YP UNGA Parallel Event "Data, Digital Transformation and the Resilience in the Energy Transition for Community Engagement": North Jersey Section Affinity Group, YP	25 Sep 2025 06:00 PM EDT	New York, New York
2025 IEEE Connecting the Unconnected North America Regional Summit (CTUS-NA'25): Princeton/Central Jersey Section	26 Sep 2025 08:00 AM EDT	Washington DC, District of Columbia
Architecting Scalable AI Workflows with Apache Spark in Big Data Environments: North Jersey Section Chapter, C16	30 Sep 2025 01:00 PM EDT	Virtual
Professional Branding Workshop: North Jersey Section Affinity Group, YP	01 Oct 2025 06:30 PM EDT	South Orange, New Jersey
October IEEE North Jersey Section ExCom: North Jersey Section	01 Oct 2025 06:30 PM EDT	Newark, New Jersey
IEEE Presentation on Personal Branding: Seton Hall Univ	01 Oct 2025 06:30 PM EDT	South Orange, New Jersey
Quantum Machine Learning (QML): Quantum Architecture Search (QAS): Philadelphia Section	02 Oct 2025 06:00 PM EDT	Virtual
39th Annual Symposium and Mini-Show - Attendee Registration Site: North Jersey Section Jt. Chapter, AP03/MTT17	09 Oct 2025 08:00 AM EDT	East Hanover, New Jersey
39th Annual Symposium and Mini-Show - Exhibitor Registration Site: North Jersey Section Jt. Chapter, AP03/MTT17	09 Oct 2025 08:30 AM EDT	East Hanover, New Jersey
IEEE Day Event: 2025 IEEE International Workshop on Intelligent Systems and Interdisciplinary Applications (ISIA) &	10 Oct 2025 09:00 AM EDT	Montclair, New Jersey

Inauguration of IEEE Montclair AP-S SBC (21201): North Jersey Section Jt Chapter, AP03/MTT17		
Inauguration of IEEE NJIT AP-S Student Branch Chapter & Workshop on Antennas, Electromagnetics, and AI-Driven Circuits and Communication Systems for Humanitarian Technologies: North Jersey Section Jt Chapter, AP03/MTT17	10 Oct 2025 05:00 PM EDT	Newark, New Jersey
Inauguration of the IEEE Stevens Inst. of Tech. AP-S SBC & Workshop on Antennas, Electromagnetics, and AI-Enabled Communication Systems for Interdisciplinary Applications Addressing the UN SDGs: North Jersey Section Jt Chapter, AP03/MTT17	11 Oct 2025 09:00 AM EDT	Hoboken, New Jersey
IEEE Day Event: Inauguration of the IEEE Rutgers AP-S Student Branch Chapter and Workshop on AI-Enabled Wireless Communication, IoT, Climate Challenges, and Humanitarian Technologies: North Jersey Section Jt Chapter, AP03/MTT17	11 Oct 2025 05:00 PM EDT	Piscataway, New Jersey
IEEE Day - Engineering in Music: North Jersey Section Jt Chapter, AP03/MTT17	11 Oct 2025 07:30 PM EDT	Piscataway, New Jersey
Architecting Scalable AI Workflows with Apache Spark in Big Data Environments: North Jersey Section Chapter, C16	24 Oct 2025 12:00 PM EDT	Teaneck, New Jersey
Women in AI Series 2025 - Artificial Intelligence in Journalism: Christen Smith: Lehigh Valley Section Affinity Group, WIE	28 Oct 2025 07:00 PM EDT	Virtual
Medium Voltage Substation Circuit Breakers & Metalclad Switchgear: North Jersey Section Chapter, PE31	30 Oct 2025 09:00 AM EDT	South Plainfield, New Jersey
IEEE Buildathon 2025: North Jersey Section Affinity Group, YP	01 Nov 2025 10:00 AM EDT	Newark, New Jersey

AI Workshop – Learn, Build, and Apply Artificial Intelligence: North Jersey Section Affinity Group, YP	19 Nov 2025 06:00 PM EST	Hoboken, New Jersey
Meters: North Jersey Section Chapter, PE31	20 Nov 2025 09:00 AM EST	South Plainfield, New Jersey
Women in AI Series 2025 - Integrating Generative AI Tools in Computer Science Course-based Research Experiences: Dr. Paula Lauren: Lehigh Valley Section Affinity Group, WIE	25 Nov 2025 07:00 PM EST	Virtual
IEEE North Jersey Section End-of-the-Year 2025: North Jersey Section	02 Dec 2025 06:00 PM EST	East Hanover, New Jersey
2025-Fall IEEE Metropolitan AI Applications Symposium (META) [Friday December 12th 2025 @12:00PM Zoom 506 875 4099]: North Jersey Section	12 Dec 2025 12:00 PM EST	Virtual
Inverters: North Jersey Section Chapter, PE31	22 Jan 2026 09:00 AM EST	South Plainfield, New Jersey
Power Under Siege: Cybersecurity Strategies for Critical Infrastructure: North Jersey Section Chapter, PE31	19 Feb 2026 09:00 AM EST	South Plainfield, New Jersey
Underground Asset Strategies: North Jersey Section Chapter, PE31	19 Mar 2026 09:00 AM EDT	South Plainfield, New Jersey
Power Quality & Testing: North Jersey Section Chapter, PE31	23 Apr 2026 09:00 AM EDT	South Plainfield, New Jersey

**For Past Month's Events – AUGUST 2025 - [Click Here](#)**

**[Click Here: For a List of the 2025 IEEE North Jersey Section Volunteers](#)**