

# IEEE North Jersey Section

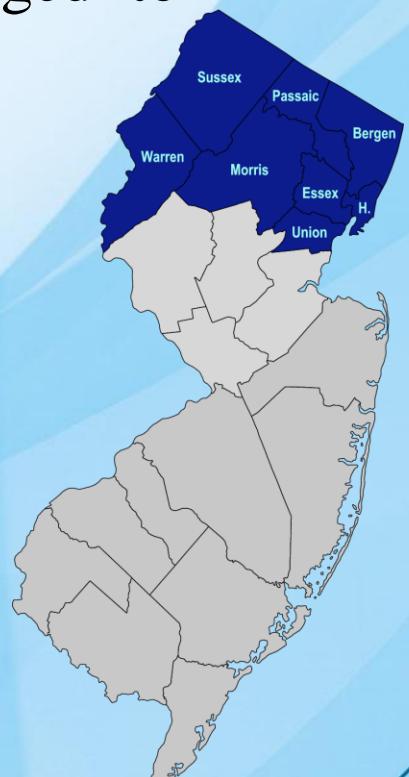
## IEEE North Jersey Section

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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

At the start of the New Year, I wish everyone had a relaxing and joyful end-of-the-year Christmas holiday season and hope that you are energized and ready to begin the New Year.

I am excited to start my term as Chair of the IEEE North Jersey Section, beginning January 1, 2025. It is truly an honor and a pleasure to serve in this role. I follow in the footsteps of many great past chairs who have helped make the Section not only a powerhouse in IEEE Region 1 but across the entire IEEE. This sets high expectations for maintaining and growing the IEEE North Jersey Section in the years ahead.

I would like to express my heartfelt thanks to Professor Hong Zhao for her exceptional contributions to the IEEE North Jersey Section over the past two years. This has been a critical period as we emerged from the COVID-19 pandemic and transitioned into a new normal, where many meetings and activities are hybrid. Professor Zhao has been instrumental in this transformation, as evidenced by the many successful events held in the Section, including seminars, workshops, and short courses.

My vision for the New Year is fourfold: First, to meaningfully impact the local community and the Section's members; second, to foster the next generation of engineering leaders; third, to preserve the history of technological innovation; and finally, to create an environment of inclusivity and diversity.

As we move into the New Year, let's continue to make the IEEE North Jersey Section a force for positive change in our region and local community. Together, we can build an entity that has a lasting, positive impact on society by creating a technical forum for discussion among industry, academia, and government to enhance technology in our community. We plan to continue our flagship events, such as the AP/MTT mini-show, awards banquet, and NJACS, along with additional technical and social activities. My goal is to ensure that joining the IEEE is rewarding for our members, helps to positively impact their careers, and provides value to the local industry and academia. Ultimately, we aim to foster technological innovation and excellence for the benefit of humanity and the local community.

Engineering and technological innovation have been passed down from one generation to the next, with each generation building on the success and discoveries of the previous one. In this regard, it is crucial to focus on the next generation of engineers by engaging with them and holding events that encourage and inspire undergraduate and graduate students, as well as organizing STEM activities for pre-university students to motivate them toward engineering and science. My aim is

to increase student membership and retain it after graduation by ensuring that students stay engaged with the IEEE and find value in its activities for their careers.

Many engineering discoveries that shaped the development of wireless communications occurred in our area, thanks to the leading industrial and academic institutions in our community. To preserve the history of technological innovation from previous generations, it is important to establish historical milestones for major inventions in our area.

Finally, all of this relies on the Section's volunteers. I am excited to work with the new ExCom team, which includes:

First Vice Chair: Anisha Apte

Second Vice Chair: Alfredo Tan

Secretary: Avimanyou Vatsa

Treasurer: Weitian Wang

Member-at-Large: Michael Miller, Adriaan van Wijngaarden, Yudong Yao

As well as Chapter officers, Committee members, and Technical Council chairs.

Let's work together as a team in an inclusive and welcoming environment where everyone feels that their contributions are valued and appreciated. This will encourage everyone to contribute even more.

At the start of the New Year, I wish you all a happy, healthy, successful, and prosperous year ahead!

*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	TBD	Awards Banquet: Hanover Manor (no Zoom)
June	Wed: 04-Jun-25	Montclair State University, Montclair + Zoom
August	TBD	Picnic: TBD (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	TBD	End of year celebration: TBD (no Zoom)

## The Leadership Style of Thomas Edison - An article by Harry Roman

Thomas Edison, the great inventor excelled in his leadership of his project teams. Here is a listing of those special skills he deployed for his R&D lab/invention factory professionals who created his new products and services.

- Championed team-based problem-solving, encouraging cross-pollination with other teams [usually 30-40 teams at once were led by Edison].
- Instituted flexible work hours-the R&D lab was open 24/7/365.
- Provided access to all the tools and materials for inventing right there in the invention lab storeroom-facilitating one-stop shopping. He facilitated invention without delays.
- Kept track of project costs with all storeroom material requests being billed back to the project teams doing the requesting.
- Maintained a large corporate library of technical books, journals, and published papers for reference material available to all teams [experts believe Edison started the corporate library movement].
- Encouraged the keeping of detailed notebooks and documentation of project activities [4,000 ledgers completed during his lifetime along with millions of additional project documents generated].
- Allowed teams to visit outside sites where relevant information could be gathered from private experiments and development efforts.

Edison refrained from closely managing each team on a regular basis, but sometimes he worked side-by-side with them if a difficult problem was encountered and his expertise was requested. He strongly believed in each team learning on its own. Building effective project teams was a source of great pride for Edison. His teams were often multi-disciplinary in nature, employing head and hands thinkers/doers.

Talk to you again soon...

Harry T. Roman, Life Senior Member

Author & Advisor, Edison Innovation Foundation

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## IEEE North Jersey Section's Education Committee Technology Review Series: Article for Jan 2025

### **Enhancing Functional Connectivity with Dictionary Learning for Brain Fingerprints**

The human brain consumes about 20% of the body's total energy, even when not engaged in any specific cognitive tasks. Researchers are particularly interested in understanding the brain's activities during rest. Resting-state functional Magnetic Resonance Imaging (rs-fMRI) is used to study these activities. In an rs-fMRI scan, a subject lies in the MRI scanner and is asked to do nothing in particular, while the brain activity is recorded. This results in four-dimensional data, representing a "movie" of the brain with three spatial dimensions and one temporal dimension. Interestingly, regions of the brain that are physically distant from each other can show similar activity patterns, a phenomenon known as functional connectivity (FC). When several such regions display similar brain activity, they form a functional network (FN). Notable FNs identified in resting-state fMRI include the Visual Network, the Motor Network, and the Default Mode Network. By analyzing the FC in resting-state fMRI, researchers can investigate what the brain is doing during periods of rest, without performing any cognitive task. A fascinating aspect of brain activity is that the FC patterns are unique to each individual, much like fingerprints. These "brain fingerprints" can be used to identify individuals, predict behaviors, and even guide personalized treatment approaches for clinical conditions such as depression or schizophrenia. However, to improve the accuracy of these predictions, it is crucial to enhance the subject-specific features of the FC data.

In this study, we aim to enhance the individual-specific characteristics of FC using dictionary learning (DL) methods. DL techniques learn a set of basis vectors from training data, which can then be used to reconstruct new test data. In this case, the FC data from a group of subjects is used to train the DL algorithms, which then generate basis vectors that can extract subject-specific FC features from individual scans. To measure the effectiveness of these algorithms in capturing individual differences, we use metrics such as Differential Identifiability ( $I_{diff}$ ) and Overlap. These metrics are based on the idea that FC patterns from scans of the same subject should be more similar to each other than those from different subjects. We compare four different DL algorithms—Principal Component Analysis (PCA), Robust PCA, K-Singular Value Decomposition (K-SVD), and Common Orthogonal Basis Extraction (COBE)—to assess their ability to extract subject-specific FC. Our results show that the COBE algorithm outperforms the other methods in this regard. Additionally, we examine how different FNs contribute to the uniqueness of the brain's functional connectivity patterns. We find that the Default Mode Network, Front-Parietal Network, and Dorsal Attention Network contain the most individual-specific information, making them particularly useful for identifying a person based on their FC.

<https://ap20.github.io/nnj/NL/edutechrev/EFCwithDLforBF.pdf>

More details on this study can be found in this paper at

<https://onlinelibrary.wiley.com/doi/10.1002/hbm.26289>. Contact Pratik Jain (pj44@njit.edu)

**GRADUATE SCHOOL VIRTUAL OPEN HOUSE!**

**Tuesday, January 21, 2025, 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**

The banner features the Gildart Haase School of Computer Sciences & Engineering logo (a crest with a book and a torch), the school's name, and the event details. It also highlights the school's designation as a National Center of Academic Excellence for Cyber Defense Education (CAE-CDE) by NSA. The banner includes a list of six Master's programs offered. Below the text are several small images showing students in various academic and technical settings, such as working on laptops, using computer terminals, and interacting with robotic equipment.

A slide for the Fairleigh Dickinson University Graduate School Virtual Open House. It features the university's logo and name at the top left, followed by a large title box containing the event details. Below the title is the university's name again, followed by the school's name and a red banner with cybersecurity information. A central text box lists six master's programs. To the right are two QR codes with registration and program info labels. The bottom half of the slide contains five small images showing students in various academic settings and a robotic arm.

# Calendar of Events

## Upcoming Events: January 2025 Onwards

<b>Title</b>	<b>Date</b>	<b>Hosts</b>	<b>Location</b>
Cryptocurrency - Bitcoin- Is it ready for Prime Time? Careers in Tech Special: Delaware Bay Section Chapter, C16	06 Jan 2025 07:00 PM	CH00002, CH01047, CH01056, CH01059, CH01070, CH01126, CH01129, CH02131, CH02139, CH02170, SIGHT177, WE10327	Virtual
Beyond Moore: 3D Memory, 3D Packaging: Pikes Peak Section Chapter, C16	07 Jan 2025 06:00 PM	CH01056, CH01070, CH01104, CH01177, CH02131, CH02139, CH04055, CH04165, CH05056, CH05183, CH06122, CH06177, CH06189, R50043	Virtual
January 2025 ExCom Meeting: North Jersey Section	08 Jan 2025 06:30 PM	R10327	Virtual
Careers in Tech Special Event 2025 - Michael Viron - Startup 101: Lessons Learned 8 Jan 2025 6 PM CST / 7 PM EST: Northwest Florida Section Chap, C16/COM19	08 Jan 2025 06:00 PM	CH01070, CH02139, CH02170, CH03197, CH04165, CH05056, CH07198, HKN217, LM10345, LM30557, R10327, R30557, R50043, R50049, SIGHT119, STB22759159, STB63891, STB96971	Virtual
AI and Trust: Boston Section Chapter, C16	09 Jan 2025 07:00 PM	CH01013, CH01027, CH01047, CH01056, CH01070, CH01075, CH02131, CH02139, CH02170, CH03197, CH06042, R10327	Cambridge, MA, Massachusetts
Generative Diffusion Models for Network Optimization: IEEE Future Networks Community	16 Jan 2025 12:00 PM	C-FN772, R10327, R20035	Virtual
"Fortifying the 5G Core: Exploitation Tactics, Advanced Detection, and Prevention Strategies" Webinar: IEEE Future Networks Community	17 Jan 2025 09:00 AM	C-FN772, CH01250, R1, R10327, R10345	Virtual

<b>Title</b>	<b>Date</b>	<b>Hosts</b>	<b>Location</b>
Manalapan High School Hackathon STEM Mentors: Careers in Technology Special Live Event: New Jersey Coast Section Jt. Chapter, IM09/C16	18 Jan 2025 09:00 AM	C-FN772, CH01070, CH02131, R10327	Manalapan, New Jersey
Dr. Martin Luther King Day of Volunteering IEEE MOVE Disaster Deployments Review/Careers in Technology CS SIGHT COPE WIE SA ComSoc Future Networks: New Jersey Coast Section Jt. Chapter, IM09/C16	20 Jan 2025 08:00 PM	C-FN772, CH01013, CH01027, CH01047, CH01056, CH01070, CH01075, CH01080, CH02069, CH02127, CH02131, CH02139, CH02170, CH03009, CH03081, CH03197, CH03225, CH03254, CH04025, CH04040, CH04055, CH05005, CH05056, CH05079, CH05227, CH06042, CH06198, CH06254, CH06291, CH07198, HKN217, LM10345, LM30557, R10327, R20013, R20035, R30171, R30557, R40021, R50043, SIGHT119, STB07591, STB14028, STB63891, STB96971, WE10327	Virtual
Careers in Technology Spring Series 2025 - Yuhong Liu, PhD - 21 January 8 pm EST / 7 pm CST: Northwest Florida Section Chap, C16/COM19	21 Jan 2025 08:00 PM	C-FN772, CH01013, CH01027, CH01047, CH01070, CH01285, CH02069, CH02127, CH02139, CH02170, CH03009, CH03081, CH03197, CH03225, CH03254, CH04025, CH04040, CH04055, CH04165, CH05005, CH05056, CH05079, CH05227, CH06198, CH06254, CH06291, CH07198, HKN217, LM10345, LM30557, R10327, R20013, R20035, R30171, R30557, R40021, R50043, SIGHT119, STB07591, STB14028, STB63891, STB96971, WE20027	Virtual
Standby Power Switching, Paralleling, & Isolation Equipment - ASCO: North Jersey Section Chapter, PE31	23 Jan 2025 09:00 AM	CH01092, CH01097	South Plainfield, New Jersey

<b>Title</b>	<b>Date</b>	<b>Hosts</b>	<b>Location</b>
<a href="#">AI in Software Development: Societal Implications and Ethical Pathways.: North Jersey Section Chapter, SIT30</a>	24 Jan 2025 01:00 PM	C-FN772, CH01215, CH01285, CH01294, CH08667, R10327	Virtual
<a href="#">Careers in Technology Spring Series 2025 - Baek-Young Choi, PhD - 28 January 8 pm EST / 7 pm CST: Northwest Florida Section Chap, C16/COM19</a>	28 Jan 2025 08:00 PM	C-FN772, CH01013, CH01027, CH01047, CH01070, CH01285, CH02069, CH02127, CH02139, CH02170, CH03009, CH03081, CH03197, CH03225, CH03254, CH04025, CH04040, CH04055, CH04165, CH05005, CH05056, CH05079, CH05227, CH06198, CH06254, CH06291, CH07198, HKN217, LM10345, LM30557, R10327, R20013, R20035, R30171, R30557, R40021, R50043, SIGHT119, STB07591, STB14028, STB63891, STB96971, WE20027	Virtual
<a href="#">Careers in Technology Spring Series 2025 - Eamon J Wall, Esq - 04 February 8 pm EST / 7 pm CST: Northwest Florida Section Chap, C16/COM19</a>	04 Feb 2025 08:00 PM	C-FN772, CH01013, CH01027, CH01047, CH01070, CH01285, CH02069, CH02127, CH02139, CH02170, CH03009, CH03081, CH03197, CH03225, CH03254, CH04025, CH04040, CH04055, CH04165, CH05005, CH05056, CH05079, CH05227, CH06198, CH06254, CH06291, CH07198, HKN217, LM10345, LM30557, R10327, R20013, R20035, R30171, R30557, R40021, R50043, SIGHT119, STB07591, STB14028, STB63891, STB96971, WE20027	Virtual

<b>Title</b>	<b>Date</b>	<b>Hosts</b>	<b>Location</b>
Careers in Technology Spring Series 2025 - Rui Li, PhD - 11 February 8 pm EST / 7 pm CST: Northwest Florida Section Chap, C16/COM19	11 Feb 2025 08:00 PM	C-FN772, CH01013, CH01027, CH01047, CH01070, CH01285, CH02069, CH02127, CH02139, CH02170, CH03009, CH03081, CH03197, CH03225, CH03254, CH04025, CH04040, CH04055, CH04165, CH05005, CH05056, CH05079, CH05227, CH06198, CH06254, CH06291, CH07198, HKN217, LM10345, LM30557, R10327, R20013, R20035, R30171, R30557, R40021, R50043, SIGHT119, STB07591, STB14028, STB63891, STB96971, WE20027	Virtual
2025 7th IEEE 5G Workshop on First Responder and Tactical Networks: IEEE Future Networks Community	18 Feb 2025 08:30 AM	C-FN772, CH01250, CH02109, R1, R10327, R10329, R10345, R20003	Laurel, Maryland Virtual
Careers in Technology Spring Series 2025 - Alvin Chin, PhD - 18 February 8 pm EST / 7 pm CST: Northwest Florida Section Chap, C16/COM19	18 Feb 2025 08:00 PM	C-FN772, CH01013, CH01027, CH01047, CH01070, CH01285, CH02069, CH02127, CH02139, CH02170, CH03009, CH03081, CH03197, CH03225, CH03254, CH04025, CH04040, CH04055, CH04165, CH05005, CH05056, CH05079, CH05227, CH06198, CH06254, CH06291, CH07198, HKN217, LM10345, LM30557, R10327, R20013, R20035, R30171, R30557, R40021, R50043, SIGHT119, STB07591, STB14028, STB63891, STB96971, WE20027	Virtual
Dry Type Transformer Fundamentals and Power Quality Solutions - Hammond (PLEASE NOTE NEW DATE & TIME): North Jersey Section Chapter, PE31	20 Feb 2025 08:00 AM	CH01092, CH01097	South Plainfield, New Jersey

<b>Title</b>	<b>Date</b>	<b>Hosts</b>	<b>Location</b>
Careers in Technology Spring Series 2025 - Peter James Kootsookos, PhD - 25 February 8 pm EST / 7 pm CST: Northwest Florida Section Chap, C16/COM19	25 Feb 2025 08:00 PM	C-FN772, CH01013, CH01027, CH01047, CH01070, CH01285, CH02069, CH02127, CH02139, CH02170, CH03009, CH03081, CH03197, CH03225, CH03254, CH04025, CH04040, CH04055, CH04165, CH05005, CH05056, CH05079, CH05227, CH06198, CH06254, CH06291, CH07198, HKN217, LM10345, LM30557, R10327, R20013, R20035, R30171, R30557, R40021, R50043, SIGHT119, STB07591, STB14028, STB63891, STB96971, WE20027	Virtual
Careers in Technology Spring Series 2025 - Elizabeth Alves - 04 March 8 pm EST / 7 pm CST: Northwest Florida Section Chap, C16/COM19	04 Mar 2025 08:00 PM	C-FN772, CH01013, CH01027, CH01047, CH01070, CH01285, CH02069, CH02127, CH02139, CH02170, CH03009, CH03081, CH03197, CH03225, CH03254, CH04025, CH04040, CH04055, CH04165, CH05005, CH05056, CH05079, CH05227, CH06198, CH06254, CH06291, CH07198, HKN217, LM10345, LM30557, R10327, R20013, R20035, R30171, R30557, R40021, R50043, SIGHT119, STB07591, STB14028, STB63891, STB96971, WE20027	Virtual
Terra North Jersey STEM Fair - IEEE Young Engineer Award 2025: North Jersey Section	23 Mar 2025 09:00 AM	C-FN772, CH01092, CH01153, CH01178, R10327, SIGHT056, SIGHT177	Union, New Jersey

**For Past Month's Events – December 2024 - Click Here**

## 2025 IEEE North Jersey Section Volunteers

### **Executive Committee**

**Chair:** Emad Farag

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**First Vice-Chair:** Anisha Apte  
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**Second Vice-Chair:** Alfredo Tan [tan@fd.edu](mailto:tan@fd.edu)

**Secretary:** Avimanyou Vatsa  
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### **Member-at-Large**

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### **Society Chapters**

#### *Aerospace Electronic Systems*

**Chair:** Cherif Chibane  
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**Vice-Chair:** Kirit Dixit  
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#### *Antennas and Propagation / Microwave Theory and Techniques*

**Co-Chairs:**  
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### *Circuits and Systems/Electron Devices*

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### *Computational Intelligence Society*

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### *Control Systems*

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### *Electromagnetic Compatibility/Product Safety Engineering*

**Chair:** Russell C. Pepe  
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### *Engineering in Medicine and Biology*

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### *Industrial Applications*

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### *Instrumentation & Measurement*

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### *Photonics*

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**Affinity Groups & Councils**

*Consultants Network*

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**Secretary:** Michael Miller [millerm@ieee.org](mailto:millerm@ieee.org)  
**Member at Large:** Kenneth Oexle [k.oexle@ieee.org](mailto:k.oexle@ieee.org),

*Magnetic/UFFC/Sensor Council*

**Chair:** Philip Pong  
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*Nanotechnology Council*

**Chair:** Eui-Hyeok Yang  
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*North Jersey SIGHT Group*

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*Women in Engineering*

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