



Boston Section

Supporting students, working engineers and retirees through professional development, education and resources.

THE *Reflector*

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EDITORIAL

ARTIFICIAL INTELLIGENCE IN MEDICINE: PROMISE, CHALLENGES, AND THE ROLE OF ENGINEERS AND CLINICIANS COLLABORATING TOGETHER

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Boston Section

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Got Something to Say? We'd Like to Hear It!

*Please send your articles, opinions, event re-caps
& photos and announcements to The Reflector at:*

sec.boston@ieee.org



Artificial Intelligence in Medicine: Promise, Challenges, and the Role of Engineers and Clinicians Collaborating Together

By Farhad R. Nezami, IEEE Boston Professional Development Co-Chair

Artificial intelligence (AI) is no longer science fiction in medicine; it has become a tangible, fast-moving frontier promising to reshape how we diagnose, treat, monitor and even prevent disease. From early image-analysis systems to today's generative-AI assistants and data-driven predictive models, the arc of AI in healthcare reflects artful ambition and sober reality. On one hand, AI offers opportunities to augment clinicians, streamline workflows, personalize therapy, reduce cost, and broaden access. On the other hand, its deployment in medicine confronts complex technical, ethical, regulatory, and organizational challenges that must not be underestimated. As we stand at this crossroads, the engineering and medical communities, in particular those of us within the IEEE ecosystem, must frame our role not merely as developers of tools, but as stewards of safe, equitable, effective transformation.

The Promise of AI in Medicine

AI's promise is wide-ranging. Machine-learning models have demonstrated high accuracy in detecting pathologies, often expediting triage or enabling detection of subtle features beyond human visual perception. Generative AI has begun to assist in summarizing scientific evidence, enabling both clinicians and patients to engage with knowledge faster. Beyond diagnostics, AI holds promise in personalized medicine. Large data sets mined for patterns of disease progression, treatment response or adverse events can inform tailored therapy plans rather than one-size-fits-all approaches. Also, AI-driven tools can automate routine tasks from administrative workflows to electronic health-record data extraction, liberating human clinicians to engage more deeply in patient-centered care. In global health settings, where specialist resources are scarce, AI-augmented tools may extend the reach of expertise, assisting triage, screening, and moni-

toring in underserved populations. Furthermore, AI's capacity to detect patterns in multimodal data offers the tantalizing vision of early prediction and prevention of disease and thereby shifting the paradigm from reactive to proactive care.

The Major Challenges

While the promise is powerful, the path is fraught with challenges. Data and algorithmic bias is a first concern. AI systems trained on non-representative data risk producing inequitable outcomes. Thus, underserved or minority populations may be mis-classified or undertreated. Lack of transparency and explainability is another. Many high-performing AI models operate as "black boxes," leaving clinicians and patients uncertain about how decisions are made, which undermines trust and hampers adoption. Integration into clinical workflow remains a stumbling block. A strong algorithm alone does not guarantee success unless it fits into the everyday practices of clinicians, aligns with data systems, and accounts for local context and human factors. Regulatory, legal, and liability issues loom large. Who holds responsibility when an AI-augmented decision goes awry? How will regulatory frameworks evolve to assess safety, efficacy and post-market monitoring of AI tools? Safety, robustness, and generalizability are critical. AI models that perform well in controlled trials may fail in broader, real-world settings where patient populations, data acquisition, and workflows vary widely. Ethical and societal implications, including privacy, consent, autonomy, the risk of automation displacing human judgment, add further complexity. Over-reliance on AI could degrade clinicians' critical thinking or edge human decision-making into the background. In sum, to realize AI's promise in medicine we must address not only algorithms, but data quality, infrastructure, workflow fit, governance, human factors, and societal trust.

An Engineering-medicine Alliance is the Way Forward

The way ahead requires a collaborative mindset. Engineers, data scientists, and clinicians must co-design AI systems. Systems must be built with human-in-the-loop thinking. AI should augment, not replace, human expertise. Transparency and interpretability must be designed in. Explainable AI frameworks help clinicians understand and trust model outputs; this is especially vital in high-stakes medical domains. Rigorous validation across populations and settings is mandatory. Beyond internal test sets, AI tools must be stress-tested for generalizability, bias, safety, and maintenance over time. Workflow integration matters. Change management, user-centered design, training programs, and incentives must accompany AI deployment. Without this, even strong algorithms may languish unused. Ethics and governance must underpin development. Data governance, patient consent, bias mitigation, audit trails, and liability frameworks must be embedded from the start. Education and professional development become key pillars. Clinicians must be equipped to understand AI's strengths and limits; engineers must understand clinical constraints and patient-impact. Research and metrics should go beyond accuracy to measure outcomes, and infrastructure and data ecosystem must scale. Together, these form the foundation of responsible AI in medicine.

An Angle for IEEE Members

As the Co-Chair of Professional Development and Education for the IEEE Boston Section, I believe our membership is uniquely positioned to lead in this transformation. The IEEE offers an ideal bridge between engineering innovation and clinical translation.

For our members I suggest three strategic priorities:

1. Lifelong learning and cross-disciplinary fluency. Engineers should deepen their understanding of clinical contexts, regulatory frameworks, and health-system workflows. Clinicians should gain literacy in AI, data science, and system design. Through IEEE workshops, webinars, and collaborative forums, we can build that shared language.
2. Standards, ethics, and governance. IEEE has historically convened standard setting in novel fields. We

must extend this leadership into medical-AI. Developing guidelines for explainability, interoperability, safety validation, data privacy, and human oversight.

3. Accelerating translation with responsibility. Many promising AI prototypes never move into real-world practice because of deployment pitfalls, workflow misfit or lack of stakeholder engagement. IEEE members can partner with hospitals, start-ups and health systems to pilot, evaluate and iterate AI applications that are anchored by clinical outcomes, not just algorithmic accuracy. In doing so we marry engineering excellence with patient-centered impact.

Moreover, our Boston region with its rich ecosystem of academic medicine, medical devices, biotech and AI start-ups, is a fertile ground for cross-disciplinary innovation. IEEE Boston can serve as a convenor: hosting forums where cardiologists, radiologists, surgeons, data scientists and device engineers share real-world challenges and jointly prototype solutions. We can champion "AI-in-Medicine Bootcamps", linking engineers and clinicians, and "open data challenges" that bring transparency, reproducibility, and creativity. Finally, let us remember the guiding purpose: advancing human health. While excitement about AI is justified, the ultimate metric is improved, equitable patient outcomes not just higher accuracy or faster throughput. IEEE members have both the technological know-how and the ethical responsibility to ensure that AI-augmented medicine enhances, not diminishes, human care.

In conclusion, AI holds enormous promise in medicine, but promise is not delivery. The challenges are real, complex, and multi-dimensional. As engineers, clinicians and educators working together, we must build AI systems that are safe, effective, equitable and human-centered. At the IEEE Boston Section, through professional development, standards engagement, and translational partnerships, we can catalyze that future. Let us lean into that role with rigor, humility, and purpose.

Farhad R. Nezami, PhD is a Lead Investigator, Division of Cardiac Surgery, Brigham and Women's Hospital; Assistant Professor, Department of Surgery, Harvard Medical School; and Affiliate Faculty, Institute for Medical Engineering and Science, MIT.



*Advancing Technology
for Humanity*

IEEE International Conference on AI & Data Analytics (ICAD 2026)

June 11-12, 2026 | Boston, MA

****SAVE THE DATE****

CALL FOR PAPERS

Submit your latest research
to ICAD 2026!

Submission Deadline:
Jan 15, 2026

Accepted papers will be submitted
for publication in the
IEEE Xplore Digital Library.

SPONSORSHIP OPPORTUNITIES

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leaders in AI and data analytics.
Gain premium visibility, connect
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with innovators.

KEY TOPICS

Machine Learning &
Deep Learning

Natural Language Processing &
Computer Vision

Generative AI & Quantum/
Neuromorphic AI

Business Analytics, FinTech,
Supply Chain

Explainable & Responsible
AI, Ethics & Governance

AI in Healthcare, Cybersecurity
& Sustainability



ICAD

Details at iee-icad.org

IEEE Boston Microwave Theory & Technologies and Antennas & Propagation – 5:30 PM, Monday, December 1

Design and Development of Flat Panel Phased Array Antennas for Wireless and Satellite Communication Applications on the Fast Track -- Harnessing Teams

Time: 5:30 PM, Monday, December 1

Location: MIT Lincoln Laboratory, Main Cafeteria, 244 Wood St, Lexington, MA

Speaker: Professor Satish Kumar Sharma

Registration: <https://events.vtools.ieee.org/m/507406>

There is a great demand for high data throughput, innovative beam steering antenna solutions for wireless and satellite communication applications. In the last decade, beam steering antennas have seen tremendous progress, primarily due to the maturity of silicon beamforming chipsets, multilayer printed circuit boards, and 3D printing technologies. This talk will focus on the emerging flat panel phased array antennas used in wireless and satellite communications. The presentation will delve into electronic beam steering through beam forming networks and commercially available beam forming integrated circuit (BFIC) chips. Examples of X-/Ku-/Ka-band flat panel phased array antennas featuring dual linear, dual circular, and polarization reconfigurable designs will be showcased. The challenges and roles of silicon BFICs, multilayered printed circuit board (PCB) fabrication, RF component assembly, beam forming algorithms, and 3D dielectric and metal printing in antenna array designs will be explored during these discussions. The talk will emphasize the importance of data throughput testing of Ka-band flat panel phased array antennas in a laboratory environment and over-the-air (OTA) testing across a 1 km link between two San Diego State University buildings. It will also cover data throughput testing of a dual circular polarized Ka-band flat panel phased array on a payload over a 100,000 ft Aerostar balloon. The speaker will conclude with insights on the fu-

ture evolution of beam steering technology.

Dr. Satish Kumar Sharma, IEEE Fellow (pictured right), received his Ph.

D. degree in Electronics Engineering from the Indian Institute of Technology (IIT), Banaras Hindu University (BHU), India, in August 1997 and joined San Diego State University (SDSU) as an Assistant Professor in



August 2006. He established the Antenna and Microwave Labatory (AML) shortly after joining SDSU and has led the AML as its Director since then. He became a tenured Associate Professor in August 2010. He was promoted to full Professor in August 2014 and currently holds this position. He received the National Science Foundation (NSF)'s prestigious faculty early career development (CAREER) award 2009. He also received the 2015 IEEE AP-S Harold A. Wheeler Prize Paper Award. He was Associate Editor of the IEEE Transactions on Antennas & Propagation and IEEE Antennas, Wireless & Propagation Letters. He is an IEEE AP-S Distinguished Lecturer (2025-2027), IEEE AP-S AdCom member (2025-2027), and the 2025 inaugural Chair of the Technical Committee on Security (TC9): Security, Defense, Disaster Management. His research lab can analyze, design, develop, and verify antennas from VHF to millimeter wave (110 GHz) frequencies. He has advised and mentored more than 110 undergraduate/graduate students and Post-Doctoral Fellows/visiting research scholars.

Dr. Sharma has published over 335 journal and conference papers and other publications and holds three US and Canadian patents. He is also the CEO/founder of 5GAntennaTech, LLC.

IEEE Boston Control Systems Chapter – 6:30 PM, Wednesday, December 3

Chapter Re-Boot: Control Systems Meet and Greet

Time: 6:30 PM, Wednesday, December 3

Location: Northeastern University, 11 Leon St, Boston, MA - Building: Ryder Hall, Room 102

Registration: <https://events.vtools.ieee.org/m/513723>

Speaker: Sundararaman (Sundar) Rengarajan

Pizza and soda served for in-person attendees

This hybrid event is hosted in collaboration with the Center for Design (CfD) at Northeastern University's College of Arts, Media and Design (CAMD). This gathering brings together students, researchers, engineers, and industry professionals interested in control systems, robotics, automation, human-machine interaction, and interdisciplinary design. Whether you're returning for another season or joining for the first time, this is the perfect opportunity to connect with the community, learn what's ahead, and explore ways to get involved.

We will also share open leadership and volunteer opportunities within the Boston Section - ideal for those looking to contribute to event planning, speaker outreach, programming, and community engagement. In-person attendees can enjoy free pizza and soda throughout the evening.

Join us to meet the chapter leadership, hear about upcoming activities, and help shape the future of the IEEE Control Systems Society in Boston.

Event Agenda

6:30 PM Welcome & Opening Remarks

6:40 PM IEEE CSS Boston: Vision for the 2025–2026 Season. Key focus areas and planned initiatives
Overview of technical talks, workshops, and collaborative events

6:55 PM How to Get involved

7:10 PM Partner Spotlight: Center for Design (CfD), CAMD at Northeastern University Interdisciplinary design perspectives. Opportunities for cross-department collaborations.

7:25 PM Networking & Community Conversations. Meet fellow students, researchers, and professionals. Connect around ongoing projects, interests, and potential collaborations.

7:50 PM – 8:00 PM
Closing Session

Sundararaman (Sundar) Rengarajan (pictured

right) is the Chair of the IEEE Boston Section Control Systems Chapter. He is a PhD candidate in Human Movement & Rehabilitation Sciences at Northeastern University, working in the Playful Mind Lab under Dr. Leanne Chukoskie. His research focuses on eye-tracking, motor timing, attention, and computational methods for understanding autism-related behaviors. Beyond academia, Sundar is the founder of Mith.AI, where he leads the development of Sugar Slay, a gamified decision-support tool for Type 1 Diabetes management. His work has been supported by the Northeastern SPARK Fund, MassVentures Acorn Innovation Grant, and NSF i-Corps.



Sundar is also deeply involved in Boston's innovation and cultural ecosystem - serving in leadership roles across Startup Boston, BostonCHI, and the Sri Lakshmi Temple's cultural programs. He is a Carnatic violinist, a mentor to student researchers and entrepreneurs, and an advocate for community-driven, interdisciplinary collaboration. Sundar is also involved in startups in MIT Engine's Blueprint Accelerator.



MEET & GREET

IEEE BOSTON SECTION CONTROL SYSTEMS SOCIETY

3 December 2025 at 6.30 PM

Center for Design, Northeastern University (Hybrid)
Ryder Hall, 11 Leon St, Boston, MA 02115

REGISTER HERE!



CONNECT WITH THE COMMUNITY, LEARN ABOUT
UPCOMING EVENTS, AND EXPLORE VOLUNTEER
OPPORTUNITIES.

FREE PIZZA!



Northeastern University
College of Arts, Media and Design



IEEE Boston Computer Society, GBC/ACM – 7:00 PM, Thursday, December 4

Will AI Be the End of Civilization or the Beginning?

Time: 7:00 PM, Thursday, December 4

Location: MIT Room 32-G449 (Kiva) and online

Registration: Please register in advance for this seminar even if you plan to attend in person [here](#).

Speakers: Henry Lieberman, MIT Computer Science and Artificial Intelligence Lab and Christopher Fry, MIT Media Lab, Sloan, IBM, startups (Retired)

After registering, you will receive a confirmation email with about joining the webinar.

Popular press articles whipsaw the public between two starkly different views of Artificial Intelligence. On one hand, AI is presented as a magic genie that can solve all of our problems with superhuman intelligence. On the other hand, it's presented as an unprecedented threat to humanity, with the danger of loss of jobs, loss of privacy, automated discrimination, even some kind of "robot rebellion". No wonder the public is confused. Which is it?

We present a view that is different from both the self-interested promotion of the tech companies, and from the pessimism of the social critics. Believe it or not, the biggest value of AI will lie, not in simply improving the operations of today's industry and government, but in making it possible to have a more cooperative, less competitive world. Our view is:

- **Optimistic.** Mitigating possible dangers of AI in today's society is important. But we don't want to let fear cause us to miss the potential for AI to tackle big problems people now think are intractable: war, poverty, climate, etc.
- **Radical.** Many tech boosters imagine simply pouring AI into today's economy and electoral politics. We think these systems need to be redesigned from scratch for the AI era. We have two concrete proposals: Makerism (economics) and Reasonocracy (governance).

- **Original.** Not conventionally Left or Right, though our ideas share some design goals with both sides. Not (yet) heard on mainstream or activist media.

Henry Lieberman

(pictured right) is a Research Scientist in the InfoLab group at MIT's Computer Science and Artificial Intelligence Lab (CSAIL). His career started at the original MIT AI Lab in the 1970's, with Marvin Minsky and Seymour Papert, and he was head of the Software Agents Group at the MIT Media Lab. He pioneered real-time memory management, prototype object systems, and **Programming by Example**. He works at the intersection of AI and HCI, and was twice **program chair of the ACM Intelligent User Interfaces conference**. He served a term on the AAAI Executive Committee. He has a BS in math from MIT, and an HDR (PhD equivalent) from the Sorbonne in Paris, where he was also a visiting professor. He has about 120 publications and four books.



Christopher Fry

(pictured right) moved to Boston in 1973 to attend Berklee College of Music (the MIT of Jazz). Realizing his musical skills needed augmentation, he moved across the river to MIT (The Berklee of Computers). He's worked at BBN, IBM, MIT's Experimental Music Studio, MIT Sloan (Business) School, MIT Media Lab, and a host of start-ups. He's written languages for music composition, general purpose computing, decision support, and robotics. He also works on Personal Rapid Transit, an innovative "packet-switched" transportation network.



IEEE BOSTON SECTION WIE & YP GROUPS

HOLIDAY BREAKFAST

MEET &
MINGLE

BRAINSTORM
FUTURE
EVENTS

6

DECEMBER
AT 9:30 AM

DECORATE
HOLIDAY
COOKIES

SCAN TO
REGISTER



THE MILL CAFE
14 MILL ST, ARLINGTON,
MA 02476



IEEE Boston Chapter of the Communications Society – 7:00 PM, Wednesday, January 14

Communications Chapter Re-Boot Meet and Greet

Time: 7:00 PM, Wednesday, January 14th

Location: Zoom

Registration: <https://events.vtools.ieee.org/m/513639>

Speaker: Sudheer Amgothu

Agenda:

Welcome and introductions

ComSoc Boston chapter goals and upcoming plans

Open discussion – member ideas and collaboration opportunities plus volunteer roles and engagement (Vice Chair, Secretary, Treasurer)

Next steps and closing remarks

Your participation and input are highly valued as we work together to strengthen our ComSoc community in the Boston Section.

Sudheer Amgothu (pictured right) is the new Communication Chapter Chair and a Principal Cloud Operations Engineer at PegaSystems. He is an experienced DevOps Engineer with a focus on containerization, continuous integration, continuous deployment, Terraform, Ansible, cloud-based technology, and configuration management.



IEEE Boston Section Election Results

CONGRATULATIONS TO OUR 2026 OFFICERS!

Chair: Ramon De la Cruz

Vice Chair: Wig Balasingham

Treasurer: Chunlei Tang

Secretary: Varshitha Majunath

CNET Corner

IEEE Boston Consultants Network (CNET) is a network of consultants that offer a wide variety of consulting services: electrical, hardware, software, IT, regulatory, tech pubs, and many other engineering disciplines. The article below was written by a CNET Consultant.

Check us out at:

<https://bostonconsultants.org/>

You don't have to be a consultant to gain knowledge from any CNET event.

IEEE Boston Consultants Network (CNET) is running several Zoom Online meetings in the remainder of 2025 and January 2026.

Our three part Consultant Series events (see below) are CNETs most popular events. Learn how to interface with a consultant, hire a consultant, or be a consultant.

Show up, enjoy the talk, and ask questions. We network prior to the event; add to your professional contacts. Networking is the number one reason why LinkedIn is successful, and why it's so important to network with other professionals for your career. We hope to see you at one of our events.

Enhance your professional career by becoming a consultant, or if you are a consultant join us at CNET using the link below. We help consulting professionals.

<https://www.bostonconsultants.org/membership-plans-pricing>

Upcoming CNET Events

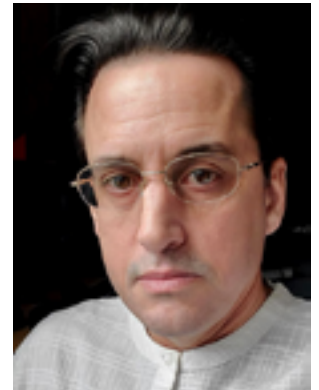
December 1, 2025 6:30 PM ET

Consultants Series Part 3 - Consulting 301 - FDA Medical Device Regulatory Process

Speaker: David Connor – Striper Solutions LLC (pictured right).

Brief: Get the information you need about the regulatory process. No consulting background needed and no prior regulatory process knowledge needed.

Register [here](#).



December 8, 2025 6:30 PM ET

Applied Agentic AI: Resources, Tips and Tricks for Engineers and Beyond includes a Live AI Tools Demo

Speaker: Paul Grossman – the Dark Arts Wizard of Test Automation (pictured right).

Brief: This talk is All about Agentic AI. If you are already using AI or need more information on using AI you should come to this presentation. Paul explores AI's role in test automation including a live demo. Free training resources and content creators are given.. Register [here](#).

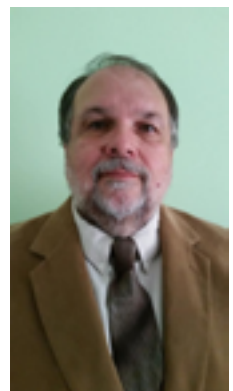


January 28, 2026 6:30 PM

Professional Engineer (PE) License for Consultants

Speaker: Larry Nelson Sr, PE – Nelson Research (pictured right).

Brief: Why you would consider getting a PE license and how to do so and tips on PE. Register [here](#).



Chapter Chair Opportunities!



Boston Section

ARE YOU READY TO LEAD, COLLABORATE, AND MAKE AN IMPACT IN YOUR PROFESSIONAL COMMUNITY?

The IEEE Boston Section is currently seeking Chapter Chairs for:

- Electronic Devices Society
- Product Safety Engineering Society

This is a fantastic opportunity to:

- Lead your local chapter
- Work alongside peers in your field
- Collaborate with the Boston Section Executive Committee

Chapter Chair Responsibilities Include:

Organizing 2 meetings per year, which can be done jointly with our other chapters and affinity groups like young professionals, women in engineering or our life members! These meetings can be in-person or online.

Qualifications:

- Be an active IEEE member
- Be a member of the Society you wish to chair
- Be committed to leading and growing the Chapter

Interested?

Send your statement of interest and CV to the Boston Section Executive Committee at:
sec.Boston@ieee.org

ieeeboston.org

Partner/Exhibitor Prospectus

2026 IEEE International Phased Array Symposium



 **ARRAY 2026**
BOSTON MASSACHUSETTS
October 19 - 22, 2026

www.ieee-array.org



Digital Signal Processing (DSP) for Software Radio

Dates & Times: Live Workshops: 6 - 7:30PM EST; Thursdays, October 23, November 6, 13, 20, December 4 and 11; First Video Release and Orientation, 6 - 6:30PM October 23, 2025. Additional videos released weekly in advance of that week's live session!

Speaker: Dan Boschen

Location: Zoom

Attendees will have access to the recorded session and exercises for two months (until February 11, 2026) after the last live session ends!

This is a hands-on course providing pre-recorded lectures that students can watch on their own schedule and an unlimited number of times prior to live Q&A/Workshop sessions with the instructor. Ten 1.5 hour videos released 2 per week while the course is in session will be available for up to two months after the conclusion of the course.

Course Summary This course builds on the IEEE course "DSP for Wireless Communications" also taught by Dan Boschen, further detailing digital signal processing most applicable to practical real-world problems and applications in radio communication systems. Students need not have taken the prior course if they are familiar with fundamental DSP concepts such as the Laplace and Z transform and basic digital filter design principles.

This course brings together core DSP concepts to address signal processing challenges encountered in radios and modems for modern wireless communications. Specific areas covered include carrier and timing recovery, equalization, automatic gain control, and considerations to mitigate the effects of RF and channel distortions such as multipath, phase noise and amplitude/phase offsets.

Dan builds an intuitive understanding of the underlying mathematics through the use of graphics, visual

demonstrations, and real-world applications for mixed signal (analog/digital) modern transceivers. This course is applicable to DSP algorithm development with a focus on meeting practical hardware development challenges, rather than a tutorial on implementations with DSP processors.

Now with Jupyter Notebooks! This long-running IEEE Course has been updated to include Jupyter Notebooks which incorporates graphics together with Python simulation code to provide a "take-it-with-you" interactive user experience. No knowledge of Python is required but the notebooks will provide a basic framework for proceeding with further signal processing development using that tools for those that have interest in doing so.

This course will not be teaching Python, but using it for demonstration. A more detailed course on Python itself is covered in a separate IEEE Course routinely taught by Dan titled "Python Applications for Digital Design and Signal Processing".

All set-up information for installation of all tools used will be provided prior to the start of class.

Target Audience: All engineers involved in or interested in signal processing for wireless communications. Students should have either taken the earlier course "DSP for Wireless Communications" or have been sufficiently exposed to basic signal processing concepts such as Fourier, Laplace, and Z-transforms, Digital filter (FIR/IIR) structures, and representation of complex

digital and analog signals in the time and frequency domains. Please contact Dan at boschen@loglin.com if you are uncertain about your background or if you would like more information on the course.

For more background information, please view Dan's Linked-In page at: <http://www.linkedin.com/in/dan-boschen>

Benefits of Attending/ Goals of Course:

Attendees will gain a strong intuitive understanding of the practical and common signal processing implementations found in modern radio and modem architectures and be able to apply these concepts directly to communications system design.

Topics / Schedule:

Class 1: DSP Review, Radio Architectures, Digital Mapping, Pulse Shaping, Eye Diagrams

Class 2: ADC Receiver, CORDIC Rotator, Digital Down Converters, Numerically Controlled Oscillators

Class 3: Digital Control Loops; Output Power Control, Automatic Gain Control

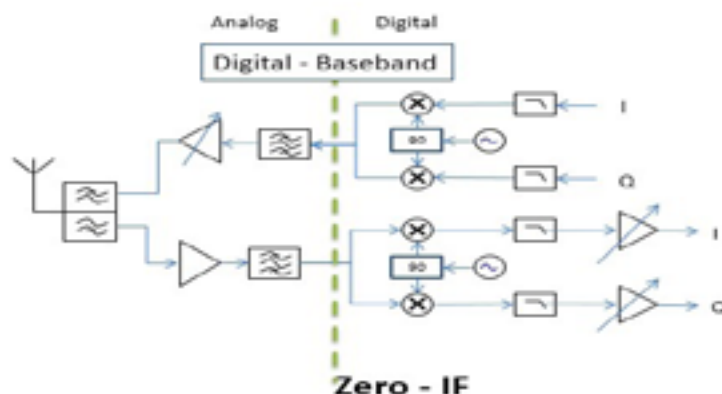
Class 4: Digital Control Loops; Carrier and Timing Recovery, Sigma Delta Converters

Class 5: RF Signal Impairments, Equalization and Compensation, Linear Feedback Shift Registers

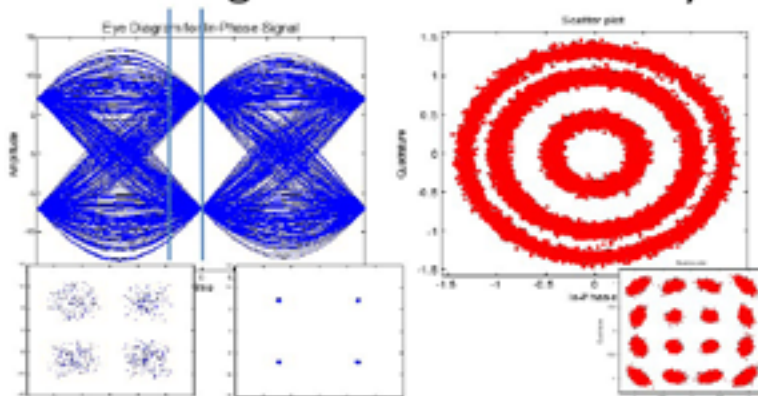
Speaker's Bio:

Dan Boschen has a MS in Communications and Signal Processing from Northeastern University, with over 25 years of experience in system and hardware design for radio transceivers and modems. He has held various positions at Signal Technologies, MITRE, Airvana and Hittite Microwave designing and developing transceiver hardware from baseband to antenna for wireless communications systems and has taught courses on DSP to international audiences for over 15 years. Dan is a contributor to Signal Processing Stack Exchange <https://dsp.stackexchange.com/>, and is currently at Microchip (formerly Microsemi and Symmetricom) leading design efforts for advanced frequency and time solutions.

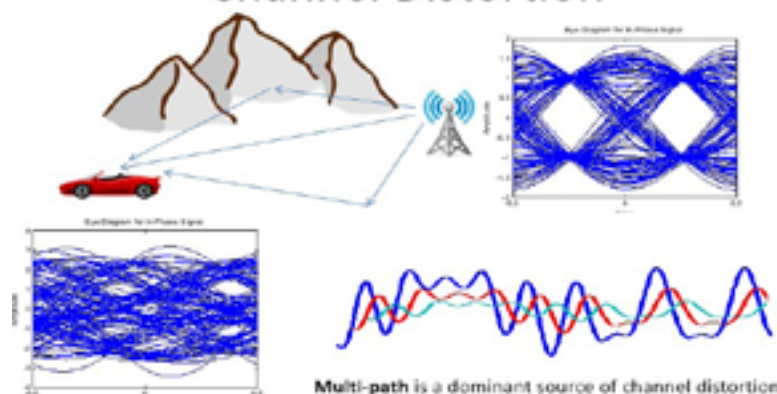
Radio Architectures



Timing and Carrier Recovery



Channel Distortion



**Decision (Run/Cancel) Date for this Course is
Friday, October 17, 2025**

Payment	By Oct 17	After Oct 17
IEEE Members	\$190	\$285
Non-members	\$210	\$315

<https://ieeeboston.org/courses>

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IEEE Boston Section Courses Include

- Electronic Reliability Tutorial Series by AnSys
- Introduction to Embedded Linux Part I
- Embedded Linux Optimization - Tools and Techniques
- Embedded Linux Board Support Packages and Device Drivers
- Software Development for Medical Device Manufacturers
- Fundamental Mathematics Concepts Relating to Electromagnetics
- Reliability Engineering for the Business World
- Design Thinking for Today's Technical Work
- Fundamentals of Real-Time Operating Systems

REGISTER NOW:

IEEEBOSTON.ORG/COURSES



Boston Section

IEEE Strategic Plan

2025-2030

OUR MISSION

We foster technological innovation and excellence for the benefit of humanity.

OUR VISION

We will be essential to the global technical community and to technical professionals everywhere, and be universally recognized for the contributions of technology and of technical professionals in improving global conditions.

CORE VALUES



Growth & Nurturing



Trust



Partnership



Integrity in Action



Global Community Building



Service to Humanity

OUR GOALS

Advance science and technology as a leading trusted source of information for research, development, standards, and public policy

Provide opportunities for technology-related interdisciplinary collaboration, research, and knowledge sharing across industry, academia, and government

Expand public awareness of the significant role that engineering, science, and technology play across the globe

Drive technological innovation while promoting scientific integrity and the ethical development and use of technology

Inspire intellectual curiosity and support discovery and invention to engage the next generation of technology innovators

Empower technology professionals in their careers through ongoing education, mentoring, networking, and lifelong engagement

IEEE will foster a collaborative environment that is open, inclusive, and free of bias and will continue to sustain the strength, reach, and vitality of our organization for future generations.

www.ieee.org/strategic-plan

Approved by the IEEE Board of Directors, November 2024



IEEE

Advancing Technology
for Humanity

IEEE Boston Section Volunteers Wanted!

Are you passionate about technology and eager to contribute to the advancement of your field? The IEEE Boston Section is excited to announce a call for volunteers to join our dynamic team of professionals and enthusiasts. By becoming a volunteer, you'll have the opportunity to collaborate with like-minded individuals, develop new skills, and make a meaningful impact on the local technology community.

About IEEE Boston Section:

The IEEE Boston Section is a thriving community of engineers, researchers, students, and industry professionals dedicated to promoting technological innovation and knowledge sharing. Our section hosts a variety of events, workshops, seminars, and conferences throughout the year, providing members with opportunities to learn, network, and stay updated on the latest developments in their fields.

Volunteer Opportunities:

We are currently seeking volunteers to help on the following committees:

The Fellow and Awards Committee - activities include recommending qualified members of the Section for advancement to Fellow grade and for receipt of the various IEEE (IEEE/Region/MGA/Section) awards. Identifying and building a database of the various IEEE awards available for nomination and searching out qualified candidates, for preparing the necessary written recommendations, and for assembling all required supporting documentation and submit its recommendations directly to the appropriate IEEE body.

Time Commitment: Meets 4 times a year for 1 – 2 hours per meeting (virtual or in person)

Local Conferences Committee - activities include identifying timely topical areas for conference development. Identify champions of these conferences to run the identified conference organizing committees. The section local conference committee is not charged with organizing and executing individual conferences.

Time Commitment: Meets 4 times per year 1 – 2 hours per meeting (virtual or in person)

Professional Development & Education Committee - activities include identifying topics, speakers, and/or organizers for appropriate technical lecture series or seminars. The subject matter should be timely, of interest to a large segment of the membership, and well organized with regard to speakers and written subject matter.

Time Commitment: meets 4 times per year, 1 – 2 hours per meeting (virtual or in person)

The Membership Development Committee - activities include actively promoting membership in the IEEE and shall encourage members to advance to the highest grade of membership for which they are qualified. To these ends this committee shall include wide

representation within the Section territory, shall maintain lists of prospects and members qualified for advancement, and shall provide information and assistance to preparing applications.

Time Commitment: meets 4 times per year, 1 – 2 hours per meeting (virtual or in person)

Student Activities Committee - activities include attracting a broad and diverse group of undergraduate and graduate students to IEEE and to engage them in activities that promote their own professional development as well as the ongoing growth of IEEE. The Student Activities Committee shall include among its members the IEEE Counselors at the universities, colleges, and technical institutes that lie within the Section territory. It shall be responsible for liaison with the Student Branches at these institutions and advise the Executive Committee on all other matters affecting the Student Members of the Section.

Time Commitment: meets 4 times per year, 1 – 2 hours per meeting (virtual or in person)

Young Professionals Affinity Group - activities include organizing programs, and initiatives aimed to address the needs of early-career professionals pursuing technology-related careers in engineering, business, management, marketing, and law. This committee is committed to helping young professionals evaluate their career goals, polish their professional image, and create the building blocks of a lifelong and diverse professional network.

Time Commitment: meets 4 times per year, 1 – 2 hours per meeting (virtual or in person)

Benefits of Volunteering:

Volunteering with IEEE Boston Section offers numerous benefits, including:

- Networking opportunities with professionals in your field.
- Skill development and enhancement through hands-on experience.
- Contribution to the local technology community and its growth.
- Access to cutting-edge information and discussions.

How to Get Involved:

If you're enthusiastic about technology and want to make a difference, we invite you to join us as a volunteer. To express your interest and learn more about specific roles, please visit our website and fill out the volunteer application form. Our team will get in touch with you to discuss opportunities that align with your interests and skills.

Thank you for considering this opportunity to contribute to the IEEE Boston Section. Your dedication and passion are what drive the success of our community and its impact on the world of technology.

[Volunteer Here!](#)

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