2022 IEEE INTERNATIONAL SYMPOSIUM ON TECHNOLOGIES FOR HOMELAND SECURITY (HST)

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As volunteers of IEEE or any other organization, it is easy to forget that you can actually be recognized with your efforts by an IEEE award. As we work with other volunteers on creating events and programs, there is a lot of pure satisfaction that comes simply from seeing the amount of people who register for an event, or realizing how many K-12 students impacted by an event, or knowing the number of companies who agreed to support an event. For me, these are the reasons I like to volunteer in the first place. In addition, I like being around other people in my field who also like to volunteer and making new contacts in IEEE. I enjoy learning from them, networking with them, and hearing about the types of jobs and experiences that they have had. These reasons keep me going!

But IEEE in fact has many excellent awards that they want to give out each year to deserving individuals. These awards are at various levels and geared towards a variety of different types of contributions – some are technical, others are focused on professional activities, etc. There are so many people among us who are worthy of these awards but it is easy to forget about putting in a nomination when awards time comes along each year. We can even ask someone to nominate us!

I have had the pleasure of being part of the IEEE-USA Awards & Recognitions Committee for the past few years and have been able to review some really amazing nominations. Each year I’m reminded about the types of people who I am fortunate enough to know and spend time with as a volunteer of IEEE. And I the past, I have been fortunate to have been recommended for and been given a few IEEE awards. It is an incredible feeling to be recognized by other IEEE members.

As you continue to volunteer, I encourage you to keep in mind that you belong to an organization where you have the opportunity to work all different sorts of events and programs with curious, intelligent, inspiring people. Don’t be afraid to nominate someone when the award program rolls around again next year. Perhaps think about what you have done yourself as a volunteer and keep a list of the IEEE activities that you have worked on, in case you ever would like to be nominated for an award. Who knows, you or someone you know might be the next recipient!
420,000+ members in 160 countries.  
Embrace the largest, global, technical community. 

People Driving Technological Innovation.
IEEE Boston Section Online Courses:
(Students have 180 day access to all online, self-paced courses)

Electronic Reliability Tutorial Series
Full course description and registration at
http://ieeeboston.org/electronic-reliability/

High Performance Project Management
Full course description and registration at
http://ieeeboston.org/high-performance-project-management-online-course/

Introduction to Embedded Linux Part I
Full course description and registration at
http://ieeeboston.org/introduction-to-embedded-linux-part-i-el201-online-course/

Embedded Linux Optimization - Tools and Techniques
Full course description and registration at
http://ieeeboston.org/embedded-linux-optimization-tools-techniques-line-course/

Embedded Linux Board Support Packages and Device Drivers
Full course description and registration at
http://ieeeboston.org/embedded-linux-bsps-device-drivers-line-course/

Software Development for Medical Device Manufacturers
Full course description and registration at
http://ieeeboston.org/software-development-medical-device-manufacturers-line-course/

Fundamental Mathematics Concepts Relating to Electromagnetics
Full course description and registration at
http://ieeeboston.org/fundamental-mathematics-concepts-relating-electromagnetics-line-course/

Reliability Engineering for the Business World
Full course description and registration at
http://ieeeboston.org/reliability-engineering-business-world-line-course/

Design Thinking for Today’s Technical Work
http://ieeeboston.org/design-thinking-technical-work-line-course/

Fundamentals of Real-Time Operating Systems
http://ieeeboston.org/fundamentals-of-real-time-operating-systems-rt201-on-line-course/
IEEE HST Virtual Symposium Coming in November!
COMPLIMENTARY REGISTRATION AVAILABLE!

HST Symposium Coming 14 – 15 November 2022
The 21st IEEE Symposium on Technologies for Homeland Security (HST ’22) will be held November 14 - 15, 2022 as a virtual symposium. This symposium brings together innovators from leading academic, industry, businesses, Homeland Security Centers of Excellence, and government agencies to provide a forum to discuss ideas, concepts, and experimental results.

Produced by IEEE with technical support from IEEE, IEEE Boston Section, and IEEE-USA and organizational support from MIT Lincoln Laboratory and Raytheon, this year’s event will once again showcase selected technical papers and posters highlighting emerging technologies in:

- Cyber Security
- Frontier and Emerging Technologies
- Climate and Homeland Resilience
- Border Security, Critical Infrastructure Protection & Law Enforcement

See IEEE-HST.ORG for more details!
Consumer Technology Society  
Call for Volunteers!

We are currently looking for volunteers who would be interested in pushing forward the mission of the Consumer Technology (CT-S), Boston Chapter. The chapter is looking for volunteers to help organize chapter meetings and help meet the needs of the local CT-S member needs.

The Boston Section is organizing chapters into groups of similar technical interest areas to pool their resources for easier and better chapter collaboration in planning the chapter events.

If you have interest in volunteering for a chapter leadership position or are interested in learning more about what these volunteer positions may entail, please send an email to Karen Safina in the IEEE Boston Section office at, ieeebostonsection@gmail.com

Aakash Deliwala, Chair, IEEE Boston Consumer Technology Chapter

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Engineering in Medicine & Biology Society  
Call for Volunteers!

We are currently looking for volunteers who would be interested in pushing forward the mission of the Engineering in Medicine & Biology Society (EMBS), Boston Chapter. The EMBS - Boston Chapter was recently approved in July 2021, and we’re looking to make a significant impact in the area of Biomedicine, Bioengineering, and Biotechnology in the region. The chapter is looking for volunteers to help organize chapter meetings and help meet the needs of the local EMBS members.

The Boston Section is organizing chapters into groups of similar technical interest areas to pool their resources for easier and better chapter collaboration in planning the chapter events.

If you have interest in volunteering for a chapter leadership position or are interested in learning more about what these volunteer positions may entail, please send an email to Karen Safina in the IEEE Boston Section office at, ieeebostonsection@gmail.com.

Aseem Singh, Marie Tupaj, Co-Chairs, Boston EMBS Chapter
IEEE Video Series

A collaborative discussion panel featuring esteemed members from the Institute of Electrical and Electronics Engineers has convened in 2021 to produce educational video presentations that embrace IEEE’s mission of advancing technology for humanity.

Among the programs they’ve produced include “Electric Vehicles: Fun Saving Our Planet”, “Greener Power For More Electric Vehicles”, “Overcoming Nuclear Fears To Achieve Net Zero CO2 By 2050” and “Achieving a Net Zero Carbon Future”, “Green Energy’s Economic Progress”, and “Net-Zero CO2 with Nuclear, Hydrogen and Geothermal”. Projects currently in production include the expansive topic of futurology, with a focus on increasing the efficiency and transformation of aging electrical power generating stations and infrastructure to accommodate nuclear power; reviewing the viability of alternative energy (such as geothermal, wind and solar); and focusing on ‘cleaner’ fossil fuels that are more environmentally-friendly to slow the rate of climate change.

These shows are produced and directed by Lennart E. Long, IEEE Senior Life Member from the Executive Committee and Past Chair of the Boston Section; Dr. Paul H Carr, BS, MS, MIT; PhD Brandeis U, IEEE Life Fellow; Dr. Ted Kochanski, SB (MIT), Ph.D (U.Texas, Austin), IEEE Global Education for Microelectronic Systems and former Boston Section Chair; and Dr. Ken Laker, B.E. (Manhattan College), M.S. and Ph.D. (New York University), IEEE Life Fellow and past President of IEEE.

The panel is moderated by five-time Boston/New England Emmy Award-winner and television personality and star of “The Folklorist,” John Horrigan. These video programs with presentations and discussions can be accessed at the IEEE Boston Section video portal at https://vimeo.com/user18608275.

We are looking for any IEEE members that would like to appear on the program in the role of presenter or discussion expert. Simply reach out to Robert Alongi at the Boston Section at, ieeebostonsection@gmail.com.

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Call for Course Speakers/Organizers

IEEE’s core purpose is to foster technological innovation and excellence for the benefit of humanity. The IEEE Boston Section, its dedicated volunteers, and over 8,500 members are committed to fulfilling this core purpose to the local technology community through chapter meetings, conferences, continuing education short courses, and professional and educational activities.

Twice each year a committee of local IEEE volunteers meet to consider course topics for its continuing education program. This committee is comprised of practicing engineers in various technical disciplines. In an effort to expand these course topics for our members and the local technical community at large, the committee is publicizing this CALL FOR COURSE SPEAKERS AND ORGANIZERS.

The Boston Section is one of the largest and most technically divers sections of the IEEE. We have over 20 active chapters and affinity groups. If you have an expertise that you feel might be of interest to our members, please submit that to our online course proposal form on the section’s website (www.ieeeboston.org) and click on the course proposal link (direct course proposal form link is http://ieeeboston.org/course-proposals/). Alternatively, you may contact the IEEE Boston Section office at ieeebostonsection@gmail.com or 781 245 5405.

- Honoraria can be considered for course lecturers
- Applications oriented, practical focused courses are best (all courses should help attendees expand their knowledge based and help them do their job better after completing a course
- Courses should be no more than 2 full days, or 18 hours for a multi-evening course
- Your course will be publicized to over 10,000 local engineers
- You will be providing a valuable service to your profession
- Previous lecturers include: Dr. Eli Brookner, Dr. Steven Best, Colin Brench, to name a few.
Microsoft Technology Center, 5 Wayside Rd, Burlington, MA
Registration: https://bostonenet.org/events/how-to-pitch-to-investors/

Attendees will have the option to join us in-person at the Microsoft Technology Center in Burlington, MA or online via Zoom.

One of the most obvious and challenging key requirements for the success of an early-stage entrepreneurial company is securing funding!

Join us Nov 1st to learn best practices for preparing your investor pitch, targeting the right investors for your business, and conveying an organized thought process to investors about your business, team, and pathway to success. Hear from 4 expert panelists that have successfully secured and invested capital as startup Executives & Founders, Advisors, Financial Consultants and Investors.

More information:
This is a hybrid event. You may choose to participate in-person or online.
In-person Participation (check-in begins at 6:00 PM):
LOCATION: Microsoft Technology Center, 5 Wayside Road, Burlington, MA 01803.
PARKING: Free parking is available.
REFRESHMENTS: Pizza will be served.
COVID POLICY: You are required to provide proof of vaccination or self-attest to having received a negative COVID-19 test within the previous week via HealthCheck. Attendees who do not upload proof of vaccination must wear a face covering onsite.

Online Participation:
Zoom links will be sent to all registrants after registration.

COST AND RESERVATIONS: This event is free for ENET members and $10 for non-members. Click here to learn how to become a member. To expedite sign-in for the event, we ask that everyone — members as well as non-members — pre-register. Pre-registration is available until midnight the day before the meeting. If you cannot pre-register, you are welcome to register in person at the door while seats are available.

Agenda
7:00 pm  Introduction, ENET Chairperson’s announcements
7:10 pm  eMinute Pitch, up to 3 Startup pitches
7:25 pm  Expert Panel, 4 expert speakers on the night’s topic
8:15 pm  Moderator Q & A speaker panel and Audience
8:30 pm-9pm Networking, panelists will be available afterward for responses to individual questions.

Speakers
Rigu Gupta, MD CEO & Founder Pirogon, Inc.
Rigu Gupta is CEO & Founder of Pirogon, Inc., an innovative medtech company revolutionizing patient care. As a serial entrepreneur and CEO, physician and scientist she brings unique inventions and business acumen to the medtech sphere.

Prior to Pirogon, Rigu was Founder & CEO of R2TPS, business advisor for J Simply LLC, Terumo, BT, Time Warner.

Rigu also worked at faculty positions at Johns Hopkins and NIH, receiving an NIH excellence award and contributed with Greg Semenza on a Nobel prize-winning team of 2019.
https://www.linkedin.com/in/rigu-gupta-5a424823a

Maria Shepherd, President and CEO, Medi-Vantage
Maria Shepherd launched Medi-Vantage in 2007 with the goal to help her medical device clients grow profitably by applying her strategic expertise in the marketing, commercialization, and product development of medical devices. Since then, Medi-Vantage has worked with over 250 medical device companies performing strategy research to support (or decline) acquisitions, determine pricing strategy, commercialize disruptive new medical device technologies, or assist product development
teams in the design or re-engineering of medical devices

Maria is also an investor in medtech and digital health companies. She was VP of Marketing for Oridion, a startup company acquired by Medtronic; and has served as Director of Marketing for Philips, as well as Boston Scientific in senior management roles.

Maria serves on the board of MedExecWomen, an organization focused on empowering female medtech executives to accelerate the positive impact of medical devices, diagnostics, drug delivery and digital healthcare around the world. She holds an MBA from Babson College and BA in biology from the University of Pennsylvania. https://www.linkedin.com/in/mariashepherd

Nishta Rao, Managing Director-Life Sciences, First Republic Bank

Nishta is currently Managing Director at First Republic Bank where she is responsible for the growth and expansion of the Bank’s Life Science vertical. Prior to this, Nishta was Managing Director, BioLabs@NYULangone where she supported the translation of technologies into commercially viable products and therapies.

In addition Nishta has also launched and led Princeton Innovation Center BioLabs (PICb). Nishta served as Senior Director of Scientific Operations at Kadmon, a biotech startup based in New York City that focuses on discovery, development, and commercialization of small molecules and biologics. Nishta has also worked at Mt. Sinai Innovation Partners, the technology transfer office at Mt. Sinai as a Business Development Analyst evaluating technologies and developing partnerships aimed towards commercialization of new technologies.

Nishta speaks at a range of conferences and panels in the life science and healthcare space and serves as a mentor to academic and industry entrepreneurial groups such as Mount Sinai, Weill Cornell eLab programs, BioNJ Bio-Partnering, among others. https://www.linkedin.com/in/nishtarao

Anmol Wassam, Angel Investor, Boston Harbor Angels, COO, myBiometry

Anmol is a Boston area venture advisor, investor, health-tech entrepreneur, and executive. He has played a leading role in many aspects of the startup cycle: from founding companies, leading teams as an executive, helping incubate companies as a consultant, and evaluating opportunities and raising money as an investor and advisor. He has previously co-founded Virtify (Healthcare IT focused on regulatory standards for drug/device submissions) and PlayLocal (Govtech providing digital access to drive healthier outcomes). He is an active angel investor with the Boston Harbor Angels investment group.

He holds a BS in Business Administration from Franklin & Marshall College and an MBA from Babson’s Olin School of Management. https://www.linkedin.com/in/startupchampion

Organizers and Moderator

Kristin King, MBA. Boston Harbor Angel Investor; VP, Corporate Development, Defibtech Nihon Kohden

Kristin is an accomplished MedTech executive, serial intrapreneur, and active angel investor, proud member of Boston Harbor Angels and strategic advisor to startups developing biotech solutions. Leadership in corporate strategy, venture investing, M&A, development and operations transforming multinational firms and startups.

She serves as an EIR for Yale Ventures and Vice Chair on Executive Board of ENET. Kristin has an MBA from NYU, Stern and B.S Biomedical Engineering, Syracuse. https://www.linkedin.com/in/kristin-king-mba/

Dave Hall, Founder & CEO, DLH Technology Advisors, Startup Strategy & Venture Capital Consulting

Dave is Founder and CEO of DLH Technology Advisors. He is a startup & strategy Executive, Innovation Consultant, Advisor, Connector, Evangelist, Angel Investor and Speaker for growth companies looking to implement, optimize, and fund their Go-to-Market plan.

DLH Technology Advisors offers consulting services including Startup Strategy, Product Development, Startup Frameworks, Business Development, Startup Marketing, Go-to-Market Strategy, Executive Coaching and Startup Funding Channels. DLH has resources for CRM development services including Salesforce implementation, AppExchange App Development, QuickStarts, Lead Architect and Admin Services for the entire Salesforce product line - https://www.DLHsales.com
https://www.linkedin.com/in/hallzy
VDL- Connecting Space Assets to the Internet: Challenges and Solutions

Speaker: Mohammed Atiquzzaman, University of Oklahoma
Location: On Line

Register in advance for this webinar at https://events.vtools.ieee.org/m/328500

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

Data communications between Earth and devices on spacecraft, such as satellites, have traditionally been carried out through dedicated links. Shared links using Internet Protocol-based communication offers a number of advantages over dedicated links. The movement of devices on spacecrafts however gives rise to mobility management issues.

This talk will discuss various mobility management solutions for extending the Internet connection to devices on the spacecraft. The talk will provide an overview of the network layer based solution being developed by the Internet Engineering Task Force and compare it with the transport layer-based solution that has been developed at the University of Oklahoma in conjunction with the National Aeronautics and Space Administration. Network in motion is an extension of the host mobility protocols for managing the mobility of networks which are in motion, such as those in airplanes and trains. The application of networks in motion will be illustrated for terrestrial and space environments.

Mohammed Atiquzzaman obtained his M.S. and Ph.D. in Electrical Engineering and Electronics from the University of Manchester (UK) in 1984 and 1987, respectively. He currently holds the Edith J Kinney Gaylord Presidential professorship in the School of Computer Science at the University of Oklahoma.


Dr. Atiquzzaman received IEEE Communication Society’s Fred W. Ellersick Prize, IEEE Distinguished Technical Achievement Award, IEEE Satellite Communications Technical Contribution Award, and NASA Group Achievement Award for “outstanding work to further NASA Glenn Research Center’s effort in the area of Advanced Communications/Air Traffic Management’s Fiber Optic Signal Distribution for Aeronautical Communications” project. He is the co-author of the book “Performance of TCP/IP over ATM networks” and has over 350 refereed publications, available at www.cs.ou.edu/~atiq.

His current research interests are in areas of transport protocols, wireless and mobile networks, ad hoc networks, satellite networks, power-aware networking, and optical communications. His research has been funded by National Science Foundation (NSF), National Aeronautics and Space Administration (NASA), U.S. Air
Force, Cisco, Honeywell, Oklahoma Department of Transportation and Oklahoma Highway Safety Office. This is a joint meeting of multiple chapters of the IEEE Computer and Communications Societies and will be online only due to residual concerns about COVID-19 and to allow listeners in multiple geographic regions to join in.

Up-to-date information about this and other talks is available online at http://ewh.ieee.org/r1/boston/computer/.
You can sign up to receive updated status information about this talk and informational emails about future talks at http://mailman.mit.edu/mailman/listinfo/ieee-cs, our self-administered mailing list.

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Alternatively, you may contact the IEEE Boston Section office at ieeebostonsection@gmail.com or 781 245 5405.

- **Honoraria can be considered for course lecturers**
- Applications oriented, practical focused courses are best (all courses should help attendees expand their knowledge based and help them do their job better after completing a course
- Courses should be no more than 2 full days, or 18 hours for a multi-evening course
- Your course will be publicized to over 10,000 local engineers
- You will be providing a valuable service to your profession
- Previous lecturers include: Dr. Eli Brookner, Dr. Steven Best, Colin Brench, to name a few.
The seminar will begin at 7:00PM. Masking and COVID vaccination are highly recommended. Please register for either in-person or online.

The online registration link will be posted two days prior to the seminar.

The online version will take place on Zoom and will be started 30 minutes early (at 6:30 EDT) to allow for technical troubleshooting. The seminar will begin at 7:00PM. For more information contact Keisuke Kojima, IEEE Boston Photonics Society chair at keisukekojima@ieee.org, or visit the IEEE Boston Photonics Society website at www.bostonphotons.org.

Location: Analog Devices Hubble Auditorium

Directions:
1 Analog Way
Wilmington, MA 01887

From Industrial Way entrance, follow signs for Visitor or Garage Parking, then follow signs for Main Entry which lead to the Hub Building - circular building at center of campus, visitor entrance is on the east side. Meeting is located on the second floor in the Hubble Auditorium.
Microwave Theory and Technology Society – 6:00PM, Tuesday, November 15

Systems: Bridging the THz and Application Gap

Speaker: Kaushik Sengupta of Princeton University (MTT-S Distinguished Lecturer)
Location: Virtual Talk

Registration:
https://events.vtools.ieee.org/m/328866

MTT BOSTON CHAPTER VIRTUAL DML TALK: “TOWARDS UNIVERSALLY PROGRAMMABLE CHIP-SCALE THZ SOURCE, SENSORS AND SYSTEMS: BRIDGING THE THZ AND APPLICATION GAP IN THE NEXT DECADE” - KAUSHIK SENGUPTA

Silicon-based Terahertz systems is a field that is only about a decade old. In this time, we have seen a phenomenal growth of silicon systems operating at THz frequencies for a wide range of applications in sensing, imaging and communication. It can be argued that both the ‘THz gap’ and the ‘technology and applications gap’ is closing in meaningful ways in the THz range. Technologies beyond 100 GHz focusing on sensing, imaging and wireless back-haul links are getting attractive as we enter into a new area of highly dense network of autonomous systems requiring ultra-high speed and reliable links.

In order to move beyond this inflection point as Moore’s law continue to slow, I will discuss why we need to look beyond the classical ‘device’-level metrics of efficiency and sensitivity of THz sources and detectors towards holistic ‘system’ level properties such as scalability and programmability. Such properties are critically important for applications in sensing and imaging, as evidenced across sensor fusion technologies across mmWave, IR and optical frequencies. The ultimate programmability in THz sources and sensors is one that can synthesize or receive THz fields with arbitrary configuration and spectrum. In this talk, I will highlight approaches that cut across electromagnetics, circuits, systems and signal processing, to allow for such reconfigurability in THz signal synthesis and sensing, yet realized with devices that are themselves not very efficient. Particularly, we will demonstrate approaches to THz CMOS sensors reconfigurable across the three field properties of spectrum (100 GHz-1000 GHz), beam pattern and polarization, programmable THz metasurfaces with CMOS tiling, and enabling dynamic spectrum shaping and physically secure sub-THz links. In the end, I will comment on what could be the major directions for the field in the coming decade.

Kaushik Sengupta received the B.Tech. and M.Tech. degrees in electronics and electrical communication engineering from IIT Kharagpur, Kharagpur, India, in 2007, and the M.S. and Ph.D. degrees in electrical engineering from the California Institute of Technology (Caltech), Pasadena, CA, USA, in 2008 and 2012, respectively. In 2013, he joined the Department of Electrical Engineering, Princeton University, Princeton, NJ, USA, as a Faculty Member. His current research interests include high-frequency ICs, electromagnetics, and optics for various applications in sensing, imaging, and high-speed communication.

Dr. Sengupta received the Bell Labs Prize (2017), Young Investigator Program (YIP) Award from the Office of Naval Research in 2017, the DARPA Young Faculty Award (2018), and the E. Lawrence Keys, Jr./Emerson Electric Co. Junior Faculty Award. He was six times selected to the Princeton Engineering Commendation List for Outstanding Teaching in 2014, 2016, 2017, 2018, 2019 and 2020, and received the ‘Excellence in Teaching Award’ from the School of Engineering at Princeton University in 2018 nominated by the Undergraduate and Graduate Student Council. He is currently serving as a steering committee member of IMS 2021 as workshop co-chair and as a member the MTT-4 Committee on Terahertz technology, and has served on the Technical Program Committee of the IEEE ESSCIRC, IEEE CICC, IEEE ICC and PIERS. He is co-recipient of the 2015 MTT-S Microwave Prize. He is currently serving as a Distinguished Lecturer for IEEE Solid-State Circuits Society (2019-2020), and will serve as a Distinguished Lecturer for IEEE Microwave Theory and Techniques (2021-2023).
IEEE and IEEE REGION 1 AWARDS Announced

**2023 IEEE Technical Field Awards**

*IEEE Control Systems Award*: To recognize outstanding contributions to control systems engineering, science, or technology.
Naomi Ehrich Leonard (Princeton/Central Jersey Section): “For contributions to applications and theory for control of nonlinear and multiagent systems.”

*IEEE Robotics and Automation Award*: The award is presented for contributions in the field of robotics and automation.
Daniela Rus (Boston Section): “For pioneering contributions to the design, realization, and theoretical foundations of innovative distributed, networked autonomous systems.”

**IEEE Life Members Affinity Group Awards**

*Regional LMAG Achievement Awards*
Michael A. Miller: Region 1 – North New Jersey LMAG, Chair

**Life Members Individual Service Awards** - This is the first year that the LMC has awarded the Global Life Members Individual Service Award and Regional Life Member Individual Service Awards to those Life Members who have provided exceptional and valuable service to the Life Member organization.
Lou Luceri: Region 1

**Region 1 Awards:**

*The William Terry Distinguished Service Award*: This award is intended to recognize those whose personal efforts have provided leadership, creativity, guidance, hard work and inspiration in a wide range of IEEE activities over a significant and sustained period of time.
Santosh K. Kurinec (Rochester) – For IEEE service, and outstanding research and teaching semiconductor technology and promoting semiconductor workforce generation

*Technological Innovation (Academic)*: For distinguished development, advancement and pursuit of the IEEE’s technical objectives
Hengyong Yu (Boston) – For pioneering contributions and international leadership in tomographic imaging, especially interior tomography and machine learning-based tomographic imaging
Wenliang Du (Syracuse) – For contributions in cybersecurity education

**Outstanding Teaching in an IEEE Area of Interest (University or College)**: For outstanding contributions to education in an area of interest to the IEEE
Bina Ramamurthy (Buffalo) – For outstanding contributions to global education in the emerging area of blockchain technology

**Outstanding Teaching in an IEEE Area of Interest (Pre-University or College)**: For improving communications between the IEEE and a student body; for support and service to a student body; for service and leadership to the student community
Chitra M. Venkatraman (North Jersey) – For significant contributions to employment networking, career development, women in engineering, and pre-university STEM education

**Outstanding Support for the Mission of the IEEE, MGA, Region 1 and/or Section**: For outstanding service to the IEEE at the Chapter, Section, Region, MGA and/or National level
Martin L. Cohen (Providence) – For outstanding and steadfast performance as Section Chair, Treasurer, and chair of numerous committees and events during two decades of service
Fatimah Shehadeh-Grant (New Jersey Coast) – For contributions in increasing STEM awareness among local pre-university students and promoting WIE initiatives
Michael Chirico (Buffalo) – For valued service and outstanding contributions to the IEEE Buffalo Section

Oliver Kennedy (Buffalo) – For contributions to incremental view maintenance, understandable reproducible data science, and outreach efforts
Karthik Dantu (Buffalo) – For technical contributions to visual localization and mapping technologies for mobile systems and robotics

*Technological Innovation (Industry or Government)*: For significant patents, discovery of new devices, development of applications or exemplary contributions to industry or government
Yuanqiu Luo (Princeton/Central Jersey) – For outstanding innovations on high-speed optical access system design and development, and leadership in driving international standards to promote broadband access worldwide
Yutaka Sugawara (Mid-Hudson) – For sustained contributions to architecture and design of world-class high performance computing systems
DSP for Wireless Communications

Dates & Times:  Live Workshops:  4:00 - 5:30PM ET, Thursdays, Nov. 3, 10, 17, Dec. 1
First Video Release, October 27, 2022, additional videos released weekly in advance of that week’s live session!

Speaker:  Dan Boschen       (New Dates!)
Location:   Zoom Webinar

New Format Combining Live Workshops with Pre-recorded Video - 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...until January 19, 2023.

Course Summary
This course is a fresh view of the fundamental and practical concepts of digital signal processing applicable to the design of mixed signal design with A/D conversion, digital filters, operations with the FFT, and multi-rate signal processing. This course will build an intuitive understanding of the underlying mathematics through the use of graphics, visual demonstrations, and applications in GPS and mixed signal (analog/digital) modern transceivers. This course is applicable to DSP algorithm development with a focus on meeting practical hardware development challenges in both the analog and digital domains, and not a tutorial on working with specific DSP processor hardware.

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 “Python Applications for Digital Design and Signal Processing”.

Students will be encouraged but not required to load all the Python tools needed, and all set-up information for installation will be provided prior to the start of class.

Target Audience:
All engineers involved in or interested in signal processing applications. Engineers with significant experience with DSP will also appreciate this opportunity for an in-depth review of the fundamental DSP concepts from a different perspective than that given in a traditional introductory DSP course.
Benefits of Attending/ Goals of Course:
Attendees will build a stronger intuitive understanding of the fundamental signal processing concepts involved with digital filtering and mixed signal analog and digital design. With this, attendees will be able to implement more creative and efficient signal processing architectures in both the analog and digital domains. The knowledge gained from this course will have immediate practical value for any work in the signal processing field.

Topics / Schedule:
Class 1: Correlation, Fourier Transform, Laplace Transform
Class 2: Sampling and A/D Conversion, Z-transform, D/A Conversion
Class 3: IIR and FIR Digital filters, Direct Fourier Transform

Class 4: Windowing, Digital Filter Design, Fixed Point vs Floating Point
Class 5: Fast Fourier Transform, Multi-rate Signal Processing, Multi-rate Filters

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. Dan is currently at Microchip (formerly Microsemi and Symmetricom) leading design efforts for advanced frequency and time solutions.

For more background information, please view Dan’s LinkedIn page at: http://www.linkedin.com/in/danboschen

Decision (Run/Cancel) Date for this Course is Monday, October 10, 2022

IEEE Members $190
Non-members $210

https://ieeeboston.org/event/digital-signal-processing-webinar/?instance_id=3297
The Reflector, November 2022

The IEEE’s core purpose is to foster technological innovation and excellence for the benefit of humanity. The IEEE Boston Section, its dedicated volunteers, and over 8,500 members are committed to fulfilling this core purpose to the local technology community through chapter meetings, conferences, continuing education short courses, and professional and educational activities.

Twice each year a committee of local IEEE volunteers meet to consider course topics for its continuing education program. This committee is comprised of practicing engineers in various technical disciplines. In an effort to expand these course topics for our members and the local technical community at large, the committee is publicizing this CALL FOR COURSE SPEAKERS AND ORGANIZERS.

The Boston Section is one of the largest and most technically divers sections of the IEEE. We have over 20 active chapters and affinity groups. If you have an expertise that you feel might be of interest to our members, please submit that to our online course proposal form on the section’s website (www.ieeeboston.org) and click on the course proposal link (direct course proposal form link is http://ieeeboston.org/course-proposals/).

Alternatively, you may contact the IEEE Boston Section office at ieeebostownsection@gmail.com or 781 245 5405.

- Honoraria can be considered for course lecturers
- Applications oriented, practical focused courses are best (all courses should help attendees expand their knowledge based and help them do their job better after completing a course
- Courses should be no more than 2 full days, or 18 hours for a multi-evening course
- Your course will be publicized to over 10,000 local engineers
- You will be providing a valuable service to your profession
- Previous lecturers include: Dr. Eli Brookner, Dr. Steven Best, Colin Brench, to name a few.

Contact IEEE Boston Section at ieeebostownsection@gmail.com for more information on rates for Online Advertising.
Digital Signal Processing (DSP) for Software Radio (New Dates!)

Dates & Times: Live Workshops: 6 - 7:30PM EST; Thursdays, Jan. 26, Feb. 2, 9, 16, 23
First Video Release and orientation, 6 - 6:30PM January 19, 2023, additional videos released weekly in advance of that week’s live session!

Speaker: Dan Boschen
Location: Zoom

Course Information will be distributed on Thursday, January 19, 2023 in advance of and in preparation for the first live workshop session.
Attendees will have access to the recorded session and exercises for two months (until April 23) 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.
if you are uncertain about your background or if you would like more information on the course.

**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.

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**Decision (Run/Cancel) Date for this Course is Monday, January 16, 2023**

- IEEE Members $190
- Non-members $210

For more background information, please view Dan’s LinkedIn page at: http://www.linkedin.com/in/dan-boschen

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**IEEE Members $190**

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[https://ieeeboston.org/event/dsp-radio/?instance_id=3302](https://ieeeboston.org/event/dsp-radio/?instance_id=3302)
Introduction to Practical Neural Networks and Deep Learning (Part I)

Web-based Course with live Instructor!

Times & Dates:  9AM - 12:30PM ET, Saturday, March 10, 2023 (New Dates!)
Speaker:   CL Kim
Course Format: Live Webinar, 3 hours of instruction!

Series Overview:   From the book introduction: “Neural networks and deep learning currently provides the best solutions to many problems in image recognition, speech recognition, and natural language processing.”

This Part 1 and the planned Part 2, (to be confirmed) series of courses will teach many of the core concepts behind neural networks and deep learning.

More from the book introduction: Reference book: “Neural Networks and Deep Learning” by Michael Nielsen, http://neuralnetworksanddeeplearning.com/ We’ll learn the core principles behind neural networks and deep learning by attacking a concrete problem: the problem of teaching a computer to recognize handwritten digits. …it can be solved pretty well using a simple neural network, with just a few tens of lines of code, and no special libraries.”

“But you don’t need to be a professional programmer.”

The code provided is in Python, which even if you don’t program in Python, should be easy to understand with just a little effort.

Benefits of attending the series:
* Learn the core principles behind neural networks and deep learning.
* See a simple Python program that solves a concrete problem: teaching a computer to recognize a handwritten digit.
* Improve the result through incorporating more and more core ideas about neural networks and deep learning.
* Understand the theory, with worked-out proofs of fundamental equations of backpropagation for those interested.
* Run straightforward Python demo code example.

The demo Python program (updated from version provided in the book) can be downloaded from the speaker’s GitHub account. The demo program is run in a Docker container that runs on your Mac, Windows, or Linux personal computer; we plan to provide instructions on doing that in advance of the class.

(That would be one good reason to register early if you plan to attend, in order that you can receive the straightforward instructions and leave yourself with plenty of time to prepare the Git and Docker software that are widely used among software professionals.)

Course Background and Content:   This is a live instructor-led introductory course on Neural Networks and Deep Learning. It is planned to be a two-part series of courses. The first course is complete by itself and covers a feedforward neural network (but not convolutional neural network in Part 1). It will be a pre-requisite for the planned Part 2 second course. The class material is mostly from the highly-regarded and free online book “Neural Networks and Deep Learning” by Michael Nielsen, plus additional material such as some proofs of fundamental equations not provided in the book.

Outline:
Feedforward Neural Networks.
* Simple (Python) Network to classify a handwritten digit
* Learning with Stochastic Gradient Descent
* How the backpropagation algorithm works
* Improving the way neural networks learn:
  ** Cross-entropy cost function
  ** Softmax activation function and log-likelihood cost function
  ** Rectified Linear Unit
  ** Overfitting and Regularization:
    *** L2 regularization
    *** Dropout
    *** Artificially expanding data set

Pre-requisites: There is some heavier mathematics in learning the four fundamental equations behind backpropagation, so a basic familiarity with multivariable calculus and matrix algebra is expected, but nothing advanced is required. (The backpropagation equations can be also just accepted without bothering with the proofs since the provided Python code for the simple network just make use of the equations.) Basic familiarity with Python or similar computer language.
Speaker Background:  CL Kim works in Software Engineering at CarGurus, Inc. He has graduate degrees in Business Administration and in Computer and Information Science from the University of Pennsylvania. He had previously taught for a few years the well-rated IEEE Boston Section class on introduction to the Android platform and API.

Decision (Run/Cancel) Date for this Course is Friday, March 10, 2023

IEEE Members $110  
Non-members $130

https://ieeeboston.org/event/neuralnetworks/?instance_id=3285

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Practical RF PCB Design, Wireless Networks, Products and Telecommunications

Time & Date: 9:00AM - 4:30PM, Wednesday & Thursday, January 4 & 5, 2023  
(13 hours of instruction!)

Speaker: Henry Lau, Lexiwave Technology

Location: Crowne Plaza Hotel, 15 Middlesex Canal Park Road, Woburn, MA

Overview: One of the most demanding consumer products in the market is the wireless telecommunication product. A well-designed Radio Frequency Printed Circuit Board (RF PCB) contributes significantly to the success of any wireless product as the layout of the PCB greatly affects the performance, stability and reliability of the product. In today’s highly competitive wireless products market with increasingly compressed development time-frame, there is a strong demand for RF professionals who possess the knowledge and experience to design top-performing RF PCBs in less number of iterations. What matters is whether your level of competence is up to the required standard to meet such demand.

Audience: RF Designers, Wireless Product Designers, Field Application Engineers, Design Managers and related professionals.

Benefits: This course aims to provide participants with an insightful training on RF PCB design from a practical, industrial perspective. Participants will be led through a systematic, theoretical presentation with case studies on commercial products in the training. The course will be conducted by an RF expert with rich industrial experience. It is suitable for RF professionals who want to keep up-to-date their skills and knowledge in RF PCB design and stay competitive.

OUTLINE

1. Printed circuit board design for RF circuits
   - From product design, circuit design to PCB design
   - Layer stack-up assignment
   - Grounding methods and techniques
   - Interconnects and I/O
   - Bypassing and decoupling
   - Partitioning methods

2. Printed circuits board design for other circuits
   - Clock circuits
   - Base-band circuits
   - Audio circuits
   - Power supplies
   - Impedance-controlled circuits

3. PCB design for EMC/EMI compliance
   - EMC/EMI compliance
   - Grounding methods
   - Decoupling methods
   - Shielding methods

4. Additional Design Techniques
   - Production concerns
   - Systematic product design approach
   - RF Modules
   - Evaluation boards
   - Other RF concerns
   - Casing design

5. Case studies
Expertise:
Henry Lau received his M.Sc. and MBA degrees from UK and USA respectively. He has more than 25 years of experience in designing RF systems, products and RFICs in both Hong Kong and US. He worked for Motorola and Conexant in US as Principal Engineer on developing RFICs for cellular phone and silicon tuner applications. Mr Lau holds five patents all in RF designs. He is currently running Lexiwave Technology, a fables semiconductor company in Hong Kong and US designing and selling RFICs, RF modules and RF solutions. He has also been teaching numerous RF-related courses internationally.

Decision (Run/Cancel) Date for this Courses is Friday, December 27, 2022

Payment received by Dec. 23
IEEE Members $415
Non-members $445

Payment received after Dec. 23
IEEE Members $445
Non-members $465

notes, lunch and coffee breaks included with registration

https://ieeeboston.org/event/practical-rf-pcb-design/?instance_id=3308

Additional Courses Planned for later in 2023

Python for Signal Processing and Digital Design – April 1, 2023
DSP for Wireless Communications – July 22, 2023
DSP for Software Radio – October 14, 2023

Look in future Reflector issues and our website for more details

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