BOSTON

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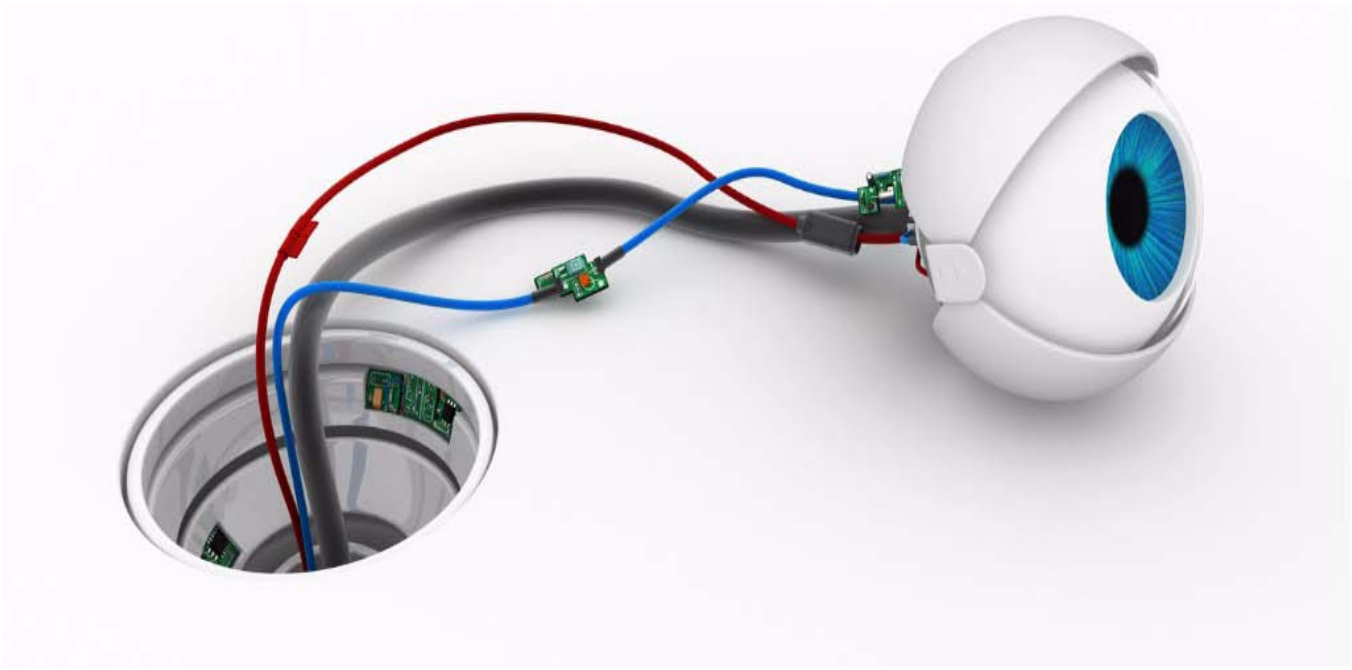

IEEE
Advancing Technology for Humanity

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Life of Learning

Bruce Allen Hecht, IEEE Boston Section Executive Committee

In the spring days of May in the northeast, we are fortunate to celebrate the return of flowers, warmth, light, and the cycle of seasons (academic years) and starting others (summer plans).

Having started a learning journey, it has been energizing to have the opportunity to learn in a variety of contexts and formats. In a topical seminar held this spring, I had the good fortune to learn from visiting scientists, industrial leaders, academic researchers, and a dedicated cohort of fellow students from many diverse backgrounds and from their range of curiosity and talents. One of the compelling topics was the intersection of data science and education.

I was reminded of a perspective highlighted by Peter Senge, founder of the Society of Organizational Learning and of Compassionate Learning, who would often quote the former MIT Dean of Engineering, Gordon Brown that "To be a great teacher is to be a prophet — for you need to prepare young people not for today, but for 30 years into the future."

In the past two years, access to classrooms experienced a dramatic and rapid shock, with the World Economic Forum (WEF) reporting up to 1.6B students out of school (December 2020). According to the author of the WEF report, Amel Karboul, outlined his personal experience and the context for these issues: "As a former government minister in Tunisia, I know firsthand the challenges. Competing priorities mean that governments struggle to invest in improving their education systems until it's too late. And when they do, they lack the capacity to try new approaches when they are already struggling to deliver basic provision. The COVID-19 pandemic has shone a light on the limitations of our most important institutions. But perhaps it can also be the inspiration for new approaches – an opportunity that has forced us to pause…"

In reflecting on the pandemic, Justin Reich, in his article and subsequent book, Failure to Disrupt, reflects on the recurring "technology based" approach to change. Past promises of automated teaching and distributed communication aim to provide benefits by leveraging technological power, however often these do not produce fundamental changes to the dynamics.

In working with colleagues here at the IEEE Boston Section, our neighbors in the Northeast, and across the IEEE Region 1, to learning, and to applying innovative ideas into practice. Your fellow engineers, designers, developers, entrepreneurs, researchers, and learners in diverse fields are resources you may access for inspiration and knowledge. We look for your input for what you may like to present about your own work, and look forward to hearing your story, whether at a future chapter meeting, conference, short course, or by chance to meet up. Whether virtual or over coffee, it will be good to see you soon!

Bruce Hecht is the IEEE Region 1 Northeast Area Chair and a Past Chair of the IEEE Boston Section. He is the founder of VG2PLAY and an MIT Fellow in System Design and Management (SDM) based at the Cambridge Innovation Center in Cambridge, MA.

Listen to the Array Café podcast at
https://array-cafe.simplecast.com/

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IEEE Boston Section is the largest, most active, and technically diverse section in the U.S.
Comprised of Engineers, scientists and professionals in the electrical and computer sciences and engineering industry

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2022 IEEE/MIT Undergraduate Research Technology Conference (URTC)

September 30 - October 2, 2022

SAVE THE DATE!!!!

2022 IMPORTANT DATES

Early Paper Submission Deadline	July 10, 2022
Regular Paper Submission Deadline	July 31, 2022
Regular Notification of Acceptance	August 28, 2022
Poster and Lighting Talk Submission Deadline	August 31, 2022
Poster and Lightning Talk Acceptance Notification	September 7, 2022

More Details will be published on the website by May 30, 2022
https://urtc.mit.edu/

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/

CALL FOR IEEE BOSTON SECTION AWARDS NOMINATIONS (2021)

DISTINGUISHED SERVICE AWARD

Description - The purpose of the Distinguished Service Award is to honor an IEEE Boston Section member who has made exceptional and distinguished contributions to the Boston IEEE Section. The Distinguished Service Award is to honor an IEEE Boston Section member who has made exceptional and distinguished contributions to the Boston IEEE Section. This award is a wood, engraved plaque with the recipient's' citation.

Administration - The Distinguished Service Award will be administered by the Boston Section's Awards Committee. The Awards Committee will submit their recommendations to the Section's Executive Committee for approval.

Eligibility - Individuals nominated for this award must be members of the Boston Section and the IEEE. The award is based upon evidence of distinguished service to the Boston Section. Selection criteria include leadership roles and leadership quality, innovative and important services/contributions to the Boston Section

DISTINGUISHED MEMBER AWARD

Description - The purpose of this award is to recognize distinguished long-term service to the Boston Section of the IEEE and significant contributions in an IEEE field of interest. The Distinguished Member Award recognizes outstanding long-term service (10-years or more) to the Boston Section and significant contributions in an IEEE field of interest This award is a wood, engraved plaque with the recipient's' citation

Administration - The Distinguished Member Award will be administered by the Boston Section's Awards Committee. The Awards Committee will submit their recommendations to the Section's Executive Committee for approval.

Eligibility - Individuals nominated for this award must have been members of the Boston Section for at least the previous ten (10) years. Multiple awards may be given each year, if suitable candidates are nominated. Individuals nominated for this award must currently be members of the Boston Section and members of the IEEE. The award is based upon evidence of distinction in long-term service to the Boston Section and for contributions to the fields of interest to the IEEE. Selection criteria include leadership roles and leadership quality, innovative and important contributions to the Boston Section, service and dedication to the Boston Section, and technical achievements in the fields of interest to the IEEE.

STUDENT ACHIEVEMENT AWARD

Description - The purpose of the Student Achievement Award is to recognize a college student who demonstrates the potential to become distinguished leader and outstanding contributor in an IEEE field of interest. This award is a wood, engraved plaque with the recipient's' citation The Student Achievement Award is to recognize a college student who demonstrates the potential to become a distinguished leader and outstanding contributor in an IEEE field of interest.

Administration - The Student Achievement Award will be administered by the Boston Section's Awards Committee. The Awards Committee will submit their recommendations to the Section's Executive Committee for approval.

Eligibility - An individual nominated for this award must be a student (sophomore year or higher), in good standing, at an institution of higher education located in the Boston Section or be a legal resident within the Boston Section who is attending an institution of higher education outside the Section. The nomination must be submitted by, or endorsed by, the student's major professor, academic advisor or Dean of the department/college they are attending. All nominees' major field of study must be in an IEEE field of interest. The award is based upon evidence of distinguished leadership, accomplishment, and/or outstanding contributions that further the aims of the IEEE.

The deadline for submitting nominations for the 2021 Boston Section Awards is Monday, February 28, 2022.

Nominations can be submitted to the Boston Section Awards Committee at ieeebostonsection@gmail.com

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

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.

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.

Entrepreneurs' Network – 7:00PM, Tuesday, May 3

Fueling Growth:
How to Build a Sales Team to Sell More

Online Webinar

Registration: https://bostonenet.org/events/fueling-growth-how-to-build-a-sales-team-to-sell-more/#registration-form

This event is free of charge. However, prior registration is required to attend.

ENET Members will also have the opportunity to view a recording of this webinar if you are unable to attend or wish to view it again.

Following up from ENET's event on marketing, this event will explore how to build a sales team to sell your startup's product and services by collaborating with information and intelligence gathered from marketing efforts, as well as how to fuel growth for your company. Now that your target market has been determined, which is one of your most important responsibilities as an entrepreneur, you now have the foundation of all the elements for your startup sales strategy, from developing and presenting your offerings to the tools to promote them. But then, the question is, to sell these offerings as a solo or to build out a sales team, that is the question. Whether you alone will wear the sales hat or you hire sales professionals, the goal should be creating and implementing a systematized, proven sales strategy to help you meet your sales goals and quotas, while documenting a sales process to iterate and improve your strategy with each sales interaction. These efforts will ultimately enable your sales process to grow and scale your startup. The result should be a systematized, proven sales strategy that will help you accelerate through your sales quotas, meet your business growth goals, and, hopefully, exceed your sales and business goals.

Tonight's expert panel of sales professionals and founders of companies will address these situations as founders determine whether to do sales by themselves or to build out a sales team. You will also hear from one of the panelists who literally started his tech startup with "two guys in a garage" and his journey to an exit. This panel will kick off with a sales professional focusing on how to ensure you have a compelling value message and understand why prospects will buy your product or services. The next expert panelist will discuss how to overcome dreaded objections when you or your sales team hear that dreaded "No" answer. The next panelist will give tips on how to use marketing materials in your sales calls including practical advice that can be used in your next sales call. The final panelist will share his story about how he and his co-founder started a company in a garage, guided their startup to an exit, and is now helping other early-stage companies start and build out their sales process. In addition, the ENET event will be moderated by professionals who collectively have co-founded a startup to a funding event, helped market and sell services that led to their most profitable years to date at several companies, joined intrapreneurial teams in enterprise companies leading to millions of dollars of savings to the bottom line while uncovering and opening up new, profitable cost centers nationwide, and raising millions for companies, from small, family-owned operations to international companies.

Please join ENET for this panel discussion on sales as these sales experts, who are also founders and entrepreneurs, share their knowledge about how to fuel growth for your startup using marketing materials and marketing intelligence, traditional sales skills, and cutting-edge sales techniques to help you to build a sales team to sell more!

A Question and Answer (Q&A) Session will follow the panel discussion, and the Expert Panelists will be available afterward for responses to individual questions. All times are USA Eastern Daylight Time (EDT) as listed below.

Event Schedule

7:00 pm ET – Introduction - ENET Chairperson's announcements

7:10 pm ET - eMinute Pitch - Up to 3 Startup pitches

7:25 pm ET - Expert Panel - 4 expert speakers on the night's topic
8:10 pm ET - Q & A - Moderator and Audience Q & A with the speakers
8:30 pm ET – Networking - Panelists will be available afterward for responses to individual questions.

Speakers:

Don Drury - Principal and Founder, Drury Advisors LLC
Don has over 30 years of experience focused on the Go-To-Market (GTM) side of the B2B enterprise software, SaaS, and technology sectors. Don spent three and a half years as a Senior Sales Consultant with SiriusDecisions before launching his own consulting business in 2018. Don has held leadership roles in multiple early-stage companies as well as large global organizations including Kronos (now UKG), Baan ERP, and Xerox. His work is focused on defining and clarifying high level GTM strategies for his clients and helping them design and deliver Sales and Marketing workstreams to acquire, retain, and grow revenue across the customer lifecycle.

Marc Kitz - Sales Coach
Marc has over 37 years of experience (including 18 at HPE) driving new technology solutions business as a Sales Representative, Manager and Coach (totaling over $200 Million). He has a strong track record for finding new business and managing thru complex sales processes. Marc lives in West Hartford, CT and grew up in Bellmore, NY. He attended the University of Rhode Island. He is now sharing his experience thru Sales Coaching, his Prime Marketing Experts, an international businessblog (https://marckitz.com/),and via subscriber e-mails – sign up on his home page!
linkedin.com/in/marckitz

Terry Davis - Business Development Director, Prime Marketing Experts
Terry is a sales professional with Prime Marketing Experts, a full-service digital marketing agency that accelerates companies' growth and only works remotely. He provides advice to businesses on what business development and digital marketing services best attract, convert, and retain customers, including sales training, sales process implementation, telesales, website design, social media management, and email marketing. Terry also provides job search assistance, including Applicant Tracking Software (ATS) Certified Resumes, cover letters, personalized LinkedIn profile makeovers, personal marketing and branding by staying up to date about job searches, market trends, ATS, and hiring processes. From establishing enduring partnerships with recruiters, coaches, human resource managers, and talent acquisition specialists, Terry partners with clients to design resumes for the job field of interest that capitalize on opportunities. As a content writer, Terry provides well-researched, SEO-friendly copy focused on providing prospects information and a call to action to move forward to help businesses turn prospects into clients. Terry also provides other specialized services, such as job search support, interview coaching, career coaching, and professional writing, and editing. Terry is also a veteran having served in our US Army and also runs a martial arts facility teaching kids and adults discipline and self-defense.
https://www.primemarketingexperts.com/

David L. Hall - Managing Director, DLH Technology Advisors
Dave is a Sales, Business Development, Start-up Marketing and Entrepreneurial Professional, living in the Salesforce Community since 2010. He co-founded Kona DataSearch to enhance the productivity of the search experience in Salesforce. He founded DLH Technology Advisors to help startups and Salesforce partners drive sales, marketing and top line revenue. A native of Worcester, MA, Dave's career started as a Mechanical Engineer out of the University of New Hampshire, working for Teradyne Connections in Nashua, NH. With 15 years running his own electro-mechanical rep business, Dave worked with multiple verticals including Industrial, Medical Device, Electronics, Robotics, Defense and Med-Tech accounts. Dave has worked at several high-tech firms including Fujitsu Consulting, Attivio, and Sadhana Salesforce Consulting. He's always been passionate about driving deal flow and now advises and invests in other start-ups to support their marketing, brand awareness and go-to-market requirements.
linkedin.com/in/hallzy

Moderator & Organizers

Maureen Mansfield - Founder, ~ Protect Your Passion ~ Vice-Chair Alliance Partners, Boston ENET

Maureen is an entrepreneur with a deep passion for all things innovative. She founded ~ Protect Your Passion ~ to educate entrepreneurs about protecting their passion when starting a startup, scaling a business, and licensing intellectual property, including patent protection. After sharing her startup story at ENET, Maureen was asked to volunteer and is now Vice-Chair Alliance Partners for The IEEE Boston ENET. With over 30 years of working with founders, business owners, and C-suites, Maureen brings sage wisdom from marketing, sales, and business development, contracts and contract compliance, and building proprietary databases that helped several companies enjoy their most profitable years. This includes leading her intrapreneurial team to earn the top coveted award from a F50 by reducing fraud and discovering new markets while saving over $1 million to its bottom line annually, with a special thanks to her sister, a computer guru, who made Maureen learn computers in the 80s. Maureen holds several degrees in selective programs from The University of Iowa and Harvard University. Knowing the importance of giving back and honoring those who helped along the way, Maureen has given back her colleges, communities, and churches, including founding two charities that continue today. Despite not pursuing a full scholarship for music, Maureen continues to play the alto saxophone, thanks to her mother who bought her that first saxophone.
linkedin.com/in/maureenmansfield7813692020

Dan Skiba - Managing Director, Skiba Advisory Associates VP Printed Electronics, Chasm Advanced Materials Vice-Chair Programs, Boston ENET

As a Product Development Company Executive, I provide strategic leadership in product innovation, and managing global teams, delivering award-winning products to the international market. My ability to problem solve, direct the entire product development lifecycle, and gain commitment to a common goal have driven faster release of products and market penetration. By building synergies across all Product Life Cycle disciplines, we have delivered products that result in 100% product utilization and seamless integration into customer environments. My skills in optimizing international resources have significantly reduced costs and streamlined production, delivering product excellence.
linkedin.com/in/dtskiba

This event is FREE, however, registration is required. Registration: https://bostonenet.org/events/fueling-growth-how-to-build-a-sales-team-to-sell-more/#registration-form

Webinar recording will be available for ENET members only. Learn how to become a member here!

Entrepreneurs' Network – 7:00PM, Tuesday, May 17

Recruiting Board Members and Senior Executives

Where: On-Line Webinar

Details and Registration coming soon!

https://bostonenet.org/events/recruiting-board-members-and-senior-executives/

Event Schedule

7:00 pm ET – Introduction - ENET Chairperson's announcements
7:10 pm ET - eMinute Pitch - Up to 3 Startup pitches
7:25 pm ET - Expert Panel - 4 expert speakers on the night's topic
8:10 pm ET - Q & A - Moderator and Audience Q & A with the speakers
8:30 pm ET – Networking - Panelists will be available afterward for responses to individual questions.

Reliability Society Boston/Providence/New Hampshire – 11:00AM, Wednesday, May 11

Lightning Fast Reliability Engineering

FREE Webinar

Please visit www.ieee.org/bostonrel

A comprehensive reliability engineering program for a new product is a large investment. Not just in dollars, but more importantly, in time. No matter if you are a Fortune 500 company or a startup in your second year, time is always the freight train bearing down on you without mercy. I am going to give you a simple recipe I use for making a highly reliable product when that train horn is blaring and only getting closer. Here is the recipe: HALT, ALT, and RG.

This Webinar is to be delivered virtually. At registration, you must provide a valid e-mail address to receive the Webinar Session link approximately 15 hours before the event. The link will only be sent to the e-mail address entered with your registration. Please double-check for spelling errors. If you haven't received the e-mail as scheduled, please check your spam folder and alternate e-mail accounts before contacting the host.

Email event contact
Michael W. Bannan, Chair
IEEE Boston/Providence/New Hampshire Reliability Chapter
Registration: No Admission Charge
Register: https://events.vtools.ieee.org/event/register/311884

Speaker:
Adam Bahret of Apex Ridge Reliability Consulting
Adam Bahret is the founder of Apex Ridge Reliability Consulting. He is a Mechanical and Electrical Systems Reliability expert with over 25 years of experience in product development across many industries. Adam is an author of two books on reliability engineering "Reliability Culture, How Leaders Build Organizations the Create Reliable Products" Wiley 2021 & "How Reliable is Your Product, 50 Ways to Improve Product Reliability" 2nd Ed 2016.

Adam has worked extensively with reliability program strategy, accelerated testing methods HALT/HASS/QALT/ALT, system reliability measurement and improvement, FMEA, ALT, DOE, Reliability Growth, predictive analysis, education programs, and organizational culture and practices. He has specialized experience in medical, robotics, consumer electronics/appliances, Ion Implantation, and Diesel Systems.

Adam has an MS in Mechanical Engineering from Northeastern University, is an ASQ nationally certified reliability engineer and a senior member of IEEE. More information on Adam and Apex Ridge Reliability can be found at www.apexridge.com

Agenda
11:00 AM - Technical Presentation
11:45 AM - Questions and Answers
12:00 PM - Adjournment

The meeting is open to all. You do not need to belong to the IEEE to attend this event; however, we welcome your consideration of IEEE membership as a career enhancing technical affiliation.

There is no cost to register or attend, but registration is required. Register

Geoscience & Remote Sensing Society – 6:00PM, Wednesday, May 11

Sensing Air Pollution from Space: Detecting smog-forming Chemistry

Place: Remote - Zoom Meeting
Speaker: Prof. Arlene Fiore, MIT, EAPS

Registration: https://events.vtools.ieee.org/m/311194

Controlling ground-level ozone smog has proven to be a persistent challenge in many U.S. air quality jurisdictions. Ozone is a secondary air pollutant that forms through atmospheric chemistry and depends non-linearly on precursor emissions of nitrogen oxides (NOx) and volatile organic compounds (VOC). The highest concentrations generally occur during the warm season, when ozone production tends to be limited by the availability of NOx, with the exception of some urban areas with high NOx emissions. Implementation of effective emission control programs requires knowledge of the sensitivity of ground-level ozone in a particular metropolitan area to NOx versus VOC emissions. Since the mid-1990s, satellite instruments have retrieved two chemical species (nitrogen dioxide and formaldehyde) that can serve as proxies for these precursor emissions.

Following a brief introduction to the approaches developed to diagnose ozone formation chemistry from space, I will highlight a recent study identifying long-term trends in the ozone formation chemistry in several U.S. cities from satellite products. Finally, I will share some ongoing work connecting space-based and ground-level viewpoints during summer 2018 field campaigns in the New York City and Baltimore/D.C. regions, with an emphasis on changes in ozone sensitivity to its precursor emission on days when the National Ambient Air Quality Standard for ozone is exceeded.

Arlene Fiore recently joined the MIT Department of Earth, Atmospheric, and Planetary Sciences as the first Peter H. Stone & Paola Malanotte Stone Professor, after ten years on the faculty at Lamont-Doherty Earth Observatory in the Department of Earth and Environmental Sciences at Columbia University. Before then, she was a research scientist at the NOAA Geophysical Fluid Dynamics Laboratory in Princeton, NJ. As a member of the NASA Health and Air Quality Applied Sciences Team, she partners with air and health management groups to address emerging needs with applications of satellite and other Earth science datasets. Her group uses models of varying complexity alongside remote sensing and in situ observations to investigate two-way interactions between air pollutants, atmospheric chemistry, and the climate system on scales ranging from hourly and local to global and decadal.

New Hampshire Section - (MTT/AP Societies) - 6:15PM, 10 May

The Space Hauc Cubesat Satellite

In-Person Presentation on Space Hauc CubeSat Satellite

Dr. Supriya Chakrabarti, Director of the Lowell Center for Space Science and Technology (LoCSST) at the University Massachusetts Lowell, will provide an overview of the Space Hauc mission - the CubeSat satellite designed, built, and launched into space by U Mass Lowell science and engineering students. It was launched from the International Space Station on 10/12/2021. The talk will include aspects of its X band phased array communication payload. For additional details contact Elizabeth H. Schenk (herrere@ieee.org) Chair, NH IEEE Microwave Theory & Techniques/Antennas & Propagation Society. This is an In-Person Meeting, free for all but registration is requested.

10 May 2022
06:15 to 07:30 PM EDT
Nashua Public Library
2 Court St., Nashua, NH 03060

Register(https://events.vtools.ieee.org/m/312549)

Introduction to Practical Neural Networks and Deep Learning (Part I)

Web-based Course with live Instructor!

Times & Dates: 9AM - 12:30PM ET, Saturday, October 15

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://neuralnetworks and deeplearning.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 Monday, October 10, 2022

IEEE Members	**$110**
Non-members	**$130**

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

Call for Articles

Now that the Reflector is all electronic, we are expanding the content of the publication. One of the new features we will be adding are technical, professional development, and general interest articles to our members and the local technology community. These will supplement the existing material already in our publication.

Technical submissions should be of reasonable technical depth and include graphics and, if needed, any supporting files. The length is flexible; however, a four to five page limit should be used as a guide. An appropriate guide may be a technical paper in a conference proceeding rather than one in an IEEE journal or transaction.

Professional development or general interest articles should have broad applicability to the engineering community and should not explicitly promote services for which a fee or payment is required. A maximum length of two to three pages would be best.

To ensure quality, technical submissions will be reviewed by the appropriate technical area(s). Professional/interest articles will be reviewed by the Publications Committee for suitability.The author will be notified of the reviewers' decision.

The Reflector is published the first of each month. The target submission deadline for the articles should be five weeks before the issue date (e.g., June 1st issue date; article submission is April 27). This will allow sufficient time for a thorough review and notification to the author.

We are excited about this new feature and hope you are eager to participate!
Submissions should be sent to;
ieeebostonsection@gmail.com

Digital Signal Processing (DSP) for Software Radio

Dates & Times: **Live Workshops: 6:00 - 7:30PM EST; Tuesdays, May 31, June 7, 14, 21, 28**
First Video Release, May 25, 2022, additional videos released weekly in advance of that week's live session!

Speaker: **Dan Boschen**

Location: **Zoom**

LAST NOTICE BEFORE COURSE BEGINS, PLEASE REGISTER NOW!

Course Information will be distributed on Wednesday, May 25, 2022 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 August 28) 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 suf-

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

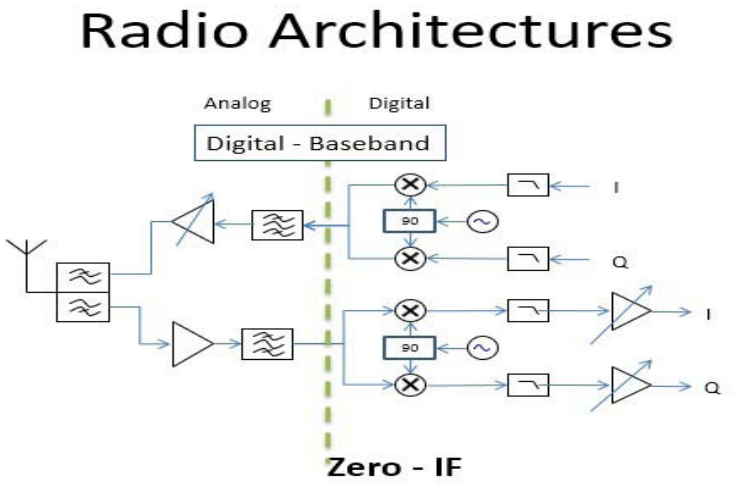
Class 5: RF Signal Impairments, Equalization and Compensation, Linear Feedback Shift Registers

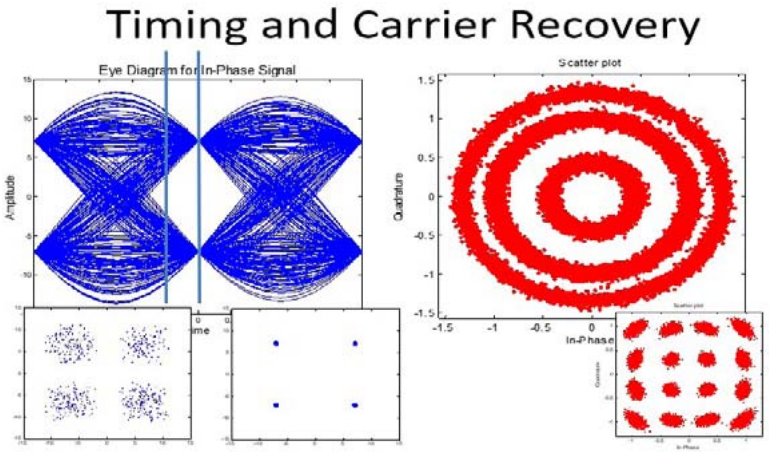
Speaker's Bio:
Dan Boschen has a MS in Communications and Signal Processing from Northeastern University, with over 25 years of experience in system and hardware design for radio transceivers and modems. He has held various positions at Signal Technologies, MITRE, Airvana and Hittite Microwave designing 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.

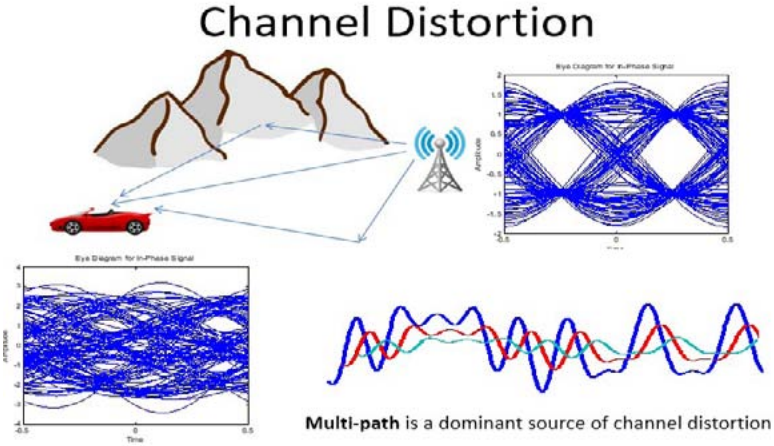
Decision (Run/Cancel) Date for this Course is Friday, May 20, 2022

IEEE Members	**$190**
Non-members	**$210**

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







https://ieeeboston.org/event/dspswradio/?instance_id=3219

Python Applications for Digital Design and Signal Processing

Dates & Times: **Live Workshops: 6:00 - 7:30PM EDT; Tuesdays, Sept. 13, 20, 27, Oct. 4**
First Video Release, September 7, 2022, additional videos released weekly in advance of that week's live session!
Speaker: **Dan Boschen**

Location: **Zoom**

This is a hands-on course combining pre-recorded lectures with live Q&A and workshop sessions in the popular and powerful open-source Python programming language.
Course Information will be distributed on Wednesday, September 7, 2022 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 December 4) after the last live session ends!

New Format with Pre-Recorded Videos: The course format has been updated to release pre-recorded video lectures that students can watch on their own schedule, and an unlimited number of times, prior to live Q&A workshop sessions on Zoom with the instructor. The videos will also be available to the students for viewing for up to two months after the conclusion of the course.

Overview: Dan provides simple, straight-forward navigation through the multiple configurations and options, providing a best-practices approach for quickly getting up to speed using Python for modelling and analysis for applications in signal processing and digital design verification. Students will be using the Anaconda distribution, which combines Python with the most popular data science applications, and Jupyter Notebooks for a rich, interactive experience.

The course begins with basic Python data structures and constructs, including key "Pythonic" concepts, followed by an overview and use of popular packages for scientific computing enabling rapid prototyping for system design.

During the course students will create example designs including a sigma delta converter and direct digital synthesizer both in floating point and fixed point. This will include considerations for cycle and bit accurate models useful for digital design verification (FPGA/ASIC), while bringing forward the signal processing tools for frequency and time domain analysis.

Jupyter Notebooks: This course makes extensive use of Jupyter Notebooks which combines running Python code with interactive plots and graphics for a rich user experience. Jupyter Notebooks is an open-source web-based application (that can be run locally) that allows users to create and share visually appealing documents containing code, graphics, visualizations and interactive plots. Students will be able to interact with the notebook contents and use "take-it-with-you" results for future applications in signal processing.

Target Audience: This course is targeted toward users with little to no prior experience in Python, however familiarity with other modern programming languages and an exposure to object-oriented constructs is very helpful. Students should be comfortable with basic signal processing concepts in the frequency and time domain. Familiarity with Matlab or Octave is not required, but the equivalent operations in Python using the NumPy package will be provided for those students that do currently use Matlab and/or Octave for signal processing applications.

Benefits of Attending / Goals of Course: Attendees will gain an overall appreciation of using Python and quickly get up to speed in best practice use of Python

Topics / Schedule:

Pre-recorded lectures (3 hours each) will be distributed Friday prior to each week's workshop dates. Workshop/ Q&A Sessions are 6 - 7pm on the dates listed below:

Class 1

Topic 1: Intro to Jupyter Notebooks, the Spyder IDE and the course design examples. Core Python constructs.

Class 2

Topic 2: Core Python constructs; iterators, functions, reading writing data files.

Class 3

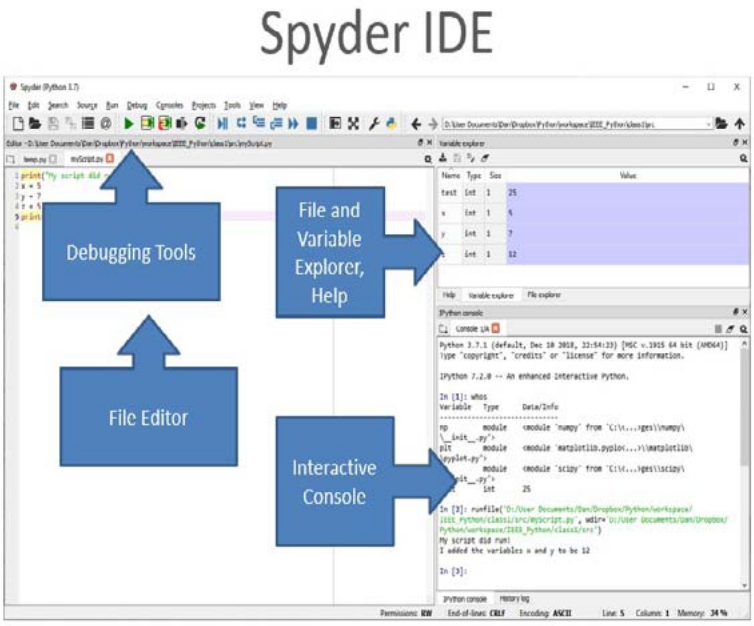
Topic 3: Signal processing simulation with popular packages including NumPy, SciPy, and Matplotlib.

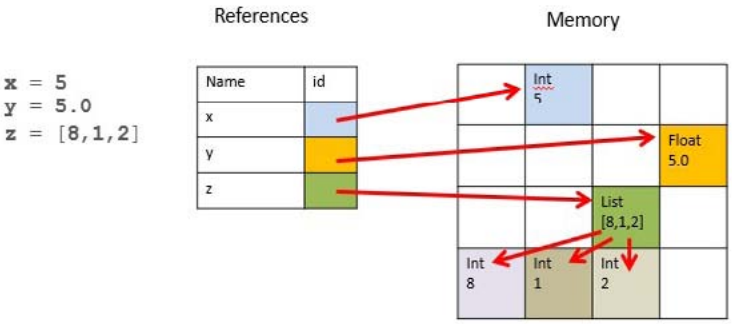
Class 4

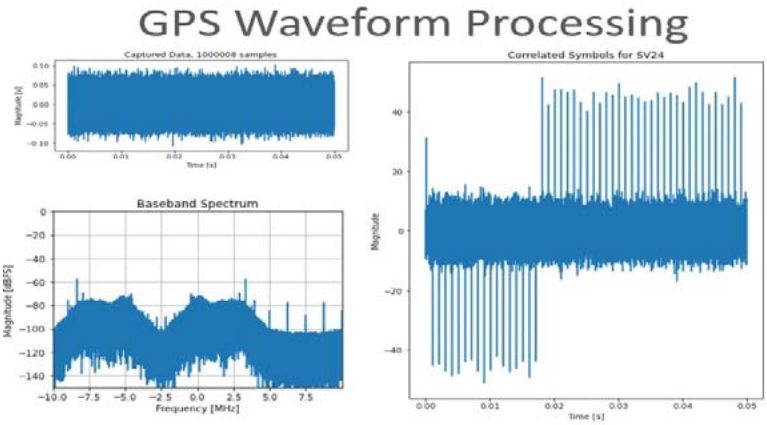
Topic 4: Bit/cycle accurate modelling and analysis using the design examples and simulation packages

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.

For more background information, please view Dan's Linked-In page (https://www.linkedin.com/in/dan-boschen/)







Decision (Run/Cancel) Date for this Course is Friday, September 2, 2022

IEEE Members	**$190**
Non-members	**$210**

https://ieeeboston.org/event/pythonapplications/?instance_id=3224

Submission Date Extended to May 15, 2022

CALL FOR PAPERS

2022 IEEE International Symposium on Phased Array Systems and Technology

Revolutionary Developments in Phased Arrays

IEEE BOSTON SECTION

11–14 October 2022
The Westin Waltham Boston
Waltham, Massachusetts, USA
www.array2022.org

About the Symposium

Phased array systems continue to be a rapidly evolving technology with steady advances motivated by the challenges presented to modern military and commercial applications. This symposium will present the most recent advances in phased array technology and present a unique opportunity for members of the international community to interact with colleagues in the field of Phased Array Systems and Technology.

Note: *there will be a virtual component of the conference to accommodate potential travel restriction or concerns due to COVID19*

Suggested Topics

- 5G Arrays
- Array Design
- Array Measurements
- Array Signal Processing
- Automotive Arrays
- Beamforming & Calibration
- Dual Polarized Arrays
- MIMO Arrays
- Medical Applications
- Metamaterial Phased Arrays
- mmWave and Terahertz
- T/R Modules

Special Sessions

- European Phased-Arrays Systems and Technology — *Michael Brandfass, Hensoldt Sensors GmbH, Alfonso Farina, Leonardo SpA*
- Low Frequency Arrays — *Vito Mecca, MIT Lincoln Laboratory*
- Intelligent Arrays — *Kevin Rudd, Ben Epstein, DARPA*
- SATCOM Arrays — *Ryan Stevenson, Kymeta*
- Weather Arrays — *Kurt Hondl, NOA*
- Wideband 3D-Integrated mmWave Array Tiles — *Tim Hancock, James Wilson, DARPA*

Publication Information

All paper submissions must be in IEEE dual-column format and must be 2 pages (minimum) to 8 pages (maximum) in length including figures, and must be submitted in PDF format via the symposium website. All papers with be peer reviewed.

Authors of papers presented at the conference will be invited to submit an expanded version to the IEEE T-MTT Mini-Special Issue.

Important Dates

- Full paper submission ..... 15 May 2022
- Author notification ..... 10 July 2022
- Author registration deadline ..... 01 Sept 2022

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2022 IEEE Virtual International Symposium on Technologies for Homeland Security

November 14–15, 2022 • information@ieee-hst.org

Call for Papers

We are pleased to announce that the 21st Annual IEEE Symposium on Technologies for Homeland Security (HST '22), will be held November 14–15, 2022 as a virtual event. This symposium will bring together innovators from leading academia, industry, businesses, Homeland Security Centers of Excellence, and government agencies to provide a forum to discuss ideas, concepts, and experimental results.

HST is produced by IEEE with technical and organizational support from IEEE, IEEE Boston Section, IEEE-USA, MIT Lincoln Laboratory, and Raytheon Technologies. This year's event will once again showcase selected technical papers highlighting emerging technologies in the following areas:

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

We are currently seeking technical paper submissions in the above areas. This year, the Homeland Security Technology community has come together to respond and develop technology to address the challenges of COVID-19 and we anticipate HST'22 to reflect that focus. Accordingly, all areas are inclusive of technologies related to the global COVID-19 pandemic. Papers examining the feasibility of transition to practice will also be considered. All areas will cover the following common topics:

- Strategy, threat characterization, operational concepts, and risk analysis;
- Modeling, simulation, experimentation, exercises & training; and
- Testbeds, standards, performance, and evaluations.

Contact Information

For more detailed information on the Call for Papers, as well as Sponsorship and Exhibit Opportunities, visit the website: http://ieee-hst.org/ or email: info@ieee-hst.org. Submissions should be sent to the following website: https://cmt3.research.microsoft.com/HST2022/

Important Dates *(All deadlines are by midnight Eastern Standard Time)*

Paper Extended Abstract Deadline:	June 15, 2022
Paper Acceptance Notification:	August 15, 2022
Final Paper Submission Deadline:	October 15, 2022

Organizing Committee

General Chair:	James Flavin, MIT Lincoln Laboratory
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Cyber Security	Hong Liu, UMass Dartmouth Firas Glaiel, Raytheon Thomas Edgar, Pacific Northwest National Laboratory

www.ieee-hpec.org

A Note from the HPEC Committee:
IEEE HPEC 2022 will be presented as a virtual conference that will allow safe participation and full publication in IEEE Xplore.

The IEEE High Performance Extreme Computing Conference (HPEC '22) will be held in the Greater Boston Area, Massachusetts, USA on 19 – 23 September 2022. The HPEC charter is to be the premier conference in the world on the confluence of HPC and Embedded Computing.

The technical committee seeks new presentations that clearly describe advances in high performance extreme computing technologies, emphasizing one or more of the following topics:

- AI / Machine Learning
- Graph Analytics & Network Science
- Advanced Multicore Software Technologies
- Advanced Processor Architectures
- Automated Design Tools
- Big Data & Distributed Computing
- Big Data Meets Big Compute
- Case Studies & Benchmarking of Applications
- Cloud HPEC
- Computing Technologies for Challenging Form Factors
- ASIC & FPGA Advances
- Quantum and Non-Deterministic Computing
- Data Intensive Computing
- Digital Front Ends
- Fault-Tolerant Computing
- Embedded Cloud Computing
- General Purpose GPU Computing
- High Performance Data Analysis
- Interactive and Real-Time Supercomputing
- Mapping & Scheduling of Parallel & Real-Time Applications
- New Application Frontiers
- Open System Architectures
- Cyber Analysis and Secure Computing

HPEC accepts two types of submissions:	**IMPORTANT DATES**:
1. Full papers (up to 6 pages, references not included. Additional pages can be purchased for $200/page). 2. Extended abstracts (up to 2 pages, references included).	Submission Deadline: **JUL 09, 2022** Notification of Acceptance: **AUG 15, 2022** Camera Ready Deadline: **AUG 31, 2022**

Submissions to HPEC '22 should be **https://cmt3.research.microsoft.com/HPEC2022/**

Preference will be given to papers with strong, quantitative results, demonstrating novel approaches or describing high quality prototypes. Authors of full papers can mark their preference for a poster display or an oral presentation. Presenters who wish to have hardware demonstrations are encouraged to mark their preference for a poster display. Accepted extended abstracts will be displayed as posters. Papers can be declared "student paper" if the first author was a student when doing the presented work and will be eligible for the "IEEE HPEC Best Student Paper Award." Papers should not be anonymized. All paper and extended abstract submissions need to use the approved IEEE templates. Full paper submissions with the highest peer review ratings will be published by IEEE in the official HPEC proceedings available on IEEE eXplore. All other accepted submissions and extended abstracts are published on ieee-hpec.org.

Vendors are encouraged to sign up for vendor booths. This will allow vendors to present their HPEC technologies in an interactive atmosphere suitable for product demonstration and promotion. We welcome input (hpec@ieee-hpec.org) on tutorials, invited talks, special sessions, peer reviewed presentations, and vendor demos. Instructions for submitting will be posted on the conference web site shortly.