

BOSTON



2019 IEEE SYMPOSIUM
ON PHASED ARRAY
SYSTEMS AND
TECHNOLOGY

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2019 MIT/IEEE
UNDERGRADUATE
CONFERENCE

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2019 IEEE SYMPOSIUM
ON TECHNOLOGIES
FOR HOMELAND
SECURITY

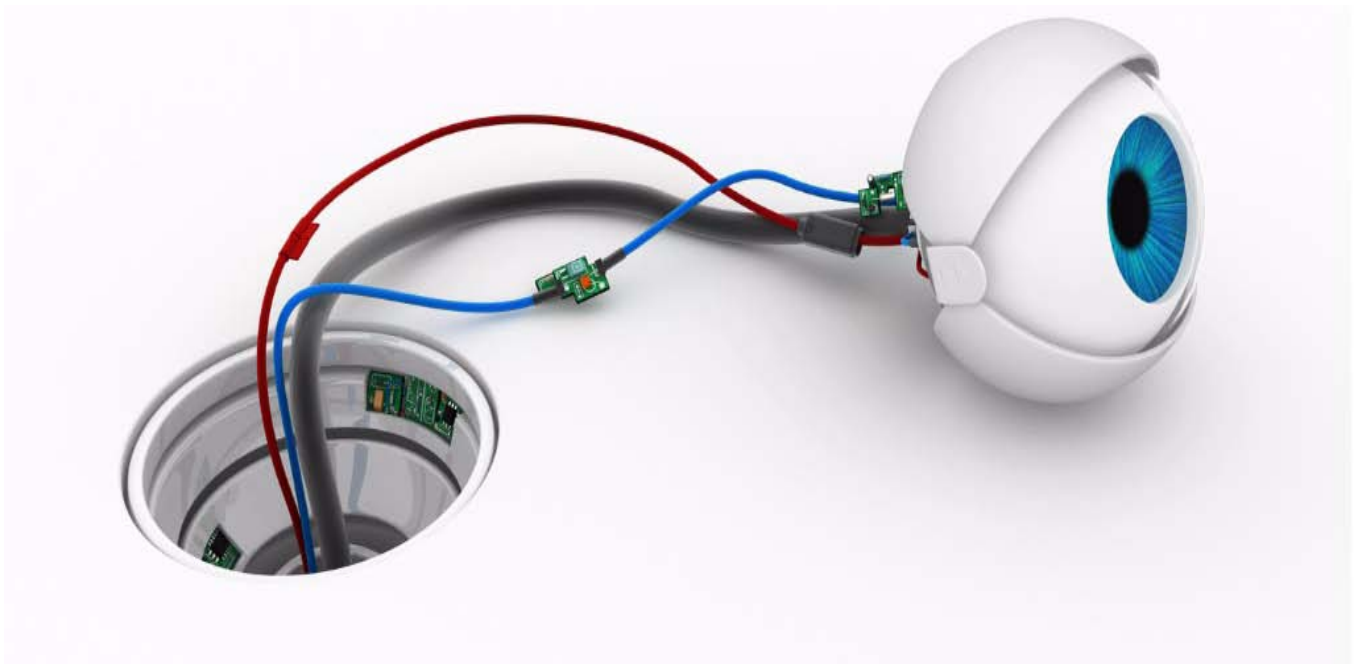
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BLOCKCHAIN
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THE REFLECTOR

ISSUE #10
OCTOBER 2019



**2018 Outstanding Section Membership
Recruitment and Retention Performance**

Boston Section

 **IEEE**
*Advancing Technology
for Humanity*

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Engaging with IEEE – Countless Options

By Denise Griffin, IEEE Region One WIE Coordinator

Some people look at the IEEE website and feel overwhelmed. I don't see it that way – I see it as variety of options and ways in which one can engage with IEEE. It's like a menu at a restaurant – you can pick from so many different options – you can order something you are comfortable with and know you like, or you can try something totally new!

In a time where so much of the information that we absorb is given to us in short little tweets or posts, it can be tempting to expect that we should be able to immediately find exactly the part of the site that we are looking for. I think of my kids as an example – they have no patience. Well, at least when it comes to this sort of thing. If they need to “look something up” for book report, they are not going to the local library, looking through the files to figure out what books they need, sitting down with a pile of books, and reading through them all to figure out the best source of information. They are sitting on their phone, and most likely looking at the first link which pops up in their google search. I try to explain to them that finding what you need might take time, but that is just because there is so much great information and so many options!

When engaging with IEEE, I wanted to find my “thing”. For me at least, I felt like I wanted to pick one one area of interest, and go with it for a while, to see where it led me. In my case, my “thing” was WIE, Women in Engi-

neering. I knew that I COULD have gotten involved in something related to Systems Engineering, since that is where I spent the first 7 years of my career. But I had this interest in meeting more women in the field because I had attended so many work meetings over the years where I was so outnumbered. So I started looking around for meetings and events related to WIE.

Over time, this interest led me to attend meetings with, and start volunteering with – people who had similar interests. They were not all women! But they had an interest in increasing the number of women going into the field, perhaps because they had a daughter, or a niece, or even a wife. In my case, a “little” volunteering eventually turned into larger roles and now I have found my “thing”. It doesn't mean that I won't occasionally attend a non-WIE related event. I certainly do that. But with WIE, I feel like I have found a way to help, to contribute, to make the most of IEEE, based on my particular interests.

I hope that you consider coming to an IEEE WIE meeting sometime. This November we are having our 5th annual IEEE WIE Forum USA East event which is a combined Region 1 and Region 2 event focused on leadership and diversity. I am on the Steering Committee and absolutely love helping to plan it. Here is the link if you are interested: <https://attend.ieee.org/wie-forum-usa-east-2019/>

IEEE Boston Section Online Courses:

(Students have 90 day access to all online, self-paced courses)

Verilog101:Verilog Foundations

Full course description and registration at ,
<http://ieeeeboston.org/verilog-101-verilog-foundations-online-course/>

System Verilog 101: Design Constructs

Full course description and registration at ,
<http://ieeeeboston.org/systemverilog-101-sv101-design-constructs-online-course/>

System Verilog 102: Verification Constructs

Full course description and registration at ,
<http://ieeeeboston.org/systemverilog-102-sv102-verification-constructs-online-course/>

High Performance Project Management

Full course description and registration at ,
<http://ieeeeboston.org/high-performance-project-management-online-course/>

Introduction to Embedded Linux Part I

Full course description and registration at ,
<http://ieeeeboston.org/introduction-to-embedded-linux-part-i-el201-online-course/>

Embedded Linux Optimization - Tools and Techniques

Full course description and registration at ,
<http://ieeeeboston.org/embedded-linux-optimization-tools-techniques-line-course/>

Embedded Linux Board Support Packages and Device Drivers

Full course description and registration at ,
<http://ieeeeboston.org/embedded-linux-bsps-device-drivers-line-course/>

Software Development for Medical Device Manufacturers

Full course description and registration at ,
<http://ieeeeboston.org/software-development-medical-device-manufacturers-line-course/>

Fundamental Mathematics Concepts Relating to Electromagnetics

Full course description and registration at ,
<http://ieeeeboston.org/fundamental-mathematics-concepts-relating-electromagnetics-line-course/>

Reliability Engineering for the Business World

Full course description and registration at ,
<http://ieeeeboston.org/reliability-engineering-business-world-line-course/>

Design Thinking for Today's Technical Work

<http://ieeeeboston.org/design-thinking-technical-work-line-course/>

Fundamentals of Real-Time Operating Systems

<http://ieeeeboston.org/fundamentals-of-real-time-operating-systems-rt201-on-line-course/>

October Chapter Meeting Summary

Entrepreneurs' and Consultants' Networks –

6:30PM, Tuesday, 1 October

How to Find, Select, and Build Your Co-Founding Team

Are you a hacker? Or are you a hustler? Success in startups requires both. Some of the most successful founder teams are two-person teams (Wozniak and Jobs among them) where one founder (the hacker) is more technical, and the other (the hustler) is more business-oriented. The hacker is a problem solver who can make the technology work to meet the needs of customers, and do it efficiently. The hustler is a team builder who can orchestrate marketing, sales, and operations. Sometimes teams have three, four or even more founders, but that can get unwieldy, and decisions often gravitate toward two leaders in the group. Most common are single founders, and they too can be successful (Zuckerberg, for example), but it's important that the single founder quickly build a core team to fill in the gaps that aren't his strengths. **See Page 7**

Boston Blockchain Group – 6:00PM, Tuesday, October 8

Introduction to Ethics of Blockchain Technology

In this MeetUp we will be listening to the IEEE Course titled "Introduction to Ethics of Blockchain Technology" as a group, and discussing the quiz questions at the end. This course is normally \$75 but will be offered for free as a one time viewing for IEEE Blockchain Boston. This module provides an overview of approaches in normative ethics that can be used to evaluate blockchain technologies. Participants will be made familiar with consequentialism, deontology, virtue ethics and care ethics. Furthermore, a simple method for constructing an ethical case study is presented and explained. **See Page 9**

Entrepreneurs' Network - 6:00PM, Tuesday, 15 October

Startup Success is Sales, Marketing, And More

Learn startup basics and complexities. Hear stories of success and failures in an interactive audience forum. We are featuring Jack Derby, Mass High Tech All-Star, co-founder of 9 companies, investor in 54 companies and Professor of Entrepreneurship. The session will be part presentation, part lecture, part Q&A across all facets driving startup success. Bring your questions, your startup challenges, and learn steps required to drive your startup success. Join us for a compelling discussion and some great networking. **See Page 10**

Reliability Society, co-sponsored by NE-ESDA - 5:30PM, 16 October

ESD and Fires and Explosions

Steve Fowler, Fowler Associates, Inc

Many of us understand the hazards of electrostatic discharge to electronics. This talk covers the basics of electrostatic ignition, its sources and methods for prevention. It will also cover the issues of personnel comfort/ dangers around extreme charging situations such as moving webs. Case studies of fires, explosions and personnel injuries will be included. It is intended to present the issues of dangers from ESD. The result of attending this talk should be a safer environment both in the workplace and at home. **See Page 11.**

**Nuclear Plasma Sciences Society, co-sponsored by Kappa Sigma Chapter of IEEE-HKN) -
6:00PM, Thursday, 17 October**

Plasma Based Green Technologies and Some Environmental Issues

Professor Min-Chang Lee, ECE Department, Boston University

Research on plasma-based green technologies and some environmental issues will be discussed. The addressed work is a portion of the integrated research and academic programs established at Boston University for plasma-based technologies, viz., plasma photonics and nanotechnology, plasma medicine, spacecraft propulsion, laser and magnetic plasma fusion as green energy sources. Singled out for discussion in this talk is our research on electromagnetic wave-plasma interactions applicable to fusion and solar powered microwave transmissions systems. Conducted research includes theory, field experiments, and laboratory simulations. **See Page 12.**

Computer Society and GBC/ACM – 7:00PM, Thursday, October 17

The Resurgence of Software Performance Engineering

Charles E. Leiserson, MIT CSAIL

Today, most application developers write code without much regard for how quickly it will run. Moreover, once the code is written, it is rare for it to be reengineered to run faster. But two technology trends of historic proportions are instigating a resurgence in software performance engineering, the art of making code run fast. The first is the emergence of cloud computing, where the economics of renting computation, as opposed to buying it, heightens the utility of application speed. The second is the end of Moore's Law, the 50-year technology trend which has, until recently, relentlessly doubled the number of transistors on a semiconductor chip every two years. **See Page 13.**

IEEE Boston Section Social Media Links:

Twitter: <https://twitter.com/ieeeboston>

Facebook: <https://www.facebook.com/IEEEBoston>

YouTube: <https://www.youtube.com/user/IEEEBostonSection>

Google+: <https://plus.google.com/107894868975229024384/>

LinkedIn: <https://www.linkedin.com/groups/IEEE-Boston-Section-3763694/about>

Entrepreneurs', and Consultants' Networks - 6:30PM, Tuesday, 1 October

How to Find, Select, and Build Your Co-Founding Team

PRE-MEETING DINNER at 5:15 PM (sharp) at Bertucci's, Waltham

Are you a hacker? Or are you a hustler? Success in startups requires both. Some of the most successful founder teams are two-person teams (Wozniak and Jobs among them) where one founder (the hacker) is more technical, and the other (the hustler) is more business-oriented. The hacker is a problem solver who can make the technology work to meet the needs of customers, and do it efficiently. The hustler is a team builder who can orchestrate marketing, sales, and operations. Sometimes teams have three, four or even more founders, but that can get unwieldy, and decisions often gravitate toward two leaders in the group. Most common are single founders, and they too can be successful (Zuckerberg, for example), but it's important that the single founder quickly build a core team to fill in the gaps that aren't his strengths.

In this meeting, our expert panel will take up co-founders and core team issues such as

- How do you find co-founders? How do you recruit a core team?
- As you build and maintain your team, how do you protect your interests? If someone leaves the team, can you get all or most of their stock back? Other issues include relations with past employers, ownership of IP, keeping trade secrets, etc.
- How do you manage the expectations of founders, core team, as well as investors?

Agenda:

6:30-7:30 PM - Registration & networking

7:30-7:40 PM - ENET Chairperson's announcements

7:40-7:55 PM - eMinute - Up to 3 Startup companies' presentations

7:55-8:45 PM - 4 expert speakers on the night's topic

8:45-9:00 PM - Audience / Speakers Q & A

9:00-9:30 PM - Final networking includes meeting presenting speakers

A question and answer session follows the presenta-

tion, and panelists will be available afterward for responses to individual questions. As with every ENET meeting, you will also get the chance to network with the panelists and other meeting attendees, both before the start of the meeting and afterward.

Speakers:



James Chilton, Technology Executive, CIO, Startup Advisor, CIO Cengage Business executive focused on strategy and growth with an extensive background in technology to gain both efficiency and competitive advantage. Uniquely qualified to develop and drive innovation, influence cultural change and deliver Go-To-Market

strategies.



Rob Ciampa, CEO & Co-Founder, WePlayed.

Rob came up through the Italian restaurant and wine business in Boston's historic North End to become an entrepreneur, provocative business speaker, best-selling book author, successful product, sales, and marketing executive, and now CEO of WePlayed, a sports video social platform powered by athletes, fans, and data science. He brought more than eighty products and services to market that generated nearly \$2 billion in worldwide revenue. Rob has degrees in computer science, electrical engineering, and business management; holds patents in data transmission, analytics, and visualization; and thinks crafting garage vermouth is much more difficult than programming in Python.

Moderator and Organizer:



Dave Hall, CEO & Co-Founder DLH Tech Advisors, Salesforce & Startup Consultant, Revenue Marketing, and Business Development
Salesforce & Startup CEO, Consultant, Advisor, Connector, Evangelist, and

Speaker for technology companies looking to implement and optimize the Salesforce product suite. My other favorite topics: golf, tennis, great coffee, and high-end tequila!

eMinute Presentations will be at the start of the meeting. These very short presentations enable young startup entrepreneurs to gain experience in presenting their summary business plans to expert panels and audiences.

Directions: Constant Contact is adjacent to RT 128 / 95 at Exit 28B.

Reservations: Please register at <https://boston-enet.org/event-3461298/Registration>

October 1, 2019; 6:30 PM - 9:30 PM

Location - Constant Contact, Inc., Reservoir Place, 3rd Floor Great Room, 1601 Trapelo Rd., Waltham, MA

Registration

ENET Member Rate – Free; CNET Member - Free

MDG Member – \$15.00

Non-ENET Member Rate – \$20.00; Student – \$10.00
Register at <https://boston-enet.org/event-3461298/>

Registration

CO-SPONSORED by CNET

This meeting is free to ENET members and \$20 for non-members. No reservations are needed for the pre-meeting dinner. To expedite sign-in for the meeting, we ask that everyone -- members as well as non-members -- pre-register online. Pre-registration is available until midnight the day before the meeting. If you cannot pre-register, you are welcome to register at the door. Attendees must arrive before 7:30 pm. Entrance is locked after 7:30 pm.

REFRESHMENTS: Snacks and soft drinks will be served at the meeting

PRE-MEETING DINNER: Join us for a pre-meeting networking dinner (self-pay) at Bertucci's in Waltham before the start of this meeting. Dinner at 5:15 sharp. No reservations required for the pre-meeting dinner.

Call for Articles

Now that the Reflector is all electronic, we are expanding the content the publication. One of the new features we will be adding are technical and professional development articles of interest 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 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 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

Boston Blockchain Group – 6:00PM, Tuesday, October 8

Introduction to Ethics of Blockchain Technology

In this MeetUp we will be listening to the IEEE Course titled “Introduction to Ethics of Blockchain Technology” as a group, and discussing the quiz questions at the end. This course is normally \$75 but will be offered for free as a one time viewing for IEEE Blockchain Boston.

This module provides an overview of approaches in normative ethics that can be used to evaluate blockchain technologies. Participants will be made familiar with consequentialism, deontology, virtue ethics and care ethics. Furthermore, a simple method for constructing an ethical case study is presented and explained. After completing this module, participants will have:

A basic understanding of the main approaches in normative ethics

A basic understanding of ways to apply these approaches to evaluate blockchain technologies

The basic skills for constructing an ethical “case study” involving a blockchain technology

Pizza will be served!

<https://www.meetup.com/Boston-IEEE-Blockchain-Meetup-Group/events/264529064/>

For more information and registration click here: [/](#)

Meeting Location: 105 Massachusetts Ave, Cambridge, MA

How to find us:: Von Hippel Room, MIT Building 13: It is easier to enter the building on Vassar Street through the courtyard and enter Building 13 that way. Go to the 2nd floor and turn right at the elevators.

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 diverse 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 - 6:00PM, Tuesday, 15 October

Startup Success is Sales, Marketing, And More

Learn startup basics and complexities. Hear stories of success and failures in an interactive audience forum. We are featuring Jack Derby, Mass High Tech All-Star, co-founder of 9 companies, investor in 54 companies and Professor of Entrepreneurship. The session will be part presentation, part lecture, part Q&A across all facets driving startup success. Bring your questions, your startup challenges, and learn steps required to drive your startup success.

Join us for a compelling discussion and some great networking.

Agenda:

6:00-7:00 PM - Registration & networking

7:00-7:10 PM - ENET Chairman's announcements

7:10-7:25 PM - eMinute - Up to 3 Startup companies' presentations

7:25-8:30 PM – Jack Derby speaking on the night's topic - Audience participation required

8:30 - 9:00 PM - Final networking includes meeting presenting speakers

Speaker and Moderator



Jack Derby, Director, Tufts Entrepreneurship Center, Cummings Family Professor of Entrepreneurship

Jack is responsible for the Tufts University Entrepreneurship Center where he teaches two courses and manages a highly engaged and active center of professors and students constituting the largest minor on campus. The Center hosts 20+ entrepreneurship events each year culminating in the \$100K New Ventures Competition ranked by Forbes as one of the leading university competitions in the U.S. Jack is passionate about Tufts and its students and has received the Henry and Madeline Fisher Award voted by the students as the most highly ranked teacher on campus.

Prior to forming a management consulting firm, Jack served as CEO of Mayer Electronics, President of CB Sports, President of Litton Industries Medical Systems, CEO of Datamedix and President of Becton Dickinson Medical Systems. For his work as an entrepreneur, co-founding nine companies, Jack was named to Mass High Tech's All-Star Team. He received the Pro Bono

PublicoAward from the Smaller Business Association of New England, the Meritorious Service Award from the Association for Corporate Growth, and the Vincent Fulmer Distinguished Service Award from the MIT Enterprise Forum where he served as Chairman.

He's an active board member in a number of companies and with a long investing history as an early stage investor as General Partner at Kestrel Ventures, Chairman of Common Angels and a General Partner at Converge Ventures.

eMinute Presentations will be at the start of the meeting. These very short presentations enable young startup entrepreneurs to gain experience in presenting their summary business plans to expert panels and audiences.

Date: October 15, 2019, 6:00 PM - 9:00 PM

Registration: ENET Member – Free

Non-ENET Member – \$10.00

Register at <https://boston-enet.org/event-3461301/Registration>

This meeting is free to ENET members and \$10 for non-members. To expedite sign-in for the meeting, we ask that everyone -- members as well as non-members -- pre-register for the meeting online. Pre-registration is available until midnight the day before the meeting. If you cannot pre-register, you are welcome to register at the door.

REFRESHMENTS: Pizza, salad, and soft drinks will be served at this meeting.

LOCATION: Draper, Hill Building, One Hampshire St. Cambridge, MA 02139. The address is One Hampshire St, but the entrance is actually on Broadway. Attendees must arrive at Draper before 7 pm. Entrance is locked after 7 pm.

PUBLIC TRANSPORTATION: Kendall Square stop on the Red Line.

PARKING: Evening discounted parking available at Blue, Yellow, and Green Parking Garages <http://greaterbostonparking.com/kendall.html>. Metered parking is often available after 6 pm.

Reliability Society, co-sponsored by NE-ESDA - 5:30PM, 16 October

ESD and Fires and Explosions

Steve Fowler, Fowler Associates, Inc.



WHERE: NOTE LOCATION CHANGE FOR THIS MEETING; BAE Systems, 65 Spit Brook Rd., Nashua, New Hampshire 03060

Many of us understand the hazards of electrostatic discharge to electronics. This talk covers the basics of electrostatic ignition, its sources and methods for prevention. It will also cover the

issues of personnel comfort/ dangers around extreme charging situations such as moving webs. Case studies of fires, explosions and personnel injuries will be included. It is intended to present the issues of dangers from ESD. The result of attending this talk should be a safer environment both in the workplace and at home.

With over 50 years of electrical engineering experience, 45 years of radiation engineering experience and 35 years of electrostatic engineering experience. Mr. Fowler is considered a leading international expert in electrical engineering, radiation processing technology, radiation safety, electrostatic control and packaging. He attended the University of South Carolina and graduated, cum laude, with a BS in Electrical Engineering. Mr. Fowler served with the United States Air Force during the Vietnam War in electronic communications.

He has published papers, given speeches, seminars and lectures on radiation engineering, radiation safety, packaging, static control and static test methods. He is used by several television programs (such as Inside

Edition and Dateline) as an expert in electrical and radiation engineering.

Mr. Fowler was previously the Electrostatic Plastics Marketing Manager for the Cryovac Division of W.R. Grace and Company. He was also the Manager of Radiation Engineering for Cryovac.

Mr. Fowler is the holder of several patents. He is or has been a member of the ASTM, EIA, ESD Association, AATCC and the Health Physics Society. He is Chairman of the AATCC Static Committee (RA-32) and Past Chairman of the Electronic Industries Association's Packaging ESD Committee (PEPS)

Mr. Fowler holds registrations in North Carolina, South Carolina, New Jersey and Oregon to provide radiation consultation and training. He is a NARTE Certified ESD Control Engineer no. ESD-00010-NE, a Registered Radiation Protection Technologist (NRRPT) and a Registered Radiation Safety Officer (IRRSO)

MEETING LOCATION: BAE Systems, 65 Spit Brook Rd, Nashua, NH 03060

The meeting is open to all (IEEE or NE-ESDA membership is not required). There is no cost to register, but registration is required. No walk-ins will be allowed at this event. A free light meal will be available.

Go Directly to the Registration Form
<https://events.vtools.ieee.org/m/203485>

*Nuclear Plasma Sciences Society, co-sponsored by Kappa Sigma Chapter of IEEE-HKN) -
6:00PM, Thursday, 17 October*

Plasma Based Green Technologies and Some Environmental Issues

Speaker: Professor Min-Chang Lee, ECE Department, Boston University

Abstract: Research on plasma-based green technologies and some environmental issues will be discussed. The addressed work is a portion of the integrated research and academic programs established at Boston University for plasma-based technologies, viz., plasma photonics and nanotechnology, plasma medicine, spacecraft propulsion, laser and magnetic plasma fusion as green energy sources. Singled out for discussion in this talk is our research on electromagnetic wave-plasma interactions applicable to fusion and solar powered microwave transmissions systems. Conducted research includes theory, field experiments, and laboratory simulations.

Relevant courses are scheduled during the school year and the summer as well as planned for the IEEE Boston Section as IEEE short courses.

About the Speaker:

Professor Min-Chang Lee has been teaching and conducting research in the Department of Electrical & Computer Engineering at Boston University since 1991. He has developed an integrated educational and research program at Boston University in plasma-based green technologies, including theoretical study, field experiments, and laboratory simulation experiments. Professor Lee is the current Chair of Nuclear and Plasma Science Society (NPSS) in IEEE Boston Section.

Location: PHO 211, Photonics Building, ECE Department, Boston University, 8 St. Mary's Street, Boston, MA 02215

IEEE Boston Section Social Media Links:

Twitter: <https://twitter.com/ieeeboston>

Facebook: <https://www.facebook.com/IEEEBoston>

YouTube: <https://www.youtube.com/user/IEEEBostonSection>

Google+: <https://plus.google.com/107894868975229024384/>

LinkedIn: <https://www.linkedin.com/groups/IEEE-Boston-Section-3763694/about>

Computer Society and GBC/ACM – 7:00PM, Thursday, October 17

The Resurgence of Software Performance Engineering

Charles E. Leiserson, MIT CSAIL

*MIT Room 32-G449 (Kiva)**This talk will be webcast on the MIT CSAIL Youtube channel <http://www.youtube.com/channel/UCYs2iUgk-sAhgoidZwEAimmg/live> beginning at 7pm.*

Today, most application developers write code without much regard for how quickly it will run. Moreover, once the code is written, it is rare for it to be reengineered to run faster. But two technology trends of historic proportions are instigating a resurgence in software performance engineering, the art of making code run fast. The first is the emergence

of cloud computing, where the economics of renting computation, as opposed to buying it, heightens the utility of application speed. The second is the end of Moore's Law, the 50-year technology trend which has, until recently, relentlessly doubled the number of transistors on a semiconductor chip every two years. With the attenuation of this major source of computing performance, application programmers will increasingly find themselves turning to software performance engineering in order to develop innovative products and applications.

Charles E. Leiserson received his B.S. from Yale University in 1975 and his Ph.D. from Carnegie Mellon University in 1981. He joined the faculty of the Massachusetts Institute of Technology in 1981, where he is now the Edwin Sibley Webster Professor in MIT's Electrical Engineering and Computer Science (EECS) Department. He is Associate Director and Chief Operating Officer of the MIT Computer Science and Artificial Intelligence Laboratory (CSAIL), the largest on-campus laboratory at MIT, where he also leads the Supertech research group. He is a Margaret MacVicar Faculty Fellow, the highest recognition at MIT for undergraduate teaching. He is a Fellow of four professional societies

and is a member of the National Academy of Engineering. He has received many Best Paper awards at prestigious conferences, as well as major awards, including the ACM-IEEE Computer Society Ken Kennedy Award, the IEEE Computer Society Taylor L. Booth Education Award, ACM Paris Kanellakis Theory and Practice Award, and the ACM and Hertz Foundation Doctoral Dissertation Awards.

Professor Leiserson's current research centers on software performance engineering – making computer programs run fast by whatever means: algorithms, parallel computing, caching, compilation, processor pipelining, bit tricks, vectorization, etc. His contributions include the Cilk multithreaded programming language and runtime system, which is available today in many open-source and commercial compilers. He founded Cilk Arts, Inc., an MIT spinoff eventually acquired by Intel Corporation. On leave from MIT as Director of System Architecture at Akamai Technologies, he led the engineering team that developed Akamai's worldwide content-distribution network comprising tens of thousands of servers. He led the development of several Cilk-based parallel chess-playing programs, including ...Socrates and Cilkchess, winning numerous prizes in international competition. He designed and led the implementation of the network architecture for Thinking Machines Corporation's Connection Machine Model CM-5, the world's most powerful supercomputer in the early 1990s, which incorporated the universal fat-tree interconnection network he conceived at MIT. Fat-trees are now the preferred interconnect strategy for Infiniband technology. He coauthored the first paper on systolic architectures, invented the retiming method of digital-circuit optimization, and introduced the notion of cache-oblivious algorithms.

An engaging educator, Professor Leiserson developed the MIT undergraduate courses on algorithms, discrete

mathematics for computer science, and software performance engineering. He is well known as a coauthor of *Introduction to Algorithms* (MIT Press), the leading textbook on computer algorithms, now in its third edition, which has sold over 800,000 copies and is one of the most cited publications in all of computer science. His annual workshop on Leadership Skills for Engineering and Science Faculty has educated hundreds of faculty at MIT and around the world in the human issues involved in leading technical teams in academia. He was the founding Workshop Chair for the MIT Undergraduate Practice Opportunities Program (UPOP), which teaches MIT Engineering sophomores how leadership skills can leverage their technical skills in professional environments. He was for many years the head of the computer-science program for the Singapore-MIT Alliance, one of the first distance-education

collaborations. Professor Leiserson has graduated over two dozen Ph.D. students and supervised more than 60 Master's and Bachelor's students.

This joint meeting of the Boston Chapter of the IEEE Computer Society and GBC/ACM will be held in MIT Room 32-G449 (the Kiva conference room on the 4th floor of the Stata Center, building 32 on MIT maps). You can see it on this map of the MIT campus.

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.

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 diverse 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.



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- Dr. Hans Steyskal: A Tribute to his Life and Contributions to Phased Array Systems and Technology

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Mr Robert Salesses

Deputy Assistant Secretary of Defense for Homeland Defense Integration and Defense Support to Civil Authorities

André Hentz,

Deputy Under Secretary (Acting) for Science and Technology, U.S. Department of Homeland Security

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:



Humanitarian Assistance & Disaster Relief



Land/Maritime Borders & Critical Infrastructure Protection



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See IEEE-HST.ORG for more details or [click here](#) to join the 2019 HST mailing list for up-to-date news!



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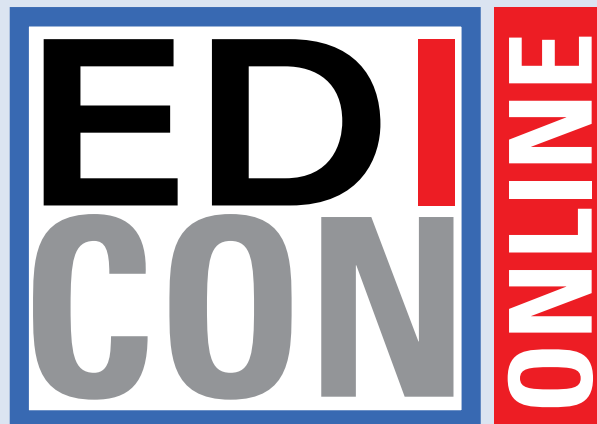
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Last Notice Before Course Begins, Please Register Now!!

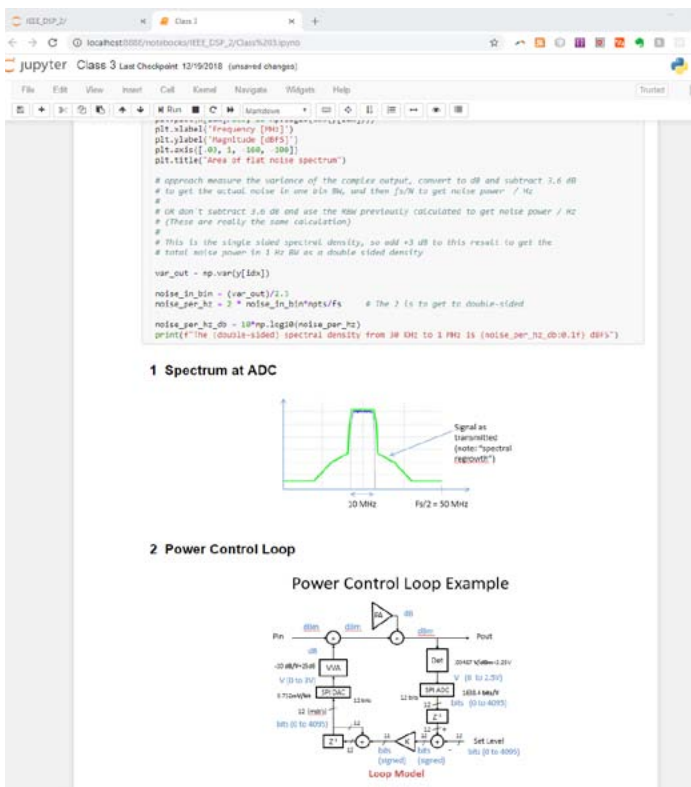
DSP for Software Radio

(13 hours of instruction!)

Time & Date: 6:00 - 9:00PM, Wednesdays, Oct. 30, Nov. 6, 13, 20 & Dec. 4
Location: Crowne Plaza Hotel, 15 Middlesex Canal Park Road, Woburn, MA
Speaker: Dan Boschen

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

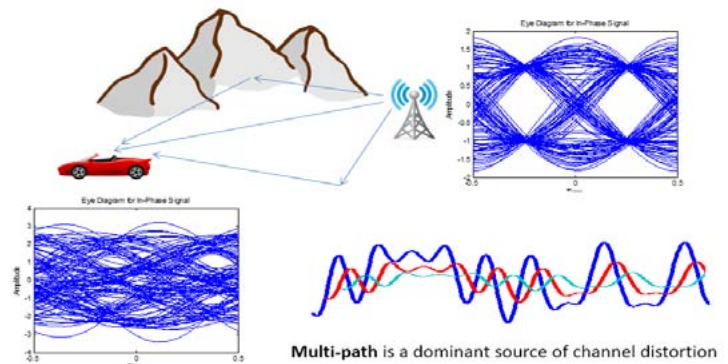


and basic digital filter design principles. The course title has been changed with some minor additions but this is the same course that was previously taught titled “More DSP for Wireless Communications”, with the addition of Python demonstrations using Jupyter Notebooks.

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

Channel Distortion



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

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

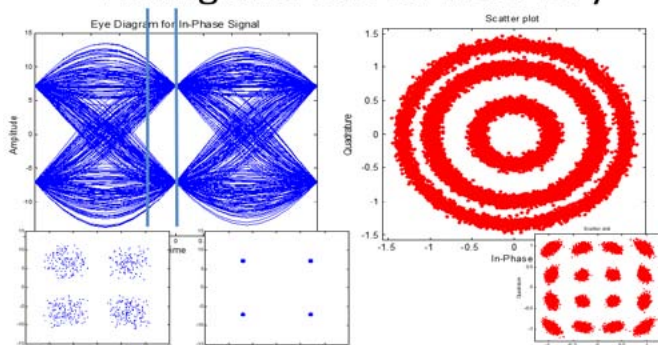
Class 5: RF Signal Impairments, Equalization and Compensation, Linear Feedback Shift Registers

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. 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 Linked-In page at: <http://www.linkedin.com/in/dan-boschen>

Timing and Carrier Recovery



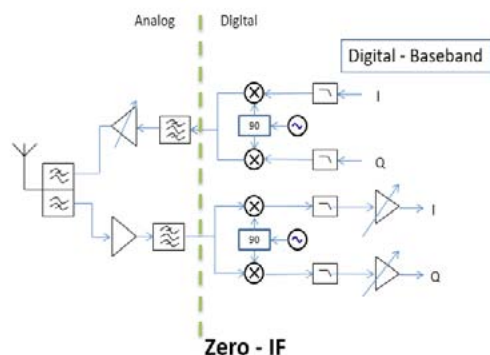
is covered in a separate IEEE Course "Python Applications for Digital Design and Signal Processing".

Students will be encouraged but not required to bring a laptop to class, 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 for wireless communications. Students should have either taken the earlier course "DSP for Wireless Communications" or have been sufficiently exposed to basic signal processing concepts such as Fourier, Laplace,

Radio Architectures



and Z-transforms, Digital filter (FIR/IIR) structures, and representation of complex digital and analog signals in the time and frequency domains. Please contact Dan at boschen@loglin.com if you are uncertain about your background or if you would like more information on the course.

Decision (Run/Cancel) Date for this Courses is Wednesday, Monday, October 21

Payment received by Oct. 17

IEEE Members	\$340
Non-members	\$375

Payment received after Oct. 17

IEEE Members	\$375
Non-members	\$440

Practical RF PCB Design, Wireless Networks, Products and Telecommunications

Time & Date: 9:00AM - 4:30PM, Thursday & Friday, January 9 & 10, 2020
(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.

***notes, lunch and coffee breaks
included with registration***

**Decision (Run/Cancel) Date for this Courses is
Tuesday, December 31, 2019**

Payment received by Dec. 27

IEEE Members \$415

Non-members \$445

Payment received after Dec. 27

IEEE Members \$445

Non-members \$465

<http://ieeeboston.org/practical-rf-pcb-design-wireless-networks-products-telecommunications/>

Call for Articles

Now that the Reflector is all electronic, we are expanding the content the publication. One of the new features we will be adding are technical and professional development articles of interest 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 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 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**