

BOSTON



ROBOTICS & AUTOMATION
SOCIETY CHAPTER

P.16

THE REFLECTOR

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PROF. DEV. TRAINING:
PRACTICAL RF PCB DESIGN,
FOR WIRELESS N/WS, PROD-
UCTS, AND TELECOMM.

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PROFESSIONAL
DEVELOPMENT TRAINING:
INTRODUCTION TO BLOCK-
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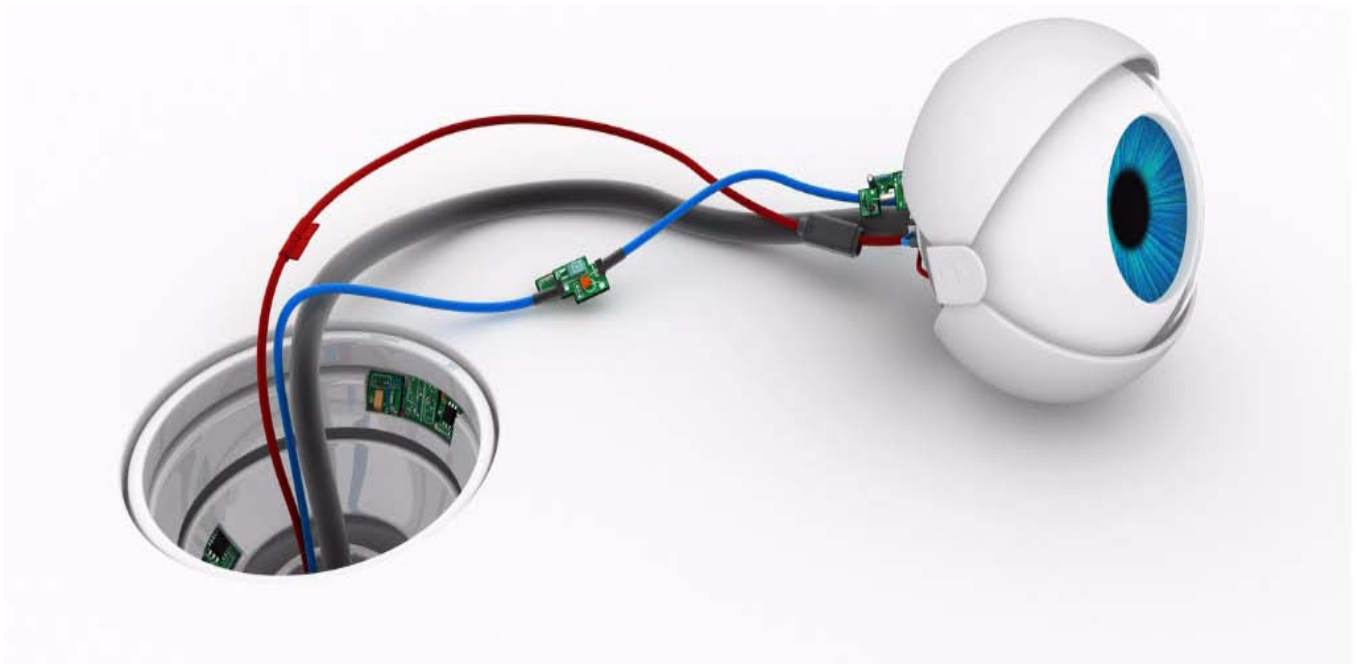


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(Last Notice Before Course Begins. This course will run as scheduled. Please Register Now!!!)



The Last Jedi Master and Artificial Intelligence

by Karen Panetta, Reflector Editor

Recently, I had an interview as an IEEE technical expert with a well known media outlet discussing artificial intelligence and the future of this powerful technology. Many of these interviewers already know the answers to the questions they are asking, but want to present unbiased and balanced perspectives. They also want to know how to explain and communicate technical concepts to their broad audiences.

So, the first thing they do before speaking to you is investigate your credentials. After all, if they are going to use your name and claim their sources are experts, they want to be sure to understand that your background really makes you an expert.

IEEE thoroughly vets all its technical experts before putting forward a person's name to any media outlet, so it was unusual for this particular interviewer to ask me, "How is a computer and electrical engineer qualified to discuss Artificial Intelligence?"

In a follow on question, the interviewer noted that I was trained as a computer architect in a previous life and thus the interviewer saw no relationship to AI. I couldn't help but to laugh out loud.

Can you imagine any engineer doing the same job as the one they did when they first got out of college? Not only would that be boring, but it would surely lead us to the unemployment line very quickly. Unless of course, you are one of "those" tenured professors. Then, you can fester for years harshly judging others and sucking the life out of untenured faculty and torturing students.

If this is the public perception of engineers and engineering professors, it is no wonder young people don't want to pursue engineering.

Back when I graduated with my first degree, I wrote code and performed diagnostics in BLISS. Have you ever even heard of that programming language? I deleted it from my resume quite a while ago and keep updating my resume with the skills that are in demand, like python and java.

I was laughing at the interviewer's question because like most of the general non-engineering population, the public perception is that we are these primitive geek types that are antiquated in our thinking and have "odd" social skills.

This brought about a memory flashback to one of my first industry positions, where my manager refused my request to take the internal training course on a new programming language called the C programming language. He told me that the C language was just a fad and that the Bliss programming language was the only one that would survive. Therefore, why waste time learning anything new?

Thankfully, that logic did not sound logical at all to me, and being a young rebel, I enrolled in a weekend IEEE Boston workshop on C programming taught by one of the most famous authors of a data structures book.

Three months later, the primo-project my team was working on got cancelled. Alas, something new called

CMOS technology had come along. Therefore, old TTL logic boards and computers the size of a small elephant were to be abandoned. Five-hundred engineers were scrambling to find new positions.

Meanwhile, I was recruited by many groups, but selected to work as the junior engineer with the elite group of consulting engineers, where I got to work on cutting edge simulators for the company's new CMOS based computer products. I was one of companies youngest engineers to be promoted so quickly to the next level. I learned so much from the very best. I was training with the Jedi masters of technology.

When I got to academia, the expectation was that I would continue the same type of work that I did when I left industry.

Honestly? Why would I leave a lucrative industry position to one that paid less than half of what I was making to do the same thing? Thankfully, the rebel in me once again ignored the advice. Only this time, the advice I was ignoring was given to me by individuals that never had a real job, where they could be fired, (aka tenured faculty), so what did they know?

I left industry because I wanted the freedom to explore and investigate new uncharted technical territories and be inspired by the youthful minds and the fresh perspectives of inquisitive students. I wanted to break discipline boundaries and embrace the fact that I really wasn't a rebel. I just didn't think like everyone else. For me then and now, it has always been about staying true to discovering innovation and inspiring young people.

My transition from computer architect to AI expert didn't happen overnight. I traversed many disciplines including image and signal processing, chip counterfeiting, encryption and compression, a deep dive into Navier-stokes equations and then on to the internet of things (IoT) and the wonderful world of sensors.

I learned about IoT years before it became the "in thing" from our long time IEEE Boston colleague, Dr.

Ted Kochanski. He would come to our meetings with the coolest gadgets and educate us in the latest and greatest IoT advances and how it would be a technology game changer.

When cloud computing came into being, my diverse background made it a simple transition to understand how it worked and how it could be broken.

As Big Data became the new buzz word to toss around, one of my favorite subjects was observing how people who claim to be "data driven," misuse/misinterpret and erroneously manipulate data to fit their own end game and ignore under-fitting and overfitting data, not to mention ethics.

Along the way, I got some chuckles hearing different definitions and interpretations of what artificial intelligence is and how it works. A few of my favorites include; "It is just a neural network that you throw data at and it tells you something." Then there is the pessimist's definition; "It's a precursor of terminator robots that will destroy humankind." But the winner is; "AI is like the Zoltar fortune telling machine made famous in the Tom Hanks movie Big. You ask it a question and it tells you the answer."

When I hear statements like this, I sometimes feel like the last Jedi Master, whose responsibility it is to train the next order of engineers to conquer the fear and myths about AI, as well as advancing the technology itself. The difference is that our technology weapon of choice won't be light sabers, it will be powerful applications of artificial intelligence benefiting all disciplines and good communication skills.

If you want to learn more about AI, attend one of our IEEE Boston Lecture series and workshops and join our rebel force to conquer the misuse of data and misunderstandings of artificial intelligence.

The views presented here are of the author and do not represent the views of IEEE or the author's employer.

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/>

January Chapter Meeting Summary

Entrepreneur's Network – 6:30PM, Tuesday, January 7

Winning Investors with your Pitch Deck and Presentation

PRE-MEETING DINNER at 5:15 PM (sharp) at Not Your Average Joe's 4C Wayside Rd, Burlington, MA 01803 Are you putting your pitch deck together to find investors? Do you need to update tweak your current deck? Join our panel event on January 7th! You will gain knowledge of best practices for the content-outline to put in and what to remove from your pitch deck to attract and ignite investors. You will learn the best practices of creating and using slides, documents, visuals. According to the latest study of 200 startup pitch decks by DocSend, investors spend an average of 3 minutes and 44 seconds reading one deck. You need to get it right quickly. Our panel of experts will focus on giving the essentials of a memorable pitch deck. Meeting Location: Microsoft Technology Center, 5 Wayside Road, Burlington, MA, 01803. [See Page 8.](#)

Photonics Society – 6:30PM, Thursday, January 9

Fast, Volumetric Imaging with Microscopes

Please Join us on Thursday, January 9th, for the third talk of the 2019-2020 IEEE Photonics Society Boston Chapter's Lecture Series. Prof. Jerome Mertz of Boston University will talk about fast, large-scale microscope imaging. We hope you can make it. We will have pizza dinner prior to the talk. Dinner and networking start at 6:30pm. Talk begins at 7:00pm. Meeting Location: MIT Lincoln Labs, 3 Forbes Road in Lexington, MA. [See Page 10.](#)

Computer Society, GBC/ACM and BostonCHI – 7:00PM, Thursday, January 16

The Four Horsemen of Quantitative UX Metrics - Jared M. Spool (@jmspool)

Informal reception coordinated by BostonCHI at 6:30PM

Quantitative metrics are an under-used tool in most user experience efforts. In this presentation, you'll learn how to turn metrics into an essential storytelling tool that demonstrates the wide-scale effect that better designs can have on your organization. You'll explore 4 different categories of UX metrics: UX Success metrics, Problem-Value metrics, Progress Reporting metrics, and Value Discovery metrics. These four types of metrics help you understand when your projects have met their intention, help you communicate your value to the organization, help you show how far along you are for complex projects, and help you identify innovative new opportunities for your designs. Meeting Location: Microsoft Burlington, 5 Wayside Road Burlington, MA 01803, MA. [See Page 11.](#)

Entrepreneur's Network – 6:00PM, Tuesday, January 21

Seed and Angel Financing for Life Science Companies

Life sciences entrepreneurs derive from a wide variety of geographic and educational backgrounds. Young or old(er), most share a strong passion for translating their ideas and data into commercial products and services to benefit human health. While the work is rewarding, it is a tremendously challenging endeavor, from building the team to meeting regulatory requirements. Often, the most daunting challenge is raising the financing needed to get started. The panelists for tonight's ENET event have deep experience in launching life science startups, from the perspectives of founder and investor, and they are looking forward to sharing their insights with you. Please join us for an engaging discussion and stellar networking. Meeting Location: Draper, Hill Building, One Hampshire Street, Cambridge, MA. [See Page 12.](#)

Reliability Society – 5:30PM, Tuesday, January 21**Advances in Thermal Management with Epoxy Systems**

Epoxy Technology has investigated the mechanism of thermal conductivity in electrically conductive adhesives. Utilizing laser flash testing and SEM cross sections, we determined how silver flake distribution effects thermal conductivity. Cure, interface, and processing play a significant role in thermal management. This reviews a new laser flash sample preparation methodology that provides more accurate measurement of “in-design” thermal resistance. Meeting Location: MIT Lincoln Laboratory, 3 Forbes Rd, Lexington, MA 02421. [See Page 14.](#)

Power & Energy Society and Industry Applications Society – 6:00PM, Tuesday, January 21**Reliability Assessment of Large Diesel Generator Fleet**

PowerSecure (PS), a subsidiary of Southern Company, operates over 1600 microgrids including a large fleet of standby diesel generators. Machines range from 125 to 2800 kW. They perform two missions: standby power after utility failure, and load management when utility is available. Results are derived from uniform records from a distributed data acquisition system, which includes automated data collection, analysis and storage producing a standardized record for all machines and events. Meeting Location: National Grid, 40 Sylvan Road, Waltham, MA 02451 (Rooms: Valley A&B). [See Page 15.](#)

Robotics and Automation Society – 6:00PM, Wednesday, January 29**Responsive Machines for Flexible Factories**

Learn how Veo Robotics is making industrial robots responsive to humans with talks, live demos, and networking with the team. Join IEEE RAS Boston chapter at Veo Robotics' facility in Waltham, MA on January 29 (6-8pm) for presentations and live demos of Veo's latest technology. Patrick Sobalvarro (CEO/Co-founder) will present on the significance of human-machine interaction to manufacturing followed by a deep dive by Clara Vu (VP, Engineering/Co-founder) on the technical challenges that human-machine interaction raises. These challenges bring together a range of engineering capabilities including embedded and computer vision, electrical engineering, web development, automation, and testing. The event will conclude with an opportunity to talk with other members of Veo's team. The event is free to attend and will include light refreshments. Meeting Location: Veo Robotics HQ, 411 Waverley Oaks Road, #107, Waltham, MA 02452. [See Page 16.](#)

Entrepreneur's Network – 6:30PM, Tuesday, January 7

Winning Investors with your Pitch Deck and Presentation

PRE-MEETING DINNER at 5:15 PM (sharp) at Not Your Average Joe's 4C Wayside Rd, Burlington, MA 01803

Are you putting your pitch deck together to find investors?

PRE-MEETING DINNER at 5:15 PM (sharp) at Not Your Average Joe's 4C Wayside Rd, Burlington, MA 01803
Are you putting your pitch deck together to find investors?

Do you need to update tweak your current deck?
Join our panel event on January 7th! You will gain knowledge of best practices for the content-outline to put in and what to remove from your pitch deck to attract and ignite investors. You will learn the best practices of creating and using slides, documents, visuals. According to the latest study of 200 startup pitch decks by DocSend, investors spend an average of 3 minutes and 44 seconds reading one deck. You need to get it right quickly. Our panel of experts will focus on giving the essentials of a memorable pitch deck.

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 - 3 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 follow the presentation, 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:

Dolores Hirschmann An internationally recognized



STRATEGIST & COACH

She helps clients clarify their "idea worth sharing", design their communication strategies, and implement business growth systems. Her clients become speakers and authors and take their message to larger audiences like TEDx and beyond. She works through group coaching, workshops, one on one coaching, as well as public speaking. Dolores is a writer, TEDx Organizer, and participant in TED conferences. She is a CTI certified and ICF accredited coach and has a business degree from the Universidad de San Andres, Argentina. Originally from Buenos Aires, Dolores speaks fluent Spanish, English, and French and lives in Dartmouth, MA with her husband and four children



Chuck Goldstone is a renowned authority on communications and has helped organizations tell better stories and tell their stories better.

He has brought together the art and science of influence, the impact of story, and the power of visuals and mnemonic devices to move audiences to decision. He was founder, CEO, and Chief Creative Officer of Ideaworks/IdeaCorporation of America, Chuck Goldstone Communications, Presen+Suasion™, and CommInLaw™

As communications strategist, author, concept catalyst, and consultant, he has the ear and trust of senior management in some of the planet's most prestigious domestic and global firms. As a consultant, he has helped organizations in nearly every discipline unleash the creative assets of executives.

Chuck has written and directed nearly 1000 programs for clients, reaching millions of viewers in the Americas, Europe, and Asia. He has taught at some of New England's most respected colleges and universities and holds an M.Ed from Boston University. He is author of

a soon-to-be-published book on business communications, story, and organizational persuasion.

For more than ten years, Goldstone was a nationally recognized commentator on Public Radio International's Marketplace, heard on over 400 stations, and is still a popular radio and TV guest and keynote speaker. He is an author, business columnist, storyteller, humorist, author of *This Book Is Not a Toy: Friendly Advice on How to Avoid Death and Other Inconveniences* (St. Martin's Press). His business communications writings have appeared in national magazines and he is a national blogger on business communications and new employee communication.

Moderator:



Susan McKenney, Founder Diversified Sales and Smarketing Institute

Susan McKenney is founder of Diversified Sales Solutions and the Smarketing Institute. She helps small companies and startups achieve sales success through management, performance and planning.

She helps corporations exceed their business goals by: Team building, development, sales enablement and sales process improvement. She most recently launched the Smarketing Institute to address the close relationship and need for Sales and Marketing in small businesses and startups using Local Sales and Marketing Professionals.

She is a former Sales professional with over twenty years of experience across many industries. Her back-

ground includes executive sales management, sales team creation, sales training. Susan has helped build regional, sales organizations, creating direct selling teams. She has developed and conducted "custom" sales and product training programs for small companies and startups. She has consulted many small businesses in MA in the last six years.

Location: Microsoft Technology Center, 5 Wayside Road, Burlington, MA, 01803. Directions: Microsoft Technology Center RT 128 / 95 to Rt 3 South to Wayside Rd.

Registration:

ENET Member Rate - Free; MDG Member – \$15.00

Non-ENET Member Rate – \$20.00; Student – \$10.00

Reservations: Please register at

<https://boston-enet.org/event-3461314/Registration>

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.

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>

Photonics Society – 6:30PM, Thursday, January 9

Fast, Volumetric Imaging with Microscopes

Prof. Jerome Mertz of Boston University

Please Join us on Thursday, January 9th, for the third talk of the 2019-2020 IEEE Photonics Society Boston Chapter's Lecture Series. Prof. Jerome Mertz of Boston University will talk about fast, large-scale microscope imaging. We hope you can make it.

We will have pizza dinner prior to the talk. Dinner and networking start at 6:30pm. Talk begins at 7:00pm. Located at MIT Lincoln Labs, 3 Forbes Road in Lexington, MA.

Fast, volumetric imaging over large scales has been a long-standing challenge in biological microscopy. Camera-based microscopes are typically hampered by the problem of out-of-focus background which undermines image contrast. This background must be reduced, or eliminated, to achieve volumetric imaging. Alternatively, scanning techniques such as confocal and multiphoton microscopy can provide high contrast and high speed, but their generalization to volumetric imaging requires an axial scanning mechanism, which, in general, drastically

reduces speed. I will describe a variety of strategies we have developed to enable fast, high-contrast, volumetric imaging over large length scales. These strategies include targeted-illumination widefield microscopy, multi-z confocal microscopy and reverberation multiphoton microscopy. I will discuss the principles of these strategies and present experimental validations.

Jerome Mertz received an AB in physics from Princeton University in 1984, and a PhD in quantum optics from UC Santa Barbara and the University of Paris VI in 1991. Following postdoctoral studies at the University of Konstanz and at Cornell University, he became a CNRS research director at the Ecole Supérieure de Physique et de Chimie Industrielle in Paris. He is currently a professor of Biomedical Engineering at Boston University. His interests are in the development and applications of novel optical microscopy techniques for biological imaging. He is also author of a textbook entitled *Introduction to Optical Microscopy*, 2nd ed.

More info: <http://www.bostonphotonics.org/seminar.aspx?seminar=318>

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, GBC/ACM and BostonCHI – 7:00PM, Thursday, January 16

The Four Horsemen of Quantitative UX Metrics

Jared M. Spool (@jmspool)



Informal reception coordinated by BostonCHI at 6:30 pm. Microsoft Burlington, 5 Wayside Road Burlington, MA 01803, MA.

Quantitative metrics are an under-used tool in most user experience efforts. In this presentation, you'll learn how to turn metrics into an essential storytelling tool that demonstrates the wide-scale effect that better designs can have on your organization.

You'll explore 4 different categories of UX metrics: UX Success metrics, Problem-Value metrics, Progress Reporting metrics, and Value Discovery metrics. These four types of metrics help you understand when your projects have met their intention, help you communicate your value to the organization, help you show how far along you are for complex projects, and help you identify innovative new opportunities for your designs.

You'll learn how to avoid common mistakes teams make when choosing metrics and get tips on how to get a starter set of metrics. Jared will show you new ways UX design leaders are using metrics to drive a better understanding of how UX design delivers lasting value.

Jared M. Spool is a Maker of Awesomeness at Center Centre - UIE. Center Centre is the school he started with Leslie Jensen-Inman to create industry-ready User Experience Designers. UIE is Center Centre's professional development arm, dedicated to understanding what it takes for organizations to produce competitively great products and services.

In the 43 years he's been in the tech field, he's worked with hundreds of organizations, written two books, pub-

lished hundreds of articles and podcasts, and tours the world speaking to audiences everywhere. When he can, he does his laundry in Andover, Massachusetts.

You'll find his writing at uie.com. You can also follow his adventures on the Twitters at @jmspool, where he tweets daily about UX design, design strategy, design education, and the wondrous customer service habits of the airline industry.

This meeting will be held at Microsoft Burlington, 5 Wayside Road, Burlington, MA. Microsoft Burlington requires a government-issued photo-ID for admission to the building. Once you enter the building, you will need to show your government-issued photo ID to the receptionist. After you have passed the reception desk, go to the right. Walk across the open area, and you will find us on the other side in Adams, Washington, and Jefferson.

We will be taking Jared to dinner at a local restaurant in Burlington after the talk at about 9pm. Attendees are welcome to join Jared for dinner on a self-pay basis.

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.

[Admission is free, but you must register at <http://jaredspooljan2020.eventbrite.com/?aff=ieee>]

For more information contact Peter Mager (p.mager at computer.org)

Entrepreneur's Network – 6:00PM, Tuesday, January 21

Seed And Angel Financing For Life Science Companies

Life sciences entrepreneurs derive from a wide variety of geographic and educational backgrounds. Young or old(er), most share a strong passion for translating their ideas and data into commercial products and services to benefit human health. While the work is rewarding, it is a tremendously challenging endeavor, from building the team to meeting regulatory requirements. Often, the most daunting challenge is raising the financing needed to get started. The panelists for tonight's ENET event have deep experience in launching life science start-ups, from the perspectives of founder and investor, and they are looking forward to sharing their insights with you. Please join us for an engaging discussion and stellar networking.

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6:00-7:00 PM - Registration & networking
 7:00-7:10 PM - ENET Chairperson's announcements
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A question and answer session follow the presentation, 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.

Panel



Maria Berkman, MD, MBA, Director, Head of MedTech, Broadview Ventures, Inc. Maria shares responsibility for all aspects of Broadview's investment activity, from identification and screening of new opportunities, through due diligence, negotiation of deal structure, and portfolio company board involvement.

Prior to joining Broadview Ventures, Maria was a management consultant at Monitor Group, where she specialized in life sciences with a focus on corporate, franchise, and asset-level commercialization strategy and competitive strategic planning for both BioPharma and MedTech clients. Prior to joining Monitor Group, Maria trained within the Partners HealthCare System at Newton Wellesley Hospital in General Surgery. Maria earned an MD from the UCLA School of Medicine, graduating Alpha Omega Alpha with a research focus in cardiothoracic and trauma surgery, and earned an MBA from the Anderson School of Management at UCLA.

In addition to her role at Broadview Ventures, Maria contributes time as a SBIR/STTR grant reviewer for the National Science Foundation and is a Strategic Advisory Board Member for the RAD BioMed Accelerator in Tel Aviv, Israel.



Patrice M. Milos, Ph.D. Co-Founder/President and CEO, Medley Genomics Inc. Dr. Milos co-founded Medley Genomics to deliver novel data analytics for understanding the heterogeneity of complex diseases with an initial focus in oncology. Immediately prior, Patrice was CEO of Claritas Genomics, a pediatric molecular diagnostic company spin-out from Boston Children's Hospital. Dr. Milos was Boston Site Head for Pfizer's Centers of Therapeutic Innovation, establishing academic-medical center partnerships to advance novel therapies to treat human disease. She was also SVP/CSO for Helicos BioSciences in Cambridge, MA, and Executive Director for Pfizer Inc, responsible for leading genomics supporting the Pfizer portfolio in precision medicine. Currently, Dr. Milos chairs the Board of Directors for RI Bio, is on the board of RI Venture Mentoring Services and recently served on the European Commission funded ULTRA-PLACAD External Advisory Board. Patrice is also Senior Advisor to Binx Health and SeqLL. Patrice earned her MS/PhD at Rensselaer Polytechnic Institute with post-doctoral fellowships at Brown and Harvard.



Gitte Pedersen, CEO, Genomic Expression

Gitte Pedersen is a scientist/CEO with a mission to cure cancer. Gitte started Genomic Expression together with her brother, Morten Pedersen, after her parents were diagnosed with cancer

understanding that if they did standard of care none of them would survive. Morten developed a way to sequence RNA in tumor tissue and connect alterations to already approved drugs and clinical studies while Gitte raised raised \$8M, \$6.5M in grants, to clinically validate their technology in 4 types of cancer. The OneRNA™ platform enables a paradigm shift from ONE disease, ONE marker, and ONE drug to ONE patient, MANY markers, and MULTIPLE treatment options that go beyond drugs.

Gitte got Genomic Expression into the top 10 of the XTC, presented for Richard Branson at Necker island, won the Lyfebulb and the EUTop50 award, and presented at the European Parliament. Prior to Genomic Expression, Gitte advised multiple small and medium sized biotech companies as well as the Danish Ministry of Foreign Affairs. Her deal resume is +\$1B. She worked at Novo Nordisk in a number of management positions and brought multiple products to market worldwide. Gitte has a master in Chemical Engineering and a bachelor in International Trade. Gitte recently joined Pipeline Angels and made her first angel investment. She co-founded Female Equity (www.femaleequity.org) which is a network organization for female founders and investors having fun(d) paddle boarding.

Moderator/Organizer



Roger Frechette, Ph.D., Founder and Principal, NEPAssociates

My daily purpose is to exercise an innate drive to transform ideas and projects into life-changing commercial assets. In the life science business, this is the long game, requiring boundless energy and

creativity, coupled with knowledge, experience, and patience.

In my consulting work, I leverage an extensive global network and insights derived from >20 years of experience in business development, calibrated with an extensive science background. My career has encompassed success as a business executive, project/alliance manager and entrepreneur, and also as a scientist, including leadership of discovery/preclinical development teams resulting in a new drug candidate – Paratek Pharmaceuticals NDA's for NUZYRA and SEYSARA NDA's were approved in 2018.

6:00PM - 9:00PM

Location: Draper, Hill Building, One Hampshire Street, Cambridge, MA

Registration: ENET Member – Free

Non-ENET Member – \$10.00

Register at

<https://boston-enet.org/event-3461315/Registration>

This ENET meeting is free to ENET members and \$10 for non-members. To expedite sign-in and order refreshments for the meeting, we ask that everyone -- members as well as non-members -- pre-register for the meeting online. 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.

Reliability Society – 5:30PM, Tuesday, January 21

Advances in Thermal Management with Epoxy Systems

Brian Bruce, Epoxy Technology, Inc.

Epoxy Technology has investigated the mechanism of thermal conductivity in electrically conductive adhesives. Utilizing laser flash testing and SEM cross sections, we determined how silver flake distribution effects thermal conductivity. Cure, interface, and processing play a significant role in thermal management. This reviews a new laser flash sample preparation methodology that provides more accurate measurement of “in-design” thermal resistance.



Brian Bruce is the Manager, Applications Engineering Lab with over 9 years of specialized training and experience in epoxy and UV adhesive applications. He has supported numerous Fortune 500 companies in their manufacturing assembly and bonding needs. He holds a Bachelor's Degree in Chemistry from

Wheaton College, and currently is employed by Epoxy Technology Inc., 14 Fortune Drive, Billerica MA 01821. (978) 667-3805 x253

AGENDA:

- 5:30PM Networking
- 5:45PM Light dinner - pizza, salad and beverages
- 6:00PM Opening and Announcements
- 6:20PM – 7:30PM Technical Presentation and Q&A

Registration: [click here](#)

Copy and paste link <http://ewh.ieee.org/r1/boston/rl/events.html>

MEETING LOCATION: MIT Lincoln Laboratory, 3 Forbes Rd, Lexington, MA, 02421

Directions to 3 Forbes Road, Lexington, MA:

- Take Route 128/I-95 to Exit 30B, Route 2A Westbound.
- At the first traffic light, turn left onto Forbes Road.
- Go to the end of the street.
- At the traffic circle, turn right.
- Go halfway around the traffic circle and turn into the parking lot for MIT Lincoln Laboratory
- The main entrance is straight ahead, shared with “agenus”.

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>

Power & Energy Society and Industry Applications Society – 6:00PM, Tuesday, January 21

Reliability Assessment of Large Diesel Generator Fleet

Neal Dowling, MTechnology, Inc.

PowerSecure (PS), a subsidiary of Southern Company, operates over 1600 microgrids including a large fleet of standby diesel generators. Machines range from 125 to 2800 kW. They perform two missions: standby power after utility failure, and load management when utility is available. Results are derived from uniform records from a distributed data acquisition system, which includes automated data collection, analysis and storage producing a standardized record for all machines and events.

Our analysis expresses reliability as experienced by customers. The fleet is heterogenous with machines from over a dozen manufacturers and many power ratings. Machine reliability was consistent across brands, and there is no significant difference in reliability for different size machines. High quality data enables reliability growth management practices. The fleet reliability for outage demands of all durations increased from 95% in 2011 to 98% in 2014-18.

Analysis of failures' arrival times shows that failure rate is strongly dependent on mission duration. Failure rates after 14 hours are approximately 1% of the value for the first 30 minutes of operation. This has important implications for designing systems to meet specified reliability targets, and in interpreting and comparing results from fleets with different mission durations.



Neal Dowling is Senior Engineer at MTechnology, Inc. MTechnology has performed PRA studies for clients worldwide, including data center designers, electric utilities, financial services firms, hospitals, medical facilities, owner/operators of mission critical facilities, and manufacturers serving the 7x24 uptime industry.

Neal is a Life Senior Member of the IEEE and Vice Chair of the IEEE 3006 Working Group.

A graduate of the Massachusetts Institute of Technology (SB 1974, SM 1979), he also has an extensive background in medical device development.

Time: Refreshments start at 6:00PM, talk commences at 6:30PM

Location: National Grid, 40 Sylvan Road, Waltham, MA 02451 (Rooms: Valley A&B)

Free and Open to the Public; RSVP is appreciated. Visit the IEEE PES Boston Chapter website for further details

If you have any questions, please contact Amsa (781-907-3564), Ozgur (765-543-9172)

Robotics and Automation Society – 6:00PM, Wednesday, January 29

Responsive Machines for Flexible Factories

Learn how Veo Robotics is making industrial robots responsive to humans with talks, live demos, and networking with the team.

Patrick Sobalvarro, Co-founder, CEO, Veo Robotics

Clara Vu, Co-founder, VP of Engineering, Veo Robotics

Registration is required.

Schedule:

Presentation by Patrick Sobalvarro, CEO and Co-founder: Introduction to Veo - 6:00 - 6:15pm

Presentation by Clara Vu, VP of Engineering and Co-founder: Veo's Technology - 6:15 - 6:45pm

Q&A - 6:45PM-7:00pm

FreeMove Demo – 7:00PM - 7:10PM

Additional Q&A - 7:10PM - 7:25PM

Social - 7:25PM – 8:00PM (with 8:30 as soft ending)

Join IEEE RAS Boston chapter at Veo Robotics' facility in Waltham, MA on January 29 (6-8pm) for presentations and live demos of Veo's latest technology. Patrick Sobalvarro (CEO/Co-founder) will present on the significance of human-machine interaction to manufacturing followed by a deep dive by Clara Vu (VP, Engineering/Co-founder) on the technical challenges that human-machine interaction raises. These challenges bring together a range of engineering capabilities including embedded and computer vision, electrical engineering, web development, automation, and testing. The event will conclude with an opportunity to talk with other members of Veo's team. The event is free to attend and will include light refreshments.

Veo Robotics is a pioneer in industrial automation, building technology that allows for efficient and safe human-machine interaction. Their mission is to enable industrial robots to work safely and efficiently alongside people to make manufacturing processes more flexible, unlocking new methods of production.

Patrick Sobalvarro, Co-founder and CEO:

Patrick Sobalvarro is the co-founder and CEO of Veo Robotics, a company that brings advanced computer



vision and 3D sensing to industrial robots, transforming factories by making machines responsive to humans.

Patrick has more than twenty-five years of experience in computer vision, robotics, and industrial automation. Prior to founding Veo Robotics, Patrick was the first Entrepreneur in Residence at Siemens Venture Capital, focusing on the creation of the vision behind Veo. He also served as the VP of New Growth Platforms for Avery Dennison, building a new business line in RFID-based IoT products, was President of Rethink Robotics, creators of collaborative manufacturing robots, and founded and led the computer vision startup IntelliVid to its acquisition by Tyco International.

Originally trained as a computer scientist, Patrick holds a Ph.D., M.S., and B.S. in Computer Science from the Massachusetts Institute of Technology.



Clara Vu, Co-founder and VP of Engineering:

Clara Vu is the co-founder and VP of Engineering at Veo Robotics, a company that brings advanced computer vision, 3D sensing, and AI to industrial robots, allowing them to work side-by-side with humans in manufacturing processes. Clara leads the engineering team and supports Veo Robotics' product creation

process and strategy.

With over two decades of experience in robotics, Clara has developed multiple products from inception to market. Clara started her career at iRobot programming



interactive toys and the Roomba. Prior to Veo, Clara was co-founder and director of software development for Harvest Automation, the makers of mobile robots for agricultural automation. Before that, Clara was a product management consultant at Rethink Robotics, where she first met Veo co-founder Patrick Sobalvarro.

Clara holds a B.S. in Mathematics from Yale University. Meeting Location: Veo Robotics HQ, 411 Waverley Oaks Rd #107, Waltham, MA 02452

Parking: Veo Robotics is located at 411 Waverley Oaks Road, Ste 107, Waltham, MA 02452. Our main entrance faces Waverley Oaks Road and is a few doors down from Mighty Squirrel. Free parking is available throughout the lot.

robots for oil well exploration. She then moved on to

Please register at:

<https://www.eventbrite.com/e/ieee-robotics-and-automation-society-event-veo-robotics-tickets-86133484571>

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:
ieebostonsection@gmail.com

DSP for Software Radio

(13 hours of instruction!)

Time & Date: 6:00 - 9:00PM, May/June timeframe, look for exact dates in the February issue and our website.

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

Speaker: Dan Boschen

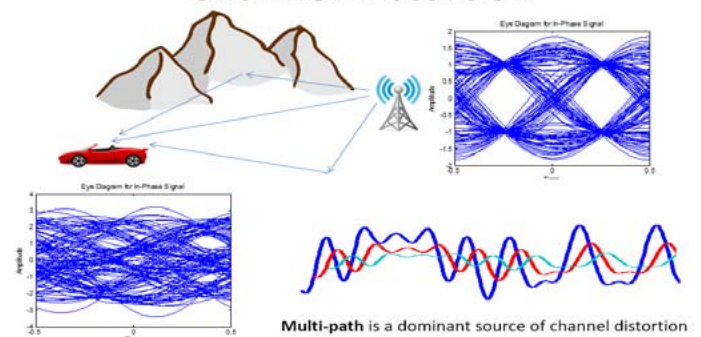
Course Summary

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.

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

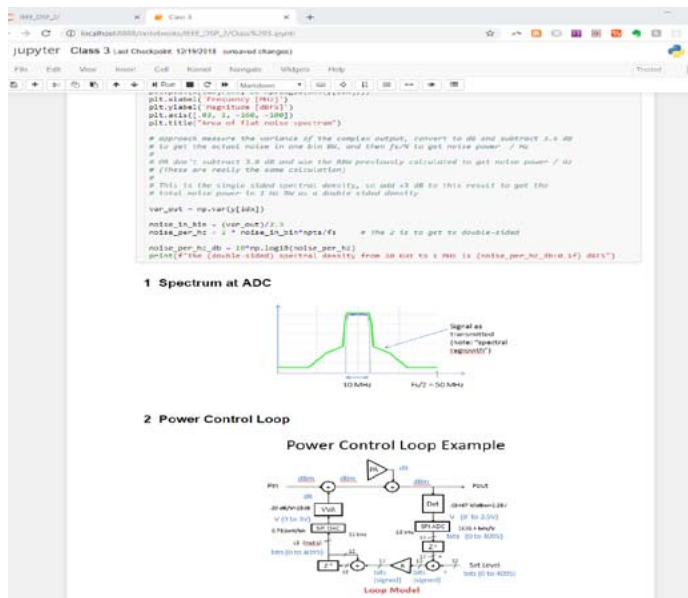
Channel Distortion



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!

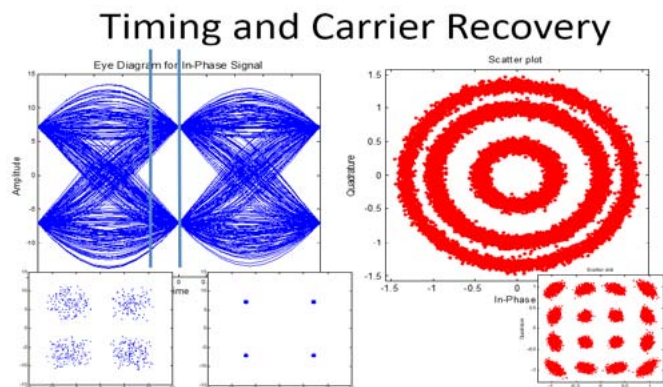
This long-running IEEE Course has been updated to include Jupyter Notebooks which incorporates graphics together with Python simulation code to provide a “take-it-with-you” interactive user experience. No knowledge of Python is required but the notebooks will provide a basic framework for proceeding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



This course brings together core DSP concepts to address signal processing challenges encountered in radios and modems for modern wireless communications.

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

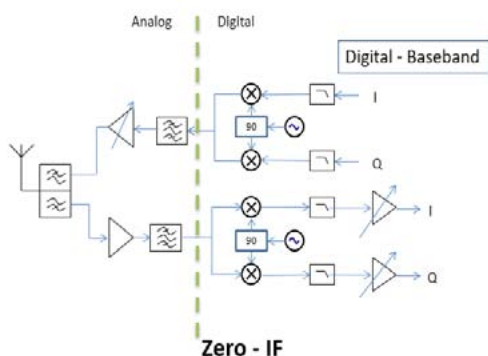
Students will be encouraged but not required to bring a laptop to class, and all set-up information for installation will be provided prior to the start of class.



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, 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.

Radio Architectures



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>

Decision (Run/Cancel) Date for this Courses is TBD

Payment received by TBD

IEEE Members \$340

Non-members \$375

Payment received after TBD

IEEE Members \$375

Non-members \$415

DSP for Wireless Communications

(13 hours of instruction!)

Time & Date: 6:00 - 9:00PM, March/April timeframe , look for exact dates in the February issue and our website.

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

Speaker: Dan Boschen

Course Summary:

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

Now with Jupyter Notebooks!

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

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

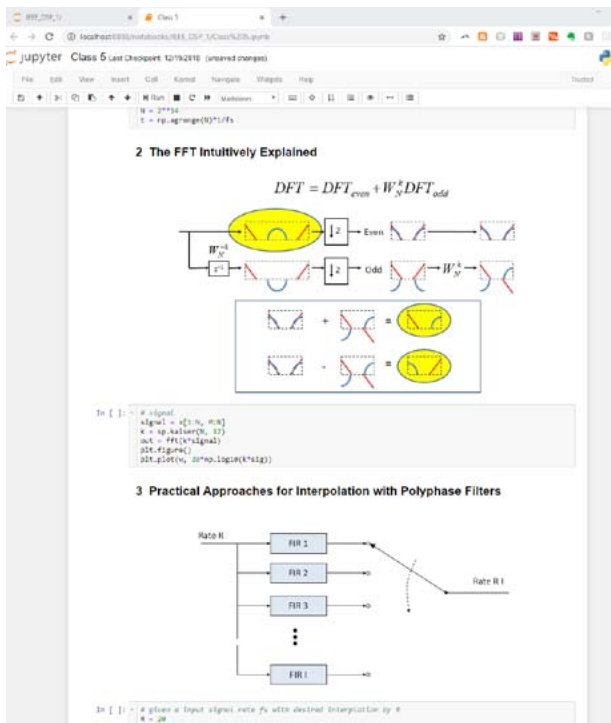
Students will be encouraged but not required to bring a laptop to class, and all set-up information for installation will be provided prior to the start of class.

Target Audience:

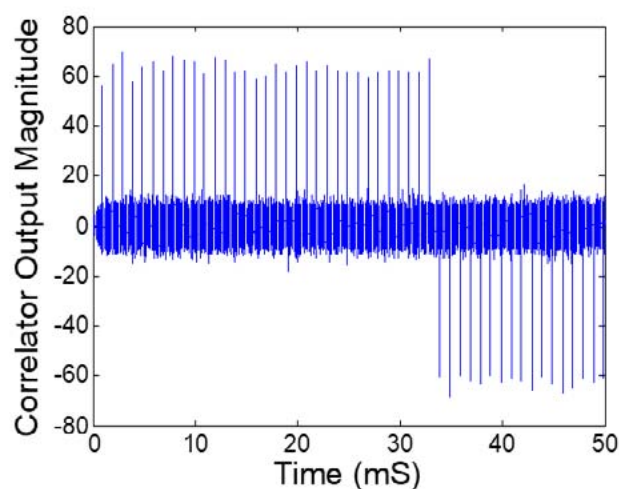
All engineers involved in or interested in signal processing applications. Engineers with significant experience with DSP will also appreciate this opportunity for an in-depth review of the fundamental DSP concepts from a different perspective than that given in a traditional introductory DSP course.

Benefits of Attending/ Goals of Course:

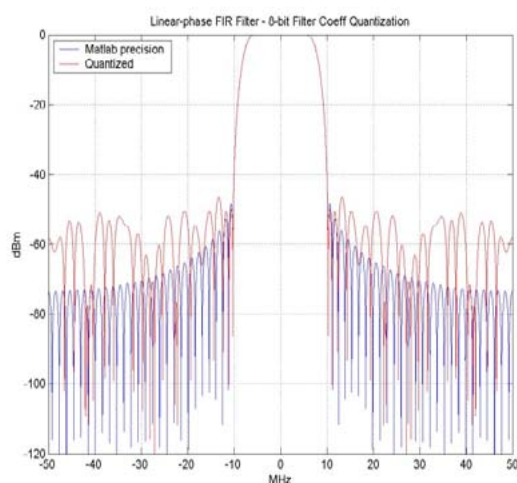
Attendees will build a stronger intuitive understanding of the fundamental signal processing concepts involved with digital filtering and mixed signal analog and digital design. With this, attendees will be able to implement more creative and efficient signal processing architectures in both the analog and digital domains.



Sliding Correlation



Linear Phase FIR Filter (8-bit quantized filter coefficients)



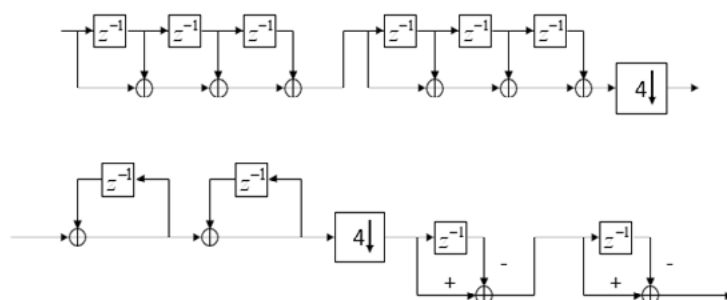
Class 4: Windowing, Digital Filter Design, Fixed Point vs Floating Point

Class 5: Fast Fourier Transform, Multi-rate Signal Processing, Multi-rate Filters

Speaker's Bio:

Dan Boschen has a MS in Communications and Signal Processing from Northeastern University, with over 25 years of experience in system and hardware design for radio transceivers and modems. He has held various positions at Signal Technologies, MITRE, Airvana and Hittite Microwave designing and developing transceiver hardware from baseband to antenna for wireless communications systems. Dan is currently at Microchip (formerly Microsemi and Symmetricom) leading design efforts for advanced frequency and time solutions.

Multi-stage CIC



Topics / Schedule:

Class 1: Correlation, Fourier Transform, Laplace Transform

Class 2: Sampling and A/D Conversion, Z –transform, D/A Conversion

Class 3: IIR and FIR Digital filters, Direct Fourier Transform

Decision (Run/Cancel) Date for this Courses is TBD

Payment received by TBD

IEEE Members \$350

Non-members \$385

Payment received after TBD

IEEE Members \$385

Non-members \$420

<http://ieeeboston.org/%20digital-signal-processing-dsp-wireless-communications/>

Python Applications for Digital Design and Signal Processing

(14.5 hours of instruction!)

Time & Date: 8:30AM - 5:00PM, Monday & Tuesday, March 16 & 17
Location: Crowne Plaza Hotel, 15 Middlesex Canal Park Road, Woburn, MA
Speaker: Dan Boschen

Course Summary

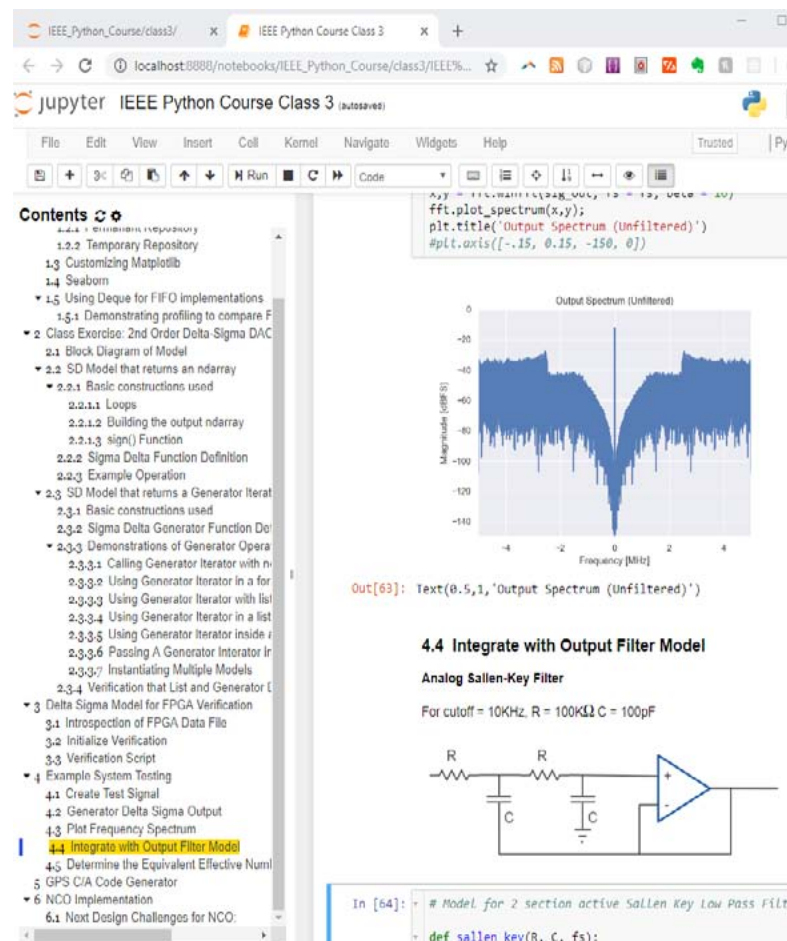
This is a bring-your-own laptop, hands-on course in the popular and powerful open source Python programming language.

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 solving signal processing challenges. Students will be using the Anaconda distribution, which combines Python with the most popular data science applications, and the 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.

Once a basic working knowledge of the language is established, 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.

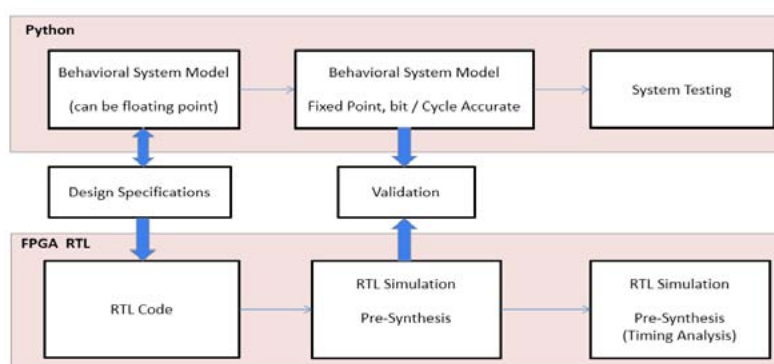


Target Audience: This course is targeted toward users with little to no prior experience in Python, however familiarity with other modern programming languages and an exposure to object-oriented constructs is very helpful. Students should be comfortable with basic signal processing concepts in the frequency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

A laptop (Mac or PC) preconfigured with Anaconda is required; the specific installation instructions will be emailed to students prior to the start of class.

Biography: 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 Symmettricom) leading design efforts for advanced frequency and time solutions.

Python for Verification



For more background information, please view Dan's Linked-In page.

Course Schedule and Topics

Thursday, March 19

8am-8:30am Registration/sign-in, coffee

8:30am-10am - Intro to Jupyter Notebooks, the Spyder IDE and the course design examples including Delta Sigma Converters, GPS Code Generators, and Numerically Controlled Oscillators. Core Python constructs.

15 minute break

10:15am-12:00 pm - Intro to Jupyter Notebooks, continued

45 minute lunch

12:45pm-2:45pm - Core Python constructs, functions, reading writing data files.

15 minute break

3:00pm-5:00pm Core Python constructs, functions, reading writing data files, continued.

Friday, March 20

8:30am-10am - Signal processing simulation with popular packages including NumPy, SciPy, and Matplotlib.

15 minute break

10:15am-12:00 pm Signal processing simulation with popular packages including NumPy, SciPy, and Matplotlib, continued.

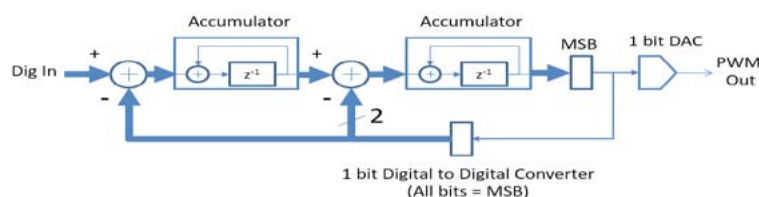
45 minute lunch

12:45pm-2:45pm - Bit/cycle accurate modelling and analysis using the design examples and simulation packages

15 minute break

3:00pm-5:00pm - Bit/cycle accurate modelling and analysis using the design examples and simulation packages, continued, Final questions.

2nd Order Delta Sigma DAC



notes, lunch and coffee breaks included with registration

Decision (Run/Cancel) Date for this Courses is Monday, March 9

Payment received by March 5

IEEE Members \$450

Non-members \$495

Payment received after March 5

IEEE Members \$495

Non-members \$535

<http://ieeeboston.org/%20python-for-signal-processing/>

Practical Antenna Design for Wireless Products

Time & Date: 9:00AM - 4:30PM, Thursday, & Friday, March 5 & 6, 2020

Speaker: Henry Lau, Lexiwave Technology

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

INTRODUCTION

To stay competitive in today's fast evolving business environment, faster time to market is necessary for wireless communication products. Playing a critical role in determining the communication range of products, RF design, particularly the antenna design, becomes crucial to the success of the introduction of new wireless products. Competence in advanced antenna designs can definitely strengthen the competitive edge of RF product design or manufacturing companies.

COURSE OBJECTIVES

This 2-day course aims to provide participants with technical insights on the vital aspects of antenna design from a practical and industrial perspective. It covers the fundamental antenna concepts and definitions, specifications and performance of different types of commonly-used and advanced antennas in RF products. Simulation tools will be introduced and discussed. Practical implementation strategies in RF products for optimum antenna performance will also be presented.

A complimentary book - 'Practical Antenna Design for Wireless Products', authored by the Speaker, will be distributed to each participant.

WHO SHOULD ATTEND

Antenna designers, RF designers, wireless product designers, field application engineers, business development engineers and managers, design managers, and related professionals.

COURSE CONTENT

Day 1 (5 March)

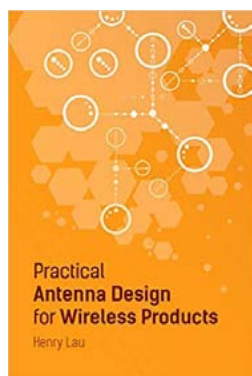
Fundamental Concepts

1. Antenna Fundamental
 - Basic types of Antenna
 - Dipole, Monopole, helical, loop, printed PCB
 - Radiation Mechanism
 - Source of radiation
 - Characteristics of radiation
2. Specification and Performance
 - Radiation pattern
 - Antenna efficiency, aperture
 - Impedance and circuit matching
 - Directivity, gain
 - Friis Transmission Equation
3. Antenna Elements
 - Dipole antenna
 - Monopole antenna
 - Multi-band antenna
 - Miniature chip type antenna
 - Loop antenna

Day 2 (6 March)

Advanced Antenna Elements

4. Miniature antenna for portable electronics
 - Patch, inverted-L, inverted-F
 - Meandered line, multi-band
5. CAD Design and Simulation
 - CAD tools
 - Design strategies
 - Limitations



Case studies

Practical implementation strategies

6. How to design good antennas

Understand the requirements

Selection of antenna type, size and geometry

Location and placement

7. Team work with product designers, electronic engineers and mechanical engineers

Why it matters

Case studies on designing good antennas

EXPERTISE

Henry Lau received his M.Sc. and MBA degrees from UK and USA respectively. He has more than 27 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 IoT and wireless solutions company in Hong Kong and US designing and selling RFICs, RF modules, Radar and IoT solutions. He has also been teaching numerous RF-related courses internationally.

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

**Decision (Run/Cancel) Date for this Courses is
Tuesday, February 25, 2020**

Payment received by Feb. 21**IEEE Members \$450****Non-members \$485****Payment received after Feb. 21****IEEE Members \$485****Non-members \$525**

<http://ieeeboston.org/practical-antenna-design-wireless-products/>

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.

Introduction to Blockchain Programming

Time & Date: 9:00AM - 4:00PM, Thursday, February 27, 2020

Speaker: Christine Miyachi, Xerox, Corp.
Ken Miyachi, San Diego Supercomputer Centers BlockLAB

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

Course Summary

This is a part-lecture/ part-bring-your-own laptop, hands-on course in Blockchain programming. Some programming experience is required.

After providing an introduction to Blockchain, we'll review cryptography which is an underlying technology of Blockchain. Then we will dive right into Ethereum, the largest Blockchain platform used today. Then we will work with crypto-zombies - an interactive code school that teaches you to write smart contracts in Solidity through building your own crypto-collectables game. After that we'll introduce tools to use Ethereum.

Target Audience

Engineers and managers of engineers with some programming background who want to understand the mechanics of Blockchain. This is a class with both lecture and hands on exercises.

Goals/benefits of attending

You will understand the basics of blockchain and know the basic tools of programming blockchain.

Outline

1. Blockchain Primer
2. Cryptography - Public and Private Key cryptography
3. Ethereum Basics - programming in ethereum
4. Crypto Zombies Tutorial

5. Ethereum Tools

6. ERC 20 Smart Contract

(<https://www.investopedia.com/news/what-erc20-and-what-does-it-mean-ethereum/>)

7. Intro to HyperLedger

8. HyperLedger Tutorial - Hyperledger Fabric

Prerequisites (in this case, laptop, etc.) A PC running Virtual Box. There will be a Virtual Box environment that will be provided for the class.

Speakers Expertise

Christine Miyachi has almost 30 years of experience working for startups and large corporations. She writes a blog about software architecture: <http://abstractsoftware.blogspot.com/>. She is currently a principal systems engineer and architect at Xerox Corporation and holds several patents. She works on Xerox's Extensible Interface Platform which is a software platform upon which developers can use standard web-based tools to create server-based applications that can be configured for the multi-function peripheral's touch-screen user interface.

Miyachi graduated from the University of Rochester with a BS in electrical engineering. She holds two MIT degrees: an MS in technology and policy/electrical engineering and computer science and an MS in engineering and management. Chris is the chair of the IEEE Boston Blockchain group (<https://www.meetup.com/Boston-Blockchain/>)

IEEE-Blockchain-Meetup-Group/). See more about Chris at www.christinemiyaichi.com

Ken has a Computer Science degree from the University of California, San Diego and is currently a Principal Investigator at the San Diego Supercomputer Centers BlockLAB and the Chair for the IEEE San Diego Blockchain Initiative. After working in Natural Language Processing and Blockchain Development he was extremely interested in the potential of decentralized solutions in the compliance and regulatory space. He is the CEO of LedgerSafe. Find more about Ken at <http://www.kenmiyaichi.com>

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

**Decision (Run/Cancel) Date for this Courses is
Tuesday, February 18, 2020**

Payment received by Feb. 14

IEEE Members \$195

Non-members \$225

Payment received after Feb. 14

IEEE Members \$225

Non-members \$255

<http://ieeeboston.org/introduction-to-blockchain-programming/>

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.

**Mark
Your
Calendar!**



Returning Tuesdays in October

4 FOCUSED TRACKS WITH FREE SEMINARS IN:

**Radar/
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WWW.EDICONONLINE.COM

Last Notice Before Course Begins, Please Register Now!!!!

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**