BOSTON

THE REFLECTOR

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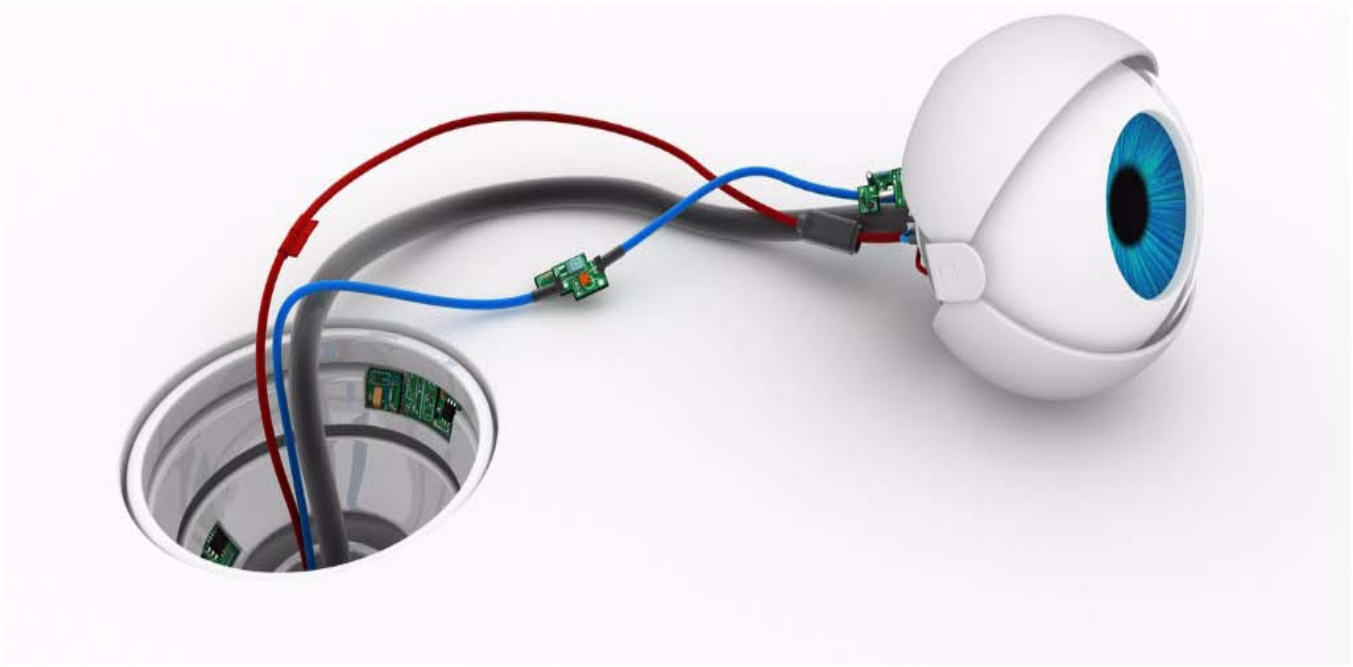

2018 Outstanding Section Membership Recruitment and Retention Performance

Boston Section

IEEE
Advancing Technology for Humanity

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It's Coming!

by Karen Panetta, Reflector Editor

"If a tree falls in the woods, and no one is around to hear it, does it make a sound?"

I remember being asked this question as an undergraduate student in a philosophy class. The class was needed to fulfill a graduation requirement. However, I would have preferred to take another programming or hardware design class to gain more of what I considered "real" engineering skills that would help me find a job.

I responded to the question by saying, "Of course it makes noise!" I then outlined the physics, waves and acoustics principles to support my position. I couldn't help but wonder why I was wasting time pondering ridiculous questions like this, when there were circuits to be built, programs to code and laboratory reports to be written. To a young undergraduate student, philosophy and engineering seemed like totally different universes, never destined to meet. I received a C+ for my response.

Little did I know then, that it was not the "yes/no" type of answer to the question that truly mattered. What was more important to consider was how our brains processed and analyzed questions like these and the introspective journey our minds travel as we solve problems.

Today's successful engineers must be well-rounded and fluent in the arts and humanities. Learning our craft does not just mean learning the technical tools and theories of our trade. It requires we give ourselves permission to allow unconstrained perspectives on problem solving beyond any boundaries.

I learned this lesson well when I traveled to the Czech Republic to speak at their Robotics conference. There, I met world renown philosophers and cognitive science experts. Their research looks at artificial intelligence, robots and human-machine interactions. Everyone may think of the evil "Terminator" type of robot bent on wiping out humans whenever we talk about the future of artificial intelligence and robots, but adding the philosophical point of view brings us back to just being human and how we think.

I am now sorry I didn't pay more attention in that philosophy class. If I understood more about how people think, I would have invested in those "fidget or finger spinner" toys that are all the rage now. They look like someone was smart enough to extract all the ball bearing assemblies out of discarded rollerblades and rebrand them as a toy, resulting in an outrageous profit margin. However, there are much better examples that demonstrate how understanding how the brain "thinks" can benefit humanity.

Recently, someone asked me about the goal of building humanoid robots to assist the elderly or differently abled persons. I can envision a robot to help me do the chores and heavy lifting I can't do or do not want to do, such as taking out the trash, or carrying in groceries up flights of stairs. On the other hand, I do not envision keeping the company

of a robot for companionship. It would be sad if an artificial human will be the only one that will tolerate being in my presence in my old age. If I get that desperate, I may as well revive the faithful "pet rock".

What would be even more useful, would be an intelligent information security agent that screened all those scam calls, emails and door to door solicitors that prey on the elderly. However, when it comes to cognitive science and deep learning, we should be thinking even bigger and beyond boundaries.

Using cognitive science, imagine being able to understand and model emotions, mental stress, drug addictions and memory impairment diseases like Alzheimer's to find cures and treatments. The possibilities are limitless and in this digital deep learning age, all of it can be realized.

The question is, as cognitive brain science and engineering becomes one of today's most attractive and important fields in advancing data science, are you ready for it? Our world needs us to be ready so we can take on the global challenges facing society right now.

Our IEEE Boston Section Computer Society and Computational Intelligence Society are already ahead of the curve on these topics and can help make sure you are ready too. To get started, check out one of the "Rock Star series" at https://www.computer.org/web/rockstars

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.

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

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

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

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

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://ieeeboston.org/verilog-101-verilog-foundations-online-course/

System Verilog 101: Design Constructs
Full course description and registration at ,
http://ieeeboston.org/systemverilog-101-sv101-design-constructs-online-course/

System Verilog 102: Verification Constructs
Full course description and registration at ,
http://ieeeboston.org/systemverilog-102-sv102-verification-constructs-online-course/

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

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

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

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

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

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

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

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

Fundamentals of Real-Time Operating Systems
http://ieeeboston.org/fundamentals-of-real-time-operating-systems-rt201-on-line-course/

December Chapter Meeting Summary

Entrepreneur's Network – 6:30PM, Tuesday, November 5
IP Protection and Legal Steps for Early Stage Companies
PRE-MEETING DINNER at 5:15 PM (sharp) at Bertucci's, Waltham. ENET's panel of legal experts will discuss fundamental legal issues that founders and executives of early stage companies must address to insure vital protections and the building of value. These issues are compounded by changes in technology, commerce, and the law. Meeting Location: Constant Contact, Inc., Reservoir Place, 3rd Floor Great Room, 1601 Trapelo Rd., **Waltham, MA.** See Page 11.

Life Members - 4:00PM, Wednesday, December 4
The Daedalus Project- Enacting the Myth of Human-Powered Flight -
Speaker: Stephen Darr, Dynamic Aerospace.
Stephen Darr will discuss his experiences working on the Daedalus Project, a human-powered flight project that recreated the myth of Daedalus. The Daedalus Project was a student-centered project carried out in the mid-1980s at MIT, the Lincoln Laboratories Flight Facility, NASA Dryden, and between the Greek Islands of Crete and Santorini. Meeting Location: MIT Lincoln Laboratory, 244 Wood Street., Lexington, MA at 4:00 PM, in the Main Cafeteria. See Page 13.

Communications Society – 7:00PM, Thursday, December 5
Key Enablers and Obstacles to a Successful 5G Deployment - Speaker: Mark Watts
This meeting is preceded by dinner with our guest speaker at Bertucci's, 475 Winter St, Waltham, MA at 5:30 PM. 5G provides an opportunity to change the way people use wireless networks, much like what 4G did with greater wireless throughput. In addition to throughput, 5G provides for additional features such as higher reliability, lower latencies and a multitude of IOT applications. The deployment comes with various obstacles preventing a successful and rapid deployment. Higher frequency bands (mmWave) reduce coverage but conversely increase capacities. Reduced coverage drives nodal density which is the key challenge for a provider. 5G in mid-band and low band deployments are tied to their own set of distinct challenges. Meeting Location: Verizon Technology Center, 60 Sylvan Rd., Waltham, MA 02451. See Page 14.

Reliability Society - 5:30PM, Wednesday, December 11
"2D & 3D Printing; Changing Form Factors in Microwave Electronics" - Dr. Craig Armiento
Applications such as the Internet of Things (IoT), flexible radars and 5G telecommunications will require new electronic form factors in the microwave and millimeter frequency domains. These applications may require electronics that are flexible, conformable, wearable or embedded in 3D objects. Printed electronics (PE) is an additive manufacturing (AM) approach that prints electronic materials to fabricate subsystems directly from CAD files. Meeting Location: MIT Lincoln Laboratory, 3 Forbes Road, Lexington, MA. See Page 15.

Robotics and Automation Society – 6:00PM, Monday, December 16

Combining Robotics and Machine Intelligence to Enable Advanced Treatment Modalities in The Head and Neck

This talk will describe recent advances in medical robots for ENT applications, and will give an overview of how recent development in robotics and AI can be used to either enhance existing surgical procedures or enable new ones that were not possible until now. Specific examples covered in the talk include transoral laser microsurgery and trans-nasal ear endoscopy. Meeting Location: WPI Seaport, Main Lounge Area, 303 Congress Street FL 1, Boston, MA 02210. See Page 16.

Entrepreneurs' Network – 6:00PM, Tuesday, December 17

How Diversity Helps Start-Up Companies

As a Start-Up, it great to have a singular goal. It is not a good idea for a single mindset. The goal is what every team member needs to focus on, having different perspectives to implement the company's product or service, speed development and create a more robust company. Having a diverse team increases innovation, productivity, performance, and reduces fear. The more diverse your workforce becomes, the larger your talent pool becomes, the larger your company network becomes. At the end of the day. Everything above makes it easier to conduct business. All while setting your company up for global success. Meeting Location: Draper, Hill Building, One Hampshire Street, Cambridge, MA. See Page 17.

Call for Course Speakers/Organizers

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

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

The Boston Section is one of the largest and most technically divers sections of the IEEE. We have over 20 active chapters and affinity groups.

If you have an expertise that you feel might be of interest to our members, please submit that to our online course proposal form on the section's website (www.ieeeboston.org) and click on the course proposal link (direct course proposal form link is **http://ieeeboston.org/course-proposals/** . Alternatively, you may contact the IEEE Boston Section office at ieeebostonsection@gmail.com or 781 245 5405.

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

Patent Basics for Inventors

By Rackham H. Karlsson, Esq.

In our work as patent counsel for clients ranging from solo inventors to large companies, we have found that many inventors have similar questions and concerns. Here, we provide information directed to some of those that tend to arise, particularly in the high tech and software fields. Understanding these concepts can help inventors become more comfortable with the patent process and avoid inadvertent forfeiture of patent rights.

Media reporting exaggerates patent system abuses.

With headlines like "Apple Wants to Patent A Paper Bag," media reporting on patents can make inventors reluctant to participate in a patent system that is often represented as frivolous and subject to abuse. What many – including some technology reporters – do not realize is that significant portions of a patent application merely provide context for the actual invention. Ultimately, the claims at the end of the patent application define the scope of the invention that the applicant actually seeks to patent, and those claims tend to be much narrower than the broad concepts discussed in the specification. In the case of Apple's paper bag (U.S. Patent No. 10,259,616), the claims cover a particular construction of an environmentally friendly paper bag – not the broad concept of a paper bag itself. While abuses do occur, they are not nearly as common as sensationalist headlines might suggest.

An invention doesn't have to be earth-shattering to be patentable.

Many valuable patents represent incremental, but nonetheless patentable, improvements in prior technology. In general, the largest hurdles to patentability tend to be novelty and non-obviousness. A patent claim is "novel" if nobody has conceived of it before. The difference can be very small, as long as there is a difference. However, the patent office might still reject a novel patent claim as "obvious," based on other information that was available at the time of the invention. For example, changing the type of material used in a product might be considered obvious, even if nobody has done it before, if the new material was a known substitute for the original material in similar products. Alternatively, changing the type of material might be considered non-obvious (and therefore patentable), if the substitution was innovative at the time. Inventors should know that what seems obvious to them in retrospect, having the benefit of already being familiar with the invention, might not have been legally obvious at the time of the invention. In addition, some variants of an invention might be considered obvious while others are not. A well-drafted patent application should include enough details and variants to provide fallback positions that are less likely to be considered obvious.

Implementation is not a requirement for patentability.

To seek patent protection, it is not necessary to have actually implemented the invention before filing a patent application. In fact, it is often better to file a patent application prior to implementation, when there is less risk of public disclosure (more on that below). This is true even if there are no immediate plans to develop the invention into a product.

The more information that inventors provide to patent counsel, the better.

While a patent is not intended to protect a specific implementation, it does need to describe the invention in sufficient detail that a "person skilled in the art" would be able to implement it. For that reason, it is very helpful for patent counsel to receive copies of whitepapers, flowcharts, architectural diagrams, hypothetical examples, simulations, models, test data, and other existing documents that describe the invention. In addition, while prior art searches are often not advised, inventors should be prepared to share their knowledge of the state of the art, including competitors, related research, and alternative approaches to the problem being solved. This information can help patent counsel both understand the invention and prepare a patent application at an appropriate level of detail. For that reason, it is better for inventors to err on the side of providing too much information than too little; patent counsel can always

filter out information that they determine is too implementation-specific.

Inventors should avoid making premature public disclosures.

In the United States, public disclosure of an invention starts the clock ticking for filing a patent application within a year. Many other countries are less forgiving and will not allow a patent on any invention that was publicly disclosed before filing the patent application. Obviously, bringing a product to market counts as a public disclosure. However, many other activities can also count as public disclosures. Written materials shared outside of the company (including whitepapers, press releases, grant proposals, and offers for sale), oral presentations, and product testing without a non-disclosure agreement can all qualify as public disclosures that forfeit international patent rights and initiate the one-year grace period for filing in the United States. Even a thesis paper sitting unread in a university library can be considered a public disclosure! Therefore, inventors should be aware of the importance of filing a patent application before sharing information about the invention with anybody outside the company who is not under an NDA.

It takes a long time to get a patent.

Many inventors are unfamiliar with the patent process and wonder how long it will take. They should know that it typically takes more than a year for the patent office to issue a first "office action" (essentially an evaluation of the patent application), which is a rejection in most cases. From there, patent counsel works with the patent office to determine which aspects of the invention, if any, are patentable. On average, it takes more than two years from the filing date for a patent application to reach a final disposition of allowance or abandonment. The time to final disposition depends partly on the technical field of the invention, with some "art units" taking considerably longer than others. In addition, the USPTO offers pilot programs that can help expedite the process in some cases.

Patent counsel does more than drafting the patent application.

Most patent applications are rejected in their initial state. Typically, the patent examiner submits that the patent claims are not allowable in view of one or more prior art references. For software patents, the examiner might also argue that the claims are directed to an ineligible "abstract idea." Therefore, in addition to drafting the patent application, patent counsel is responsible for negotiating with the patent office. Those negotiations might involve arguing that the examiner misapplied the prior art and/or amending the claims to overcome the rejection. In the event of an impasse, patent counsel might appeal the case to the Patent Trial and Appeal Board. While time-consuming, this negotiation process increases the allowance rate substantially. (Patent counsel often also provides services other than patent prosecution, such as freedom-to-operate opinions, invalidity and non-infringement opinions, IP due diligence, and patent litigation.)

Inventor involvement is usually limited after filing.

In addition to how long the patent process takes, inventors often wonder what their involvement will be after the application is filed. For corporate clients, patent counsel typically consults with the company to ensure that any claim amendments continue to align with the company's products and strategic goals. While less common, patent counsel might also consult with the inventor, for example to help distinguish the invention from prior art cited by the patent examiner. However, many inventors are not involved in the patent process after the patent application is filed.

Software inventions are often patentable.

Reports of software patents' death have been greatly exaggerated. In January 2019, the USPTO issued new guidance on determining whether computer-implemented inventions are patent-eligible. The USPTO further clarified that guidance in October 2019. Meanwhile, although the courts have invalidated a number of software patents, they have also upheld others. This new guidance and case law provide a framework for patent prosecution strategies that increase the chances of allowance. Patent eligibility is also a developing area of law, with Congress working on legislation that is expected to further clarify the issue. For a software patent filed today, the legal landscape is likely to be even more concrete by the time it receives its first office action. Thus, the patent system remains a viable and promis-

ing path to protecting a broad range of software-based innovations, from the system layer all the way up to user interfaces.

… and patents provide broader protection for software inventions than copyright.

Many inventors are unfamiliar with the difference between patents and copyrights. In the United States, source code enjoys protections under copyright law, regardless of whether the software is patented. However, a copyright does not prevent another company from coming up with a different implementation of the same concept. In contrast, a software patent typically includes claims that cover (a) a set of operations described at a relatively high functional level, (b) computer-readable media storing instructions for performing the operations, and (c) a computer system or apparatus that performs the operations. Therefore, the claims of a well-drafted software patent provide a scope of protection that is much broader than any specific set of source code.

Rackham H. Karlsson, Esq., Associate at Lando & Anastasi, LLP, is an experienced patent practitioner with significant expertise in software, including programming languages, machine learning, cloud computing, networking, workflow automation, user interfaces, education software, and social media technologies. His strong technical background and prior legal and industry experience enable him to provide practical counsel to L&A's diverse client base. He can be reached at RKarlsson@LALaw.com or 617-395-7060. www.lalaw.com

Call for Articles

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Entrepreneur's Network – 6:30PM, Tuesday, December 3

IP PROTECTION AND LEGAL STEPS FOR EARLY STAGE COMPANIES

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

ENET's panel of legal experts will discuss fundamental legal issues that founders and executives of early stage companies must address to insure vital protections and the building of value. These issues are compounded by changes in technology, commerce, and the law.

- What is the preferred form of entity and where should it be established?
- What is the preferred method to protect the company's Intellectual Property by use of various forms of patent, copyright, trademark, and trade secrets, either alone or in combination?
- How should founders' equity be apportioned through stock options and what restrictions should apply?
- What compensation and benefits should be included in employee agreements including consideration of Non - Disclosure Agreements, the changing environment for Non - Compete Agreements, as well as Assignment of Invention Agreements?
- These issues and their benefits and pitfalls will be discussed and presented with you, the business professional, in mind.

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:

J. Peter Fasse, Principal at Fish & Richardson P.C.
Peter Fasse is a Principal in the Boston office of Fish & Richardson, and has been working at Fish since 1987. Peter has two B.S. degrees from MIT, in Life Sciences and Bioelectrical Engineering. His practice emphasizes client counseling, opinion work, and patent prosecution in a wide variety of technologies, with an emphasis on healthcare, medical devices, and other biomedical fields plus various "green" technologies. Peter helps clients from start-ups to multinationals to develop competitive worldwide patent strategies and to establish solid and defensible patent portfolios. He performs competitive patent analyses, identifies third-party patent risks, and provides patentability and freedom-to-operate opinions. Peter also has experience in opposing and defending patents before the European Patent Office and in U.S. litigation and post-grant proceedings. Peter has experience in various fields including medical therapeutics, diagnostics, devices, imaging, microfluidic systems, RNAi and CRISPR therapeutics, dendritic cell- and DNA- based vaccines, liquid biopsy, engineered AAV systems, next generation sequence analysis, cell culturing and bioprocessing, nanoparticle and vector-based delivery, wind and solar power, optics, and lasers.

Kraig Hitchcock, Gesmer Updegrove LLP
Kraig Hitchcock is a corporate attorney with significant experience representing emerging and established companies. He obtained a B.A. in History in 1996 from Boston College and a J.D. from Boston College Law School in 2002 and he is admitted into the courts of Massachusetts. Kraig advises clients on matters ranging from corporate governance, equity and debt financings, mergers & acquisitions and

general corporate matters. He strives to ensure that every client gets sound advice and practical solutions to the complex decisions they face. Clients turn to Kraig for counsel on shareholder and capitalization matters, equity compensation, financings, employment contracts, corporate governance and customer and vendor agreements. He frequently advises clients on sales and purchases of businesses and minority investment transactions. Prior to joining Gesmer Updegrove, Kraig was a corporate associate at Ropes & Gray LLP in Boston, where his practice focused on corporate transactions, financings, securities work and general corporate matters.

Shawn Foley, Of Counsel, Burns & Levinson

With more than 30 years of experience in the field, Shawn Foley brings refined legal and advocacy skills and technical versatility. His approach to patent procurement is practical, cost effective, distinctly business-oriented and personable. Prior to joining Burns & Levinson, Shawn played an integral role in developing his previous firm's practice in life sciences and pharmaceuticals. A wide spectrum of clients with diverse technologies and business needs have sought his counsel, including major pharmaceutical and personal care companies, medium-sized brand and generic drug companies, start-ups, universities, and entrepreneurs, both in the U.S. and abroad. Shawn began his career as an examiner with the U.S. Patent Office, where he reviewed patent applications during the emergence of the biotechnology field. After an initial 2-year stint with a leading Southeastern IP firm, he gained valuable corporate experience as counsel for a leading diversified chemical company where he worked on a daily basis with management and scientists in both pharmaceuticals and in Ag-Bio. Since joining Burns & Levinson, Shawn has focused on immunotherapy including traditional small molecule-based approaches and more contemporary biological approaches such as CAR-T therapy. Thus, Shawn has experienced many different aspects of the patent system. Shawn is admitted in Massachusetts, New Jersey and North Carolina Bars.

Moderator and Speaker:

Bob Weber, Managing Director, Patent Kinetics, LLC

Bob Weber is an intellectual property professional, inventor, serial entrepreneur, senior executive, and management consultant. Presently, he is Managing Director, Patent Kinetics, LLC, a company that helps entrepreneurs and patent owners build and monetize valuable patent portfolios. Weber is an inventor with 28 issued US patents and a number of foreign counterparts assigned to Intertrust Technologies where he served as SVP Business and Technology Strategy, 1996-1999. The Intertrust portfolio was characterized in the Wall Street Journal as a "once in a generation billion-dollar licensing opportunity." Weber has also been a Principal Consultant at Northeast Consulting Resources, Inc. At NCRI, his consulting practice focused on strategies for information creation, access and distribution; clients included Fortune 50 companies. Weber divides his time between Silicon Valley and Boston. He served on the Advisory Board of the IEEE Boston Entrepreneurs Network ("ENET") at various times between 2004 until June, 2019. Weber has been a member of the Silicon Valley Chapter of the Licensing Executives Society since 2010 and presently serves on the chapter's Board of Directors and Program Committee. Weber also served on the organizing committee for the ConnectedThings2015 and ConnectedThings2016 IoT conferences produced by the MIT Enterprise Forum.

Co-Meeting Organizers:

William R. Byrnes

Bill's legal practice assists entrepreneurial companies with the legal issues they face with a focus on day-to-day commercial issues involving customers, vendors, and other third-party relationships. Bill received his undergraduate degree in English Literature and Creative Writing from Boston University, a J.D. from Suffolk University Law School, and a L.L.M. degree in Taxation from Boston University Law School, Graduate Tax Program. He is also a Boston Entrepreneurs' Network board member.

William Mansfield, Secretary Of Boston ENET

Attorney Mansfield is a patent attorney and is a lawyer in MA & NY; high bar exam scores allowed him to waive into the D.C. Circuit. He won the CALI Award for perfect grades in an IP course, and he has passed the Fundamentals of Engineering Exam covering all types of engineering. He assists clients with corporate and in-

tellectual property law using trademarks, trade dress, copyrights, licensing, patents, trade secret protection, strategic partnerships, and succession planning.
From 2004, he has worked on legal matters & he has counseled entrepreneurs/startups since 2009 thru Mansfield Law. He has worked on patent prosecution, especially business method, business process, electrical, mechanical, telecommunications, and e-commerce patents. He has filed for global IP protection and has a network of foreign IP professionals.

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
MDG Member – $15.00
Non-ENET Member Rate – $20.00
Student – $10.00

Register at
https://boston-enet.org/event-3461307/Registration

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

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.

Life Members – Wednesday, December 4

The Daedalus Project- Enacting the Myth of Human-Powered Flight

Speaker: Stephen Darr, Dynamic Aerospace

Since ancient times, people have been fascinated by the possibility of human flight. In Greek mythology, Daedalus constructed wings of wax and feathers, enabling his human-powered escape flight from imprisonment in Crete to the island of Santorini.

Stephen Darr will discuss his experiences working on the Daedalus Project, a human-powered flight project that recreated the myth of Daedalus. The Daedalus Project was a student-centered project carried out in the mid-1980s at MIT, the Lincoln Laboratories Flight Facility, NASA Dryden, and between the Greek Islands of Crete and Santorini. It involved not only engineering research and development but physiological research, classics research into the myth of Daedalus, and fundraising from individuals, industry, and governments. The Daedalus project set multiple human-powered flight records that endure to this day.

The speaker, Stephen Darr, is a former Daedalus Project engineer. He holds an Aerospace Engineering degree from Boston University and currently consults to NASA and the FAA, helping to research, develop, and implement advanced aeronautics technologies. He was a Senior Aviator for the US Army and continues to fly fixed-wing aircraft as a commercial and private pilot.

The meeting will be held Wednesday, December 4th at the MIT Lincoln Laboratory, 244 Wood Street., Lexington, MA at 4:00 PM, in the Main Cafeteria. Refreshments will be available at 3:30 PM. Please use the Wood Street Gate and visitor parking as directed. Follow the outside signs to the Main Cafeteria, or enter reception to use the elevator.

For directions to MIT Lincoln Lab, go to
http://www.ll.mit.edu/.

Communications Society – 7:00PM, Thursday, December 5

Key Enablers and Obstacles to a Successful 5G Deployment

Speaker: Mark Watts

5G provides an opportunity to change the way people use wireless networks, much like what 4G did with greater wireless throughput. In addition to throughput, 5G provides for additional features such as higher reliability, lower latencies and a multitude of IOT applications. The deployment comes with various obstacles preventing a successful and rapid deployment. Higher frequency bands (mmWave) reduce coverage but conversely increase capacities. Reduced coverage drives nodal density which is the key challenge for a provider. 5G in mid-band and low band deployments are tied to their own set of distinct challenges.

Speaker Bio: Mark Watts, Verizon
Mark T. Watts is a Distinguished Member of the Technical Staff Architect at Verizon Communications. He joined Verizon's predecessor Bell Atlantic in 1997 with various increases in responsibility. He has been primarily focused on physical layer transport, data and IP engineering, and most recently wireless transport for 4G and 5G network and architecture. Mark graduated from Villanova University with a Degree in Mechanical Engineering in 1996.

Please circulate to interested parties.

Venue Note. This is our venue at the new Verizon Technology Center Campus in Waltham.

The meeting begins at 7 PM at the new meeting auditorium at the Verizon Technology Center. The address is 60 Sylvan Road, Waltham, MA 02451. The entrance is by the far corner – with the picnic tables out front – and not the tower or the new building. It is most easily reached by the West Street entrance.

Important Note: Verizon Technology Center requests the names of the meeting attendees in advance of the meeting. If you plan to attend, please send a note via e-mail with your name to John Nitzke at RF@ieee.org by Wednesday, December 4th.

The meeting is preceded by dinner at Bertucci's, 475 Winter St, Waltham at 5:30 PM. The speaker will be joining us at dinner. Please let Bob Malupin know if you plan to attend the dinner at Bertucci's. Bob can be contacted at Robert.Malupin@VerizonWireless.com .
Directions to Bertucci's restaurant in Waltham: Take Exit 27B on I95/128, heading west on Winter Street. After exiting, stay all the way to the right and take the first right turn into the shopping plaza.

Directions to Verizon Technology Center (old Verizon Labs location), 60 Sylvan Rd. campus, Waltham, MA 02451: Take Exit 27B on I95/128, heading west on Winter Street. Stay all the way to the right. Verizon Technology Center is 1/2 mile ahead. At the second traffic light, turn left onto WEST ST. and then take the first right (at the Verizon sign) which leads into the Verizon campus. Take the first left. The building and entrance for the meeting are on your right. Note that the entrance to the auditorium area is by the far corner – with the red picnic tables out front – and not the tower or the new building.

Reliability Society – 5:30PM, Wednesday, December 11

2D & 3D Printing; Changing Form Factors in Microwave Electronics

Dr. Craig Armiento

Applications such as the Internet of Things (IoT), flexible radars and 5G telecommunications will require new electronic form factors in the microwave and millimeter frequency domains. These applications may require electronics that are flexible, conformable, wearable or embedded in 3D objects. Printed electronics (PE) is an additive manufacturing (AM) approach that prints electronic materials to fabricate subsystems directly from CAD files. PE is not a replacement for active components, rather, printed subsystems will use best of breed semiconductors and exploit additive technology to print IC interconnects, passive components, antennas or connectors. This approach can be described as additive microelectronic/microwave packaging. This talk will describe research in printed microwave electronics at the University of Massachusetts Lowell in collaboration with corporate partners such as Raytheon through the RURI and PERC organizations. Research activities include the development of materials and processes that enable printing of 2D and 3D antenna arrays, phased arrays and frequency selective surfaces (FSS). New material formulations and processing are key to development of additive microwave technology. An example is a unique ferroelectric ink that was developed at UML with a tunable permittivity. This ink has been used to print varactors, phase shifters and tunable FSS.

Craig Armiento is a Professor in the Electrical and Computer Engineering (ECE) Department at the University of Massachusetts Lowell. He is a founder and Co-Director of the Raytheon-UMass Lowell Research Institute (RURI) and is the Director of the Printed Electronics Research Collaborative (PERC). Prof. Armiento served as Chair of the Electrical and Computer Engineering Department from 2005-2011. Prior to coming to UMass Lowell in 2003, Prof. Armiento had over twenty years of industrial R&D experience leading research teams at GTE Laboratories (now Verizon) on projects including Fiber-to-the-Home (now FiOS), optoelectronic hybrid integration, photonic device fabrication and packaging and GaAs ICs. He also served as Director of Optical Networking at Lightchip Optical Networks Inc. and was a researcher at MIT Lincoln laboratory. Prof. Armiento has over 100 publications and presentations and 18 U.S. patents. He earned his Ph.D. and two masters degrees from MIT and a BSEE from Manhattan College.

MEETING LOCATION: MIT Lincoln Laboratory, 3 Forbes Rd, Lexington, MA, 02421
Registration: click here
Copy and paste link
http://ewh.ieee.org/r1/boston/rl/events.html
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”.

Robotics and Automation Society – 6:00PM, Monday, December 16

Combining Robotics And Machine Intelligence to Enable Advanced Treatment Modalities in the Head and Neck

Speaker: Prof. Loris Fichera

Today's surgical robots enable physicians to perform minimally invasive procedures in regions of the human body that historically required large incisions to access the operating field. However, these robots were not conceived to be used in the head and neck, and their kinematic design makes it challenging to use them in ENT (Ear, Nose, and Throat) procedures. This talk will describe recent advances in medical robots for ENT applications, and will give an overview of how recent development in robotics and AI can be used to either enhance existing surgical procedures or enable new ones that were not possible until now. Specific examples covered in the talk include transoral laser microsurgery and trans-nasal ear endoscopy.

Loris Fichera is an Assistant Professor of Robotics at Worcester Polytechnic Institute (WPI). His research interests are in medical robotics and computer-assisted surgery, with particular focus on ENT applications. Prior to joining WPI, he was a Postdoctoral Researcher at Vanderbilt University and Vanderbilt University Medical Center in Nashville TN, where he conducted research in image-guided ear surgery. He received a PhD in Robotics, Cognition and Interaction Technologies from the University of Genoa/Italian Institute of Technology in 2015. His dissertation focused on novel methods to predict and control laser-tissue interactions in robotic laser microsurgery. Dr. Fichera was the recipient of the 2016 Young Investigator Award from the International Society for Computer-Aided Surgery (ISCAS). He was best paper and best medical robotics paper award finalist at the IEEE International Conference on Robotics and Automation (ICRA) in 2015. In 2019, he received the Rho Beta Epsilon award for Excellence in Robotics Education.

Meeting Location: WPI Seaport, Main Lounge Area, 303 Congress Street FL 1, Boston, MA 02210
Register here:
https://www.eventbrite.com/e/ieee-robotics-and-automation-society-talk-wpi-seaport-tickets-82054959593

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Twitter: https://twitter.com/ieeeboston

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

Entrepreneur's Network – 6:00PM, Tuesday, December 17

How Diversity Helps Start-Up Companies

As a Start-Up, it great to have a singular goal. It is not a good idea for a single mindset. The goal is what every team member needs to focus on, having different perspectives to implement the company's product or service, speed development and create a more robust company. Having a diverse team increases innovation, productivity, performance, and reduces fear. The more diverse your workforce becomes, the larger your talent pool becomes, the larger your company network becomes. At the end of the day. Everything above makes it easier to conduct business. All while setting your company up for global success.

Our panel consists of; a practitioner who will enlighten us on the benefits of diversity and real-life examples of its benefits, a Diversity and Inclusion consultant to help us understand how to implement diversity in the workplace, an award-winning attorney to tell about personal diversity success stories and how we might think of diversity from a legal perspective, and a business psychologist and business consultant to educate us on how people make decisions and the personal effects of diversity.

Agenda:
6:00-7:00 PM - Registration & networking
7:00-7:10 PM - ENET Chairperson's announcements
7:10-7:25 PM - eMinute - Up to 3 Startup companies' presentations
7:25-8:15 PM - Two expert speakers on the night's topic
8:15- 8:30 PM - Audience / Speakers Q & A
8:30 - 9:00 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.

Panel:
Julia Bonarrigo
Global Senior Manager, Diversity, Inclusion & Corporate Social Responsibility, Akamai Technology

Julia is a strategically-minded, operations-savvy people leader focused on making the technology industry more inclusive and more diverse.

Expertise in: Execution of Diversity & Inclusion strategies and initiatives, design and delivery of custom talent acquisition and recruitment programs, employee engagement, corporate citizenship, project management, communications, training, change management, event management, creative thinking, and operating in a matrixed environment.

Gwendolyn McCoy, MBA
Senior Consultant at Diversity@Workplace Consulting Group | Principal at MS Creative Group/Make Scents Floral Design
Gwendolyn's talents include; diversity, inclusion, training and facilitation, public speaker, panelist, instructional design, technical writing, web design, program/project/event/talent management, marketing, business start-up, floral design.

Before joining Diversity@Workplace, Gwendolyn was Enterprise Inclusion Leader - Corporate Diversity and Inclusion at Blue Cross Blue Shield, and a Dell Specialist and Web Master at Perot Systems.

Macey Russell
Partner, Complex Trial and Appellate Group
Partner in Complex Trial and Appellate group at Choate with over 30 years of experience advising Fortune 500 corporations and businesses in corporate and litigation matters from consumer class action lawsuits, equity, and debt investments, commercial and real estate finance, environmental, labor and employment, and commercial disputes. Mr. Russell is also listed in Best Lawyers in America.

Experienced and trusted leader appointed by Governor of Massachusetts to Chair the Commonwealth's Judicial Nominating Commission responsible for rec-

ommending judges at all levels, including the Supreme Judicial Court.

Experienced business leader appointed by the Treasurer of the Commonwealth to Chair a Task Force charged with recommending changes to the 1933 laws governing the marketing and sale of alcoholic beverages with a focus economic development and public safety. See https://www.mass.gov/news/alcohol-task-force-releases-final-report

Experienced and recognized national diversity and inclusion thought leader relating to diversity in corporate law firms and law departments. The Burton Foundation and Library of Congress honored Mr. Russell with a 2011 Burton Award for excellence in legal writing for his co-authored article Developing Great Minority Lawyers for the Next Generation. He has authored seven and lead author on four published articles on diversity and inclusion in the legal profession for the Institute for Inclusion in the Legal Profession, Association of Corporate Counsel Magazine, Defense Research Institute, and Practicing Law Institute. He has made over 30 presentations and lectures on diversity and inclusion, including diversity symposiums at the corporate headquarters for Bank of America, Starbucks, Procter and Gamble, HSBC, Vertex Pharmaceutics, and AT&T, and SIFMA, Securities Industry, and Financial Markets Association.

Camille Preston, Ph.D., PCC
Business Psychologist, Leadership Expert, Author, Executive Coach
Dr. Camille Preston is the founder and CEO of AIM Leadership. Camille founded AIM leadership to help individuals, teams, and organizations accelerate business results by optimizing their human capital. A psychologist by training, Camille's past and present clients include Fortune 500 companies, government and military organizations, hospitals, and nonprofits. A recognized thought leader on virtual effectiveness, Camille is also a sought-after speaker and the author of two books: Rewired and Create More Flow. Camille holds a Ph.D. in Psychology from the University of Virginia and advanced training in leadership from Georgetown University.

Co-Organizer and Moderator:
Dan Skiba, President & CEO GOT Interface, Vice-Chair Boston ENET
As a Product Development Company Executive, I provide strategic leadership in product innovation and managing global teams, delivering award-winning products to the international market. My ability to problem solve, direct the entire product development lifecycle and gain commitment to a common goal have driven faster release of products and market penetration. By building synergies across all Product Life Cycle disciplines, we have delivered products that result in 100% product utilization and seamless integration into customer environments. My skills in optimizing international resources have significantly reduced costs and streamlined production, delivering product excellence.

Robert Adelson, business and tax attorney, partner @ Engel & Schultz LLP (Boston) and Chair Emeritus @ Boston Entrepreneurs' Network (ENET).
Rob has been an attorney for over 30 years specialized in business, tax, stock and options, employment, contracts, financing, trademarks and intellectual property. Rob began as an associate at major New York City law firms before returning home to Boston in 1985 where he has since been a partner in small and medium sized firms before joining his present firm in 2004. Rob represents entrepreneurs, start-ups and small companies, independent contractors and employees and executives. Rob is a frequent speaker on business law topics and author of numerous articles published in Boston Business Journal, Mass High Tech and other publications. He has been named among the "Top 20 Boston Startup Lawyers" by ChubbyBrain.com, a website that provides tools for entrepreneurs. Rob has been on the ENET Board since 2002, was Vice Chair 2005-2009, and ENET Chairman 2009-2019. He was also a Co-Founder and Board member of the 128 Innovation Capital Group (2004 -2015). In 2016, he received the IEEE USA Professional Achievement award for "extreme dedication to the entrepreneurship community." He holds degrees from Boston University, B.A., summa cum laude, Northwestern University (Chicago), J.D., Law Review, and New York University, LL.M. in Taxation. His website - www.ExecutiveEmploymentAttorney.com

Reservations: Please register at https://boston-enet.org/event-3461308/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.

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Practical Antenna Design for Wireless Products

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

Speaker: Henry Lau, Lexiwave Technology

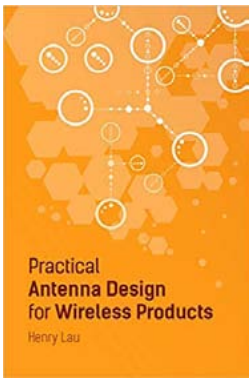
Location: Crowne Plaza Hotel, 15 Middlesex Canal Park Road, Woburn, MA

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, 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 divers sections of the IEEE. We have over 20 active chapters and affinity groups.

If you have an expertise that you feel might be of interest to our members, please submit that to our online course proposal form on the section's website (www.ieeeboston.org) and click on the course proposal link (direct course proposal form link is **http://ieeeboston.org/course-proposals/** . Alternatively, you may contact the IEEE Boston Section office at ieeebostonsection@gmail.com or 781 245 5405.

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

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 cyptography which is an underlying technology of Blockchain. Then we will dive right into Etherum, 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-

IEEE-Blockchain-Meetup-Group/). See more about Chris at www.christinemiyachi.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.kenmiyachi.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

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- Previous lecturers include: Dr. Eli Brookner, Dr. Steven Best, Colin Brench, to name a few.

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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