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Preparing for an Interdisciplinary Future

Francesca Scire-Scappuzzo, PhD
Chair, IEEE Geoscience and Remote Sensing Society

When I was in high school back in the eighties, the world seemed a very well-defined and predictable place. You decided what to study in college depending on what you wanted to be when you grew up: a physicist, a lawyer, an engineer, a physician, a business executive, or a philosopher.

Now, with my own children in high school, I see a very different world, more uncertain and rapidly changing. As my kids meet some of our family friends around the dinner table they discover that atmospheric scientists now work for insurance companies, mathematicians are in biotech, engineers might become business consultants, and some chemists run wineries in California.

Future generations will have to be constantly learning and integrating new technologies and science in whatever work they do. They won't go to college to become one type of professional, but rather they will master scientific knowledge and high-tech across a wide range of subjects to pursue careers we can't even imagine yet. They should expect to be always reinventing themselves and work across many disciplines.

We live in a time when science, mathematics, computing, artificial intelligence, data communication, and hardware development are not separate disciplines. Think about the Internet of Things, robotics, genomics, synthetic biology, smart cities, or climate change research. Today, professionals already need a wide range of interdisciplinary skills that cannot be found in one single college department or discipline.

Just as our kids will be expected to reinvent themselves, so should we. Organizations like IEEE can bridge the gap between traditional education and new market needs by enabling college students, young technical experts, and experienced professionals to remain relevant, informed and well-qualified in response to today's demands for new, highly interdisciplinary, skills and know-how.

This is why the IEEE Boston Geoscience and Remote Sensing Society has recently introduced a series of interdisciplinary lectures co-sponsored with other IEEE societies. The goal of these inspiring events is to bring together colleagues from different fields of engineering, science and technology to promote new interactions and help professionals reinvent themselves one seminar at a time.

I look forward to seeing you soon at our interdisciplinary seminar series!

The Institute of Electrical and Electronic Engineers, Inc.

Spring 2017 Professional Development and Education Program
www.ieeeboston.org

Phased-Array and Adaptive-Array Fundamentals and Their Recent Advances
Dates and Time: Ten Monday Evenings,
Feb. 27, March 6, 13, 20, 27, April 3, 10, 24, May 1, 15
(Snow/make-up dates May 22, June 5, 12
6:00PM - 9:00PM
MITRE Corporation, Bedford, MA

Introduction to Embedded Linux
Dates and Time: Mondays, March 20, 27, April 3, 10
6:00PM - 9:00PM

More Digital Signal Processing (DSP) for Wireless Communications
Dates and Time: Wednesdays, March 22, 29, and
April 5, 12, 26; 6:00PM - 9:00PM

Software Development for Medical Device Manufacturers: An intensive Two-day Workshop
Dates and Time: Wednesday, April 5 and Thursday,
April 6; 8:30AM - 4:30PM

Embedded Linux BSPs and Device Drivers
Dates and Time: Wednesdays, April 12, 19, 26
and May 3; 6:00PM - 9:00PM

QA and Testing in DevOps Automation
Date and Time: Thursday, April 20
8:00AM - 5:00PM

Advanced Embedded Linux Optimization
Dates and Time: Wednesdays, May 10, 17, 24 and 31
6:00PM - 9:00PM

Practical Antenna Design for Wireless Products
Dates and Time: Thursday, June 1 and Friday, June 2
9:00AM - 4:30PM

Making You A Leader Fast Track
Date and Time: Monday, May 22; 8:30AM - 5:00PM

Writing Agile User Story and Acceptance Test Requirements
Date and Time: Tuesday, May 23; 8:30AM - 5:00PM

Determining and Communicating Project Value Return on Investment (ROI)
Date and Time: Wednesday, May 24; 8:30AM - 5:00PM

Proactive User Acceptance Testing - Confident Competence
Date and Time: Thursday, May 25; 8:30AM - 5:00PM

Online Courses
(Each Online Course - 90 day access for registrants!!!)

- Verilog 101: Verilog Foundations
- Systems Verilog 101 (SV101) Design Construct
- Systems Verilog 102 (SV102) Verification Constructs
- High Performance Project Management

(Discounts available if register for all three Verilog Courses)

- Software Development for Medical Device Manufacturers
- Reliability Engineering for the Business World
- Fundamental Mathematical Concepts Relating to Electromagnetics
- Introduction to Embedded Linux

See our new online platform for these four new online courses!!!

All Courses are being held at the Crowne Plaza Hotel, 15 Middlesex Canal Park Road, Woburn unless otherwise noted. For more information on these courses and other local IEEE activity see our website at www.ieeeboston.org, email: ieeebostonsection@gmail.com, or call 781-245-5405

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 NEW Online course

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

Software Development for Medical Device Manufacturers NEW Online course

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

Fundamental Mathematics Concepts Relating to Electromagnetics NEW Online course

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

Reliability Engineering for the Business World NEW Online course

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

Entrepreneurs' Network – 6:30PM, Tuesday, 6 June

M&A and Successful Exits

Meeting Location – Constant Contact, 3rd Floor Great Room, 1601 Trapelo Road, Waltham, MA.
PRE-MEETING DINNER at 5:15 PM (sharp) at Bertucci's, Waltham.

You are one of them...a dedicated entrepreneur, who has poured her heart and sweat into the venture. Does this single-minded dedication to launch and grow the business have to exclude thoughts of potential future exits? On the contrary, an exit strategy is an important element of the overall business strategy that describes the vision of how you will eventually capitalize on your investment. This is important because the decisions about how you structure and operate the business can have huge implications down the road.

Let us hear from experienced panelists, who have prepared companies and participated in successful exits that have come in various sizes and forms. They will talk about exit strategy planning and, just as important, what exits look and feel like in real life to an entrepreneur, an investor and M& A advisors.

Agenda:
630-730 PM - Registration & networking
730-740 PM - ENET Chairman's announcements
740-755 PM - E Minute - Up to 3 Startup companies' presentations
755-845 PM - 3 expert speakers on the night's topic
845-900 PM - Audience / Speakers Q & A
900-930 PM - Final networking including meeting speakers

Speakers:
Kerri Salls, founder of This Way Out Group LLC
Kerri Salls is entrusted by owners to reduce risk and maximize value, transforming an income generating business into a wealth producing asset owners can monetize, using exit planning as a framework. A thought leader in the field, Kerri is the host of the podcast Exit This Way, author of HARVEST Your Wealth, Don't Murder Your Business, How to Manage a Gaggle of Advisors to Build Your All-Star Exit Team, and the home-study program: Selling Your Business for Maximum Profits, and co-author of Why Plan For Due Diligence in The Sale Of My Company? Her articles are published by the Alliance of Merger & Acquisition Advisors, M&A Source, the Exit Planning Exchange and numerous directories. Kerri received an MBA from Boston University in operations management and international marketing. After the Peace Corps, Kerri started her career at MITRE Corporation, Data General, and at Honeywell (on the first ATM project) and went on to manage projects from $10- 50M at Atex Publishing Systems, New England Business Systems and others before specializing in Exit Planning in 2005.

She has written almost 20 articles in this field that include -

- One Hidden Asset That Drives Your Company's Value;
- Growth Vs. Value: Not All Revenue Is Created Equally;
- Attract The Attention Of Your Ideal Acquirer 5 Ways
- Top 10 Questions To Start Thinking About Value Enhancement
- Do You Want To Make The Most Money Possible When You Sell Your Business?
- What's Your Exit Strategy? One industry discussion

Peter Alternative, Partner, Mirus Capital Advisors
Peter brings 20 years of experience advising middle market, technology-based companies. He has been a financial advisor to both public and close-

ly-held companies on divestitures, capital raising, recapitalizations, strategic acquisitions, mergers and cross-border transactions. He has managed and closed dozens of engagements with companies in numerous segments of information technology and professional services, with a focus on enterprise software. Peter has spoken to a number of executive groups, including Gartner Research Emerging Technology conference, the EO Birthing of Giants program at the MIT Enterprise Forum,

The CFO Roundtable and The Financial Management Association on topics ranging from capital markets to mergers and acquisitions. He has been interviewed and/or published by a number of publications including The Daily Deal, Mass High Tech, Mergers and Acquisitions Magazine, CBS Marketwatch, MergerMarket and Tech Biz. Peter is also a guest lecturer at Bentley University. Before joining Mirus, Peter was a financial analyst for CFO Strategies, a Boston-based financial consulting firm that provides interim CFO services to venture-funded technology startups. Peter began his business career as a founding member of two entertainment startups. Peter is a member of the Entrepreneurs Organization, the Bentley University Executives Club and the Boston chapter of the Association for Corporate Growth, where he is its past President. Peter sits on several other boards holds Series 7, 63 and 79 FINRA certifications. Peter received an MBA with high distinction from Bentley University's McCallum Graduate School of Business, and a BA in Political Science from Hobart College.
http://merger.com/selling-a-business/overview/

Christopher Crane, President and Chairman of Vartopia LLC, a high-tech SaaS provider, as well as owner of hotels and restaurants in York Maine.

Originally a math high-school teach, Mr. Crane became an entrepreneur in the early 80's selling and programming Digital Equipment Corporation mini computers. Over the ensuing years' Mr. Crane, with a partner, purchased many similar companies that were in financial difficulties and created a public company with five vertical market divisions called ASA International. In 1996, Mr. Crane left the company and purchased and ran TradePoint System, a supplier of software to the International Trade industry. In 2004 Mr. Crane sold TradePoint systems and then returned to ASA to help dismantle the public company and sell two of the company's divisions.

Moderator:

Robert Adelson, business and tax attorney, partner at Boston law firm of Engel & Schultz LLP, and Chairman of The Boston Entrepreneurs' Network.
Rob has been an attorney for over 30 years specialized in business, tax, stock and options, employment, contracts, financings, 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 and Chairman since 2009 and is also a Co-Founder and Board member of the 128 Innovation Capital Group. 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.
www.ExecutiveEmploymentAttorney.com

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

Directions: Constant Contact is adjacent to RT 128 / 95 at Exit 28B.
See: http://www.constantcontact.com/about-constant-contact/office-location-waltham.jsp

Reservations: ENET Constant Contact meetings are free to ENET members and $20 for non-members. No reservations are needed for the premeeting dinner. To expedite sign-in for the meeting, we ask that everyone -- members as well as non-members -- pre-register for the meeting online. Pre-registration is available until midnight the day before the meeting. If you cannot pre-register, you are welcome to register at the door.

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

Photonics Society – 6:30PM, Thursday, 8 June

Scaling Optical Networks into the Next Decade and Beyond

Dr. Peter J. Winzer, Nokia Bell Labs

With data-centric network traffic growing exponentially at around 60% per year, fiber-optic transport networks are rapidly approaching their fundamental Shannon capacity limits. By 2020, leading-edge network operators will require capacities that are fundamentally impossible to implement using conventional optical transmission technologies. We will explore key technology scaling disparities that are driving the looming capacity crunch in global core networks and discuss their impact on our communications society. We will then point to spatially parallel transmission solutions (Space-Division Multiplexing, SDM) as the only long-term viable solution to overcome the transport capacity scalability bottleneck. We will explore the implications of ultimately unavoidable spatial crosstalk, and examine how multiple-input-multiple-output (MIMO) digital signal processing, well established in wireless communications, can help to scale optical core networks. A look at information theoretic physical-layer security in SDM-based fiber-optic transmission systems will round off our discussions.

Peter J. Winzer received his Ph.D. from the Vienna University of Technology, Austria, where he worked on space-borne lidar and laser communications for the European Space Agency. At Bell Labs since 2000, he has focused on many aspects of fiber-optic communications, including advanced optical modulation, multiplexing, and detection. He has contributed to several high-speed optical transmission records and field trials from 100 Gb/s to 1 Tb/s and has been globally promoting spatial multiplexing to overcome the optical networks capacity crunch. He has widely published and patented and is actively involved with the IEEE Photonics Society and the OSA, including service as Editor-in-Chief of the IEEE/OSA Journal of Lightwave Technology, Program Chair of ECOC 2009, and Program/General Chair of OFC 2015/17. Dr. Winzer is a Highly Cited Researcher, a Bell Labs Fellow, a Fellow of the IEEE and the OSA, and an elected member of the US National Academy of Engineering.

This meeting begins at 6:30 PM Thursday, June 8th, 2017 and will be located 3 Forbes Road, Lexington, MA, 02420. Note this is a satellite location ~1.5mi away from MIT Lincoln Laboratory. The meeting is free and open to the public. All are welcome. Prior to the seminar there will be social time and networking from 6:30 – 7:00PM. Dinner will also be provided. The seminar will begin at 7:00PM. For more information contact Ajay Garg, IEEE Boston Photonics Society Chapter chair at ajay.garg@ll.mit.edu, or visit the IEEE Boston Photonics Society website at www.bostonphotonics.org.

Directions to Forbes Rd Lincoln Laboratory: (from interstate I-95/Route 128)
Take Exit 30B onto Marrett Rd in Lexington – Merge into left lane
Make the first Left onto Forbes Rd.
Proceed straight through the small rotary and enter the parking lot.
The entrance is by the flags.

Microwave Theory and Techniques Society – 6:30PM, Monday, 12 June

Dual-Terahertz-Comb Spectrometer in CMOS:

A Powerful Tool to Reveal the Invisible Secret in the Air

Rotation energy state of gaseous molecules provides an effective way to identify different chemical species with low ambiguity and high sensitivity. It also has high potential to serve as human-breath analyzer, industrial leakage monitor and spectroscopic imager. However, current rotational-mode spectrometers exhibit severe trade-off among resolution, speed and energy efficiency. Advanced CMOS process and circuit design technology is leading us to overcome these difficulties, and achieve low cost, robust and compact spectrometer in the near future. In this talk, implementation of a 220-to-320-GHz spectrometer consisting of a pair of 65-nm CMOS chips will be presented. It utilizes two counter-propagating frequency-comb signals to seamlessly scan the broadband spectrum and significantly reduces the total scanning time through high parallelism. The comb signal, with 10 equally-spaced frequency tones, is generated and detected by a chain of inter-locked transceivers on chip.

The large reduction of required tuning range for each transceiver enables peak energy efficiency across a wide bandwidth. The spectrometer chip has a measured total radiated power of 5.2 mW and a measured single-sideband noise figure of 14.6~19.5 dB, representing the highest generated power and sensitivity of silicon-based THz circuits. Absorption spectrum of acetonitrile (CH3CN) are obtained, which agrees well with the JPL spectroscopy database.

Cheng Wang was born in Suining, Si Chuan, China, on March 8, 1987. He received his B.S. degree in engineering physics from Tsinghua University, Beijing, China, in 2008 and his M.S. degree in radio physics from China Academy of Engineering Physics, Mianyang, China, in 2011. He joined the Institute of Electronic Engineering, Mianyang, China, as an assistant research fellow from 2011 to 2015.

Currently, he is pursuing his Ph.D. degree at the Department of Electrical Engineering and Computer Science (EECS), Massachusetts Institute of Technology (MIT), under the supervision of Professor Ruonan Han. In 2016, he received the Analog Device Inc. Outstanding Student Designer Award. In 2017, he received the IEEE Microwave Theory and Techniques Society Boston Chapter Scholarship. His research covers topics of millimeter/terahertz-wave gas spectroscopy, high-precision clock generation, broadband communication and radar imaging.

Meeting Location: MIT, 37-252, 70 Vassar Street, Cambridge, MA

Robotics and Automation Society – 6:00PM, Tuesday, 13 June

GE Robotics: Bridging the Digital Industrial Gap

Shiraj Sen, Lead Scientist at GE Global Research

Industrial-grade robotic systems will be the next great industrial tool; a tool that won't eliminate people from work, rather it will amplify our capabilities, allowing us to safely operate at rates never seen, in places we could never access safely, and with physical and cognitive abilities we haven't yet imagined. These next generation industrial robots are leading GE's transformation into a digital industrial company. In this talk, I will share GE's focus on the development of such "industrial service robots" – robots that can work with humans to address dull, dirty, and dangerous work in dynamic industrial environments. I will discuss some of the unique challenges with regards to the development of such systems for our field and service applications: tiny robots that can crawl inside turbines to inspect and repair them, ground-based robots that can work in railyards without human supervision, or aerial robots that can autonomously inspect assets.

Shiraj Sen is a Lead Scientist at GE Global Research and a core member of GE's robotics team, focused on the research and development of robotic systems for field and service robots. At GE, Shiraj works toward developing autonomous system that work in the Oil and Gas, Transportation, and power sector. His research interest span perception, navigation, and manipulation to develop systems that work reliably in industrial environments. Shiraj received his Ph.D. in Computer Science from University of Massachusetts at Amherst, MA in 2013. Prior to joining GE, Shiraj was a postdoctoral fellow at the University of Massachusetts working with NASA to develop techniques that allowed robots to learn, and make decisions under uncertainty.

Doors open: 6:00 P.M.
Presentation: 6:30 P.M.
Dinner: 8:00 P.M.

Meeting Location:
Mass Robotics
12 Channel Street
Boston, MA 02210
Floor 5, Suite 502

PARKING DIRECTIONS: If parking becomes difficult, there is a parking garage one block away at 15 Drydock Avenue. The restaurant is also close by.

UNSPONSORED DINNER: La Casa De Pedro, 505 Congress Street, Boston, MA 02210

Have more questions? Want to share a drink with the speaker? Want to network with fellow engineers and professionals? Just want to chat about the current goings-on in Robotics, or technology in general? Join us for dinner, where you can talk about Robotics in a more casual setting!

GENERAL INFORMATION: This and other RAS meetings are open to the general public. For more information about the RAS Boston Chapter, contact Chapter Chair Sripati Sah at chair@robotics-boston.org or visit http://www.robotics-boston.org/.

Reliability Society – 5:30PM, Wednesday, 14 June

Reliability Engineering for the Business World – Upcoming Online Course Preview

Kevin Granlund, Distributed Systems Analysts, LLC

This presentation previews an online course about becoming a leader in reliability engineering, with the objective of teaching how to become the go to person in your business for objective business sensed reliability answers and requirements. While statistics are the tools of reliability engineering, it takes knowledge not only of these tools but also of the business.

Developing knowledge of the business, from sales, engineering, customer service, to supply chain management can determine how effective you can be in improving reliability. Never take anything for granted, even some rules of thumb in reliability can be misleading, this course will show you how to prove what truly happens in the real world and how to effect change in any part of the business where it is needed. We will explore the balance sheet, organizational structure, customers, service, and high volume manufacturing. It's not just about how often things fail, it is also about where the defect came from, what is the financial effect, the recovery, when should a business take field action, effect of human error, failure analysis/material science, reliability testing, and much more. I will also discuss how you develop executive buy in for change.

The course assumes a basic knowledge in reliability statistics. There are 12 sessions that cover the following topics: Basics – Measurements, Business Model, Design Model (HW and SW), HALT/RDT/Predictions, Manufacturing Model, Early Life Failures, Wear Out and Mid Life Crisis, and Advanced Reliability.

Agenda:
5:30-6:00 PM: Sign in, refreshments, and personal networking
6:00-6:10 PM: Chapter Chair greetings and announcements
6:10-7:45 PM: Presentation
7:45-7:55 PM: Q&A session, meeting adjourns

Kevin Granlund, Distributed Systems Analysts, LLC
Kevin is an innovative leader in reliability methodologies with more than 30 years experience in the storage industry. In his latest role as Director of Engineering, he developed a top down reliability/availability management process for design organizations developing mission-critical storage systems. Kevin previously directed the most extensive HALT/HASS operation in the industry, with over 300 chambers worldwide. He has written several papers, consulted with many companies, 3 patents awarded and 2 pending related to systems reliability and test.

His most recent work has been performing system architectural analysis to optimize system availability, serviceability and costs. Providing guidance to development to maximize system reliability and reduce service costs.

He has provided consultation to many large companies such as EMC, CISCO, AT+T, HP, Seagate and many others. His position and experience has enabled him to perform extensive field studies and design of experiments. Kevin has developed many accelerated testing programs for both short term and long term reliability and developed cost models to enable more informed decisions.

He has developed Long Term Systems Reliability tests and processes for detecting early wear out design flaws. Also built models for non-traditional acceleration factors for unique design defects and managed the transfer of this technology to subcontractors.

Kevin has lead hundreds of FMEA on new designs and refined FMEA processes to maximize problem prevention in key technologies. Including power systems, logic systems, ASICs, disk drive systems, RAID, and networks.

Kevin is an active member of the Boston IEEE Reliability Society Advisory Committee.

Kevin received his ASEE degree from Worcester Industrial Technical Institute in 1979.
Email: granlundkevin@gmail.com

Meeting Location: MIT Lincoln Laboratory, 3 Forbes Road, Lexington, MA

Entrepreneurs' Network – 6:30PM – 8:45PM, Tuesday, June, 20th

Pitch Your Startup to Mentors and Investors!

Boston ENET's Annual Open Mic and Pitch Night

Meeting Location – Pivotal Labs, 255 Main St., 6th FL, Cambridge, MA.

Back by popular demand is the annual Open Mic and Pitch Night! This year, up to 15 entrepreneurs will give their startup pitch to a panel of mentors and investors! Please join "Pitch Your Startup to Mentors and Investors! Boston ENET's Annual Open Mic and Pitch Night" to see these founders give their startup pitch and watch first-hand the invaluable feedback from the expert panel of mentors and investors, all while supporting fellow entrepreneurs!

This year's annual Open Mic Night will feature founders giving their startup pitch to a panel of mentors and investors! Entrepreneurs get an opportunity to practice their presentation skills in front of an unknown audience, get feedback from the panel of experts, and network with like-minded entrepreneurs and members of the Boston ENET community. There is ample time to network over pizza and beverages before and after the pitches. Perfecting that pitch just might come in handy as you never know who you will meet in an elevator for 15 seconds or while grabbing that cup of Joe in the coffee shop ... really! This event will be held right in the heart Cambridge's innovation hub, in Kendall Square at Pivotal Labs.

To celebrate Boston ENET's 26th year of educating and empowering entrepreneurs, prizes will be given to the winner in each of the following four categories: 1) Audience Favorite, the favorite startup by vote of the audience, 2) Titanic, the startup that might seem doomed, but has potential to give entrepreneurs life saving lessons, 3) Unicorn, the startup that could be that next $1B+ exit, and 4) Rising Phoenix, despite all odds, the startup that is rising out of the ashes to become a success.

Panel of Judges: Our panel of judges are from the entrepreneurial community of mentors, investors (including early-stage investors), and entrepreneurs whose startup ventures are scaling, have exited, and, in some cases, starting their next venture!

Interest to pitch? To APPLY, email both Maureen Mansfield at maureenmansfield@post.harvard.edu and Dr. Nathalie Goletiani nathalieg2010@live.com.

Contact Name: Maureen Mansfield, ALM, Boston ENET Board & Vice Chair, Alliances bit.ly/1TaKOOi Please join our conversation on Twitter @BostonENET & @eMinutePitch

Erik Swanson

America's #1 Habits and Attitude Coach, Keynote Speaker, Habitude Warrior Coach, Best-Selling Author.
Professional International Keynote Speaker, Best Selling Author, and Success Coach
& President/CEO/Founder of:
HABITUDE WARRIOR INTERNATIONAL
www.HabitudeWarriorConference.com

Mr. Swanson has been an International Success Coach & Trainer for the past 19 years consulting with corporations and associations and keynote seminars throughout the United States, U.K., Australia, and beyond.

He is the Founder and CEO of Habitude Warrior International. www.HABITUDEWARRIOR.com

where he takes you through a journey of a 50 week long training system to enhance your habits and attitudes. After the first year, you are welcome to become a Certified Habitude Warrior Trainer and conduct your own workshops, seminars and training in your own city with your clients. To find out more about this email us the request at: info@HabitudeWarrior.com

Shereen Shermak
Financial services entrepreneur, passionate about product management. Active angel investor and VC. Shereen Shermak is driven by entrepreneurship, whether inside an existing business or from an original idea. She loves solving industry problems. She has learned a lot about financial services and startups in general in that process. Most of her career has been in Boston financial services but she has also spent time figuring out how to rebuild small business in the City of New York.

Tara R. Greco
Tara is a marketing evangelist and angel investor in start-ups including medtech, biotech, edtech, CPG, sustainability and women-led startups.
Tara excels at leading organizations, building brands, mining research for insights, and developing new platforms as she has for CoSlide, Care Academy, JFK Library Foundation, RoboSail, VoltreePower, Playrific, Bare Tree Media, Turbine (Warner Bros.), TJX, Stride Rite, Atari, Crayola, Mattel, Tyco Toys, and K'NEX. Taraenjoys leading teams and fostering a spirit of excellence. Tara holds an MBA in Marketing from Temple University and a BS in Business from Skidmore College.
Panelist

John D. Hannick
Mr. John D. Hannick is a strategy, entrepreneurship and venture expert

With more than 12 years experience. Mr. Hannick is a leader in Booz Allen Hamilton's Commercial Strategy team and head Booz Allen's Boston iHub. Mr. Hannick has advised major corporations, governments, and startups alike in strategy development, data science and analytics, organizational transformation, change management, and technology implementation. He has consulted more than 25 global organizations in travel and hospitality, retail, financial services, technology, sports and entertainment, and non-profits in a wide array of technology deployments and analyses including predictive pricing, customer segmentation, financial due diligence, investment decisions, public relations strategies, and organizational design. Mr. Hannick earned a B.S. in Finance and Accounting from Boston College. He also holds an advanced leadership certificate from the Wallace E. Carroll School of Management.

Meeting Co-Organizer: Maureen Mansfield, ALM, Chief Contract Officer, MANSFIELD LAW, Twitter: @MaureenManALM

Maureen Mansfield, ALM, is a business development, corporate development, and strategy professional for companies in the private and public sectors. Currently, Maureen is at Mansfield Law where she works with entrepreneurs, inventors, artists, startups, and emerging growth companies. Previously, she cofounded a boot strapped startup that has progressed to a $10 million term sheet agreement. She currently serves as an advisor and mentor for several startups and related entrepreneurial ventures. She is a member of the Executive Board of The Boston Entrepreneurs' Network (Boston ENET), where she leads Alliance Partnerships.

Prior to joining Mansfield Law in 2009, Maureen

was a New England Director of Business Development for the award-winning firm Syska & Hennessy, Inc., With S&H, she focused on business development and corporate management strategy for major accounts locally, nationally, and internationally. After helping to bring in its most successful year, Maureen was awarded a seat on the board of directors. Previously, Maureen was a Senior National Accounts Manager at Abbott Laboratories where she focused on contract compliance, increasing revenues, and sales. She initiated and innovated contract management and auditing procedures that resulted in a new nationwide cost center the produced annual savings of over $1 million. She also helped cofound two holiday charities that continue today.

Maureen received two BAs from the University of Iowa, one in Journalism and one in Communication. Maureen also received a Master of Liberal Arts (ALM) in Management with a Concentration in Finance & Control from Harvard University.

Meeting Co-Organizer: Dr. Nathalie Goletiani, M.D., inventor, founder and CEO of POWERFEM Therapeutics; Instructor in Psychiatry at McLean Hospital, Harvard Medical School.

Dr. Goletiani is the Founder and Chief Executive Officer of POWERFEM Therapeutics, a company devoted to novel, networked treatment methods for the care of those suffering from substance abuse and mental illness. Her extensive clinical research into the hormonal effects of nicotine, opioid and cocaine use lead her to new concepts and mechanisms in understanding and treating psychiatric disorders, in particular, disorders experienced by underserved female populations. At Harvard's McLean Hospital, she was charged with rebuilding and responsible for all the operations of Clinical Research Program, including simultaneously running multiple clinical trials. Based on her patented work, she founded POWERFEM Therapeutics, an independent company devoted to creating new treatments and healthcare solutions. POWERFEM incorporates novel disease concepts and treatments to design cost-effective, integrated mental and substance abuse care solutions across multiple provider networks.

Dr. Goletiani has received numerous national and international awards including most recently the Harvard Livingston Award for the investigation of complex underlying mechanisms in the neurobiology of women. She also received a Harvard University Zinberg Fellowship specifically to support her research on alcohol and drug use disorders. Her research provides a valuable basis for psychotherapeutic public policy decision making on issues of substance abuse and the integrated treatment of mental illness. She has extensively published the results of her research in peer reviewed journals.

Nathalie completed basic and clinic fellowships at the Harvard School of Public Health and at Harvard Medical School. In addition, she has been trained at and conducted medical research at Tbilisi State Medical University, University of Amsterdam and King's College in London.

Where:
Pivotal Labs, 255 Main St., 6th FL, Cambridge
PUBLIC TRANSPORTATION: Is accessible by public transportation

Admission: General admission is $10. Free to ENET members. Free pizza and soft drinks will be served. Advanced registration is requested but not required.

Electromagnetic Compatibility Society – 6:00PM, Wednesday, 21 June

Thin PCB Dielectric Technology

Bob Carter, Oak-Mitsui Vice President of Marketing

Device data rates have increased tremendously since the late 2000¹s and years since smart phone technology and other high speed devices hit the market. This change forced internet infrastructure, computing and technology companies that processed data to make changes. They were pushed to design and develop next generation chips, PCB¹s, and other architecture to meet the challenge of the new higher speed, higher volume systems. These changes and requirements have led to increasing processing speeds, lower power delivery margins, and new design sets and expanded into almost all areas of technology. When older more traditional PCB¹s design guidelines are used to design PCB¹s for systems that operated beyond 200 MHz there are significant resonances that occur. These are resonances starting within the PCB and that may resonate to the whole system as noise, signal loss and distortion, and EMI.

One proven way to significantly reduce resonance is to narrow the gap between the power-ground plans within the PCB. This presentation will show the benefits of using thinner dielectrics in PCB¹s,modules and packages between the power and ground planes. It will show that thinner is significantly better at reducing noise and resonances especially at frequencies beyond 200 Mhz and up to 25 Ghz. Additionally it will look at the effect of effects of higher high Dk versus standard Dk, and high Df versus low Df.

Bob Carter is Vice President of Marketing, Business Development, and Technology for Oak-Mitsui's FaradFlex ultra-thin embedded capacitance materials and advanced technology VSP copper. Bob has over 32 years of professional experience in the printed circuits, advanced electronic materials, MEM's, RF modules, and chip packaging. Directs engineering, marketing, and sales worldwide. He initiated the start-up of 2 major PCB factories in China. Led engineering, development, and applications organizations at companies such as Xerox, Toppan, Multi-Fineline Electronix, Rogers Corporation, Flex2Chip Inc, and Panasonic Electronic Materials. Bob studied Chemical & Materials Engineering and Business Management at California Polytechnic University, Pomona, California and Grand Canyon University, Phoenix, Arizona and has a BS Degree.

Meeting Details: The meeting of the EMC Society will be held on Wednesday, June 21, 2017 at Bose Corp., 100 The Mountain Road, Framingham, MA. The technical presentation will commence at 7:00PM following a social hour at 6:00 PM. Food is provided.

DIRECTIONS TO BOSE CORPORATE HEADQUARTERS: The address is: 100 The Mountain Road, Framingham, MA, 01701 From Mass Pike (I-90); Take Exit 12 (Route 9 West) toward Worcester. Keep left at the fork on the ramp and get on Route 9 West. At the first set of lights take a right onto California Ave. (sign reads "Framingham Technology Park"). Go straight, over the railroad tracks, and through the next set of lights. The road curves around to a stop sign at the foot of the mountain. Take a left onto the Mountain Road and follow it to the next stop sign at the top of the mountain. The tall glass building before you is the Bose Corporate Center. Take a right at the stop sign, drive past the front of the Corporate Center and park. For more information, please contact Mike Royer at Michael_Royer@bose.com

Consultant's Network – 6:30PM, Tuesday, 27 June

Collection Strategies for Professionals

Howard Goldman, Esq.

Every business, including a consulting practice, has to ensure that it gets paid. While most people are basically honest and more or less do what they say, there are always those who forget to pay their bills or are just looking to get something for free. This talk focuses on steps to take to ensure that you do get paid. Topic covered will include

- Know Your Customer
- Due Diligence on Budget
- Get it in Writing
- Implement a Billing and Collection Procedure
- Red Flags
- Legal Enforcement Techniques

Howard Goldman concentrates his practice in business law for closely held companies, real estate, litigation, conveyancing, condominium law, civil litigation, and financing. Mr. Goldman has been admitted to practice law in both Massachusetts and Rhode Island.

In service to the legal and business community, Mr. Goldman regularly provides lectures for members of both the Institute of Real Estate Managers and of the Community Association Institute, non profit, national real estate trade organizations. In addition, Mr. Goldman is an active member of the Massachusetts and Norfolk County Bar Associations. Mr. Goldman serves on a panel that provides mediation screening services through the Alternative Dispute Resolution Program at the Boston Municipal Court. In his hometown of Needham, Massachusetts, Mr. Goldman serves on the Zoning Board of Appeals, and on the Boards for the Temple Beth Shalom Brotherhood and the Newton-Needham Chamber of Commerce. Mr. Goldman formerly served on the Board of the Needham Education Foundation, a non-profit that supports innovative educational programming in the public schools of Needham. Mr. Goldman is also a former board member of the Smaller Business Association of New England (SBANE) and served on the Board of Directors of the Jewish Big Brother & Sister Association of Massachusetts. In August 2011, he was appointed to the Federal District Court's Pro Bono Mediation Program, where he serves as an advocate for indigent parties at select Federal Court mediations in civil litigation matters.

Mr. Goldman is an honors graduate from Cornell University, where he received his B.A., and from Boston University School of Law, where he received his law degree. Attorney Goldman is admitted to practice in the U.S. District Court, District of Massachusetts and Rhode Island, the Federal District Bankruptcy Court, and the U.S. Court of Appeals, First Circuit. Mr. Goldman has three sons and is an active coach in basketball and baseball teams. He also is an avid tennis player and competes on a USTA tennis team.

PLEASE NOTE: The meeting is open to the public. No charge for Consultants Network members or employees of Constant Contact; $5 entrance fee for all others. Casual dress. Registration (no registration required).

The Consultants' Network meeting starts at 6:30 PM. The meeting will take place at Constant Contact, Reservoir Place - 1601 Trapelo Road, Waltham, MA 02451. A no host, PRE-MEETING DINNER will take place at 5:15 PM (sharp) at Bertucci's, 475 Winter Street, Waltham, MA 02451 (exit 27B, Rte 128).

Driving Directions

To Bertucci's: Follow I-95/route 128 to Winter St in Waltham. Take exit 27B from I-95/Route 128. Turn left on Wyman S, then left on Winter St. Bertucci's is the 1st right after crossing the bridge over I 95/Route128.

To Constant Contact: Follow I-95/route 128 to Trapelo Rd in North Waltham, Waltham. Take exit 28 from I 95/route 128. Constant Contact is the 1st right after crossing the bridge over I 95/Route128.

Consultants' Network meetings generally take place on the fourth Tuesday of each month, but are not held during the summer months. Check the Consultants' Network website for meeting details and last-minute information.

For more information, e-mail or chairman@boston-consult.com

Computer Society and GBC/ACM – 7:00PM, Wednesday, 28 June

Personal Control of Digital Data

Butler Lampson, Adjunct Professor at MIT & Technical Fellow at Microsoft

People around the world are concerned that more and more of their personal data is on the Internet, where it's easy to find, copy, and link up with other data. Data about people's presence and actions in the physical world (from cameras, microphones, and other sensors) soon will be just as important as data that is born digital. What people most often want is a sense of control over their data (even if they don't exercise this control very often). Control means that you can tell who has your data, limit what they can do with it, and change your mind about the limits. Many people feel that this control is a fundamental human right (thinking of personal data as an extension of the self), or an essential part of your property rights to your data.

Regulators are starting to respond to these concerns. Because societies around the world have different cultural norms and governments have different priorities, there will not be a single worldwide regulatory regime. However, it does seem possible to have a single set of basic technical mechanisms that support regulation.

Butler Lampson is a Distinguished Engineer at Microsoft Corporation and an Adjunct Professor of Computer Science and Electrical Engineering at MIT. He was on the faculty at Berkeley and then at the Computer Science Laboratory at Xerox PARC and at Digital's Systems Research Center. He has worked on computer architecture, local area networks, raster printers, page description languages, operating systems, remote procedure call, programming languages and their semantics, programming in the large, fault-tolerant computing, transaction processing, computer security, WYSIWYG editors, and tablet computers. He was one of the designers of the SDS 940 time-sharing system, the Alto personal distributed computing system, the Xerox 9700 laser printer, two-phase commit protocols, the Autonet LAN, the SPKI system for network security, the Microsoft Palladium security system, the Microsoft Tablet PC software, and several programming languages.

He holds a number of patents on networks, security, raster printing, and transaction processing. He is a member of the National Academy of Engineering and a Fellow of the Association for Computing Machinery and the American Academy of Arts and Sciences. He received the ACM Software Systems Award in 1984 for his work on the Alto, the IEEE Computer Pioneer award in 1996, the National Computer Systems Security Award in 1998, the IEEE von Neumann Medal in 2001, the Turing Award in 1992, and the National Academy of Engineering's Draper Prize in 2004.

This joint meeting of the Boston Chapter of the IEEE Computer and GBC/ACM will be held in an MIT room to be determined. We are waiting to here back from the MIT scheduling office as to specific location.

2017 IEEE WIE USA EAST FORUM

Call for Participation

November 30 – December 2, 2017 Baltimore, MD

Presentation Topics

- Mentoring the next generation of female leaders
- Strategies for increasing equity in power and decision making
- Women as leaders in education, industry, and government
- Development: communication skills in written and spoken word, effective dialog
- Cross-cultural aspects of leadership
- What it takes to be a great leader - qualities that all successful leaders share
- Shaping the future by female leaders
- Training vs inherent skills: can leadership be learned?
- Work-Life balance: family systems traditions and changes
- Leadership development for women: overcoming stereotypes
- The design, implementation, and evaluation of leadership from a structural perspective
- Helping girls and young women become leaders - motivating to empower, empowering to motivate
- Exploring the attrition gap - why do women leave the engineering field and what can be done to prevent it

Not a WIE member?
Our active community of female and male engineers is involved in career building, networking, and community outreach.

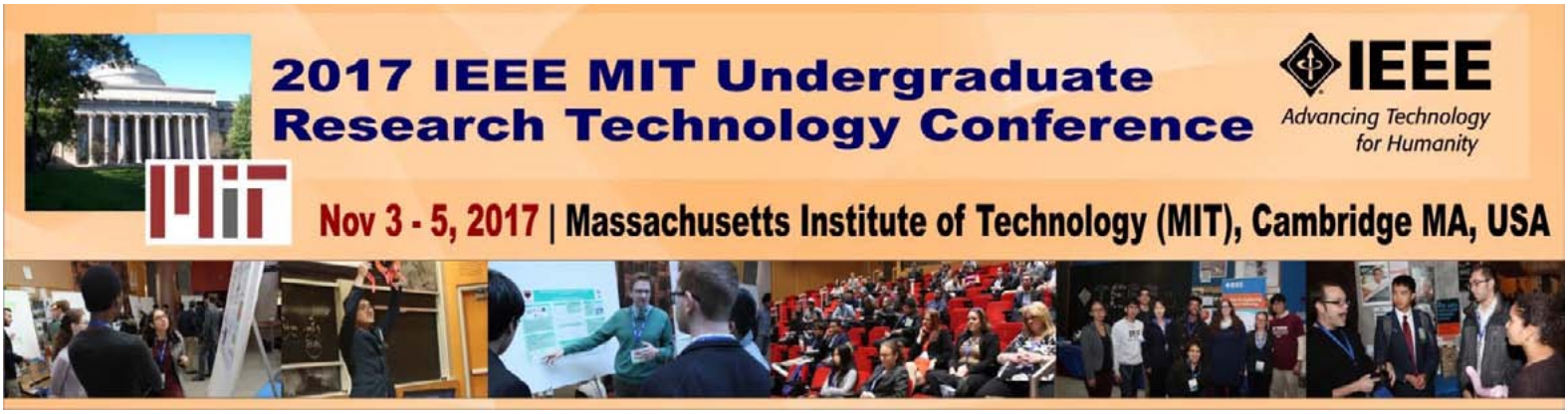
Join Now

Submission Deadline

Presentation topic abstract suitable for program (up to 150 words), and extended abstract for evaluation (up to 2 pages) due 24 July 2017.

For more information, visit:
http://sites.ieee.org/wie-forum-usa-east/calls-for-participation/

IEEE WIE FORUM USA EAST 2017 IEEE IEEE-USA



Call for Submissions

Submission Deadline: June 30th, 2017

Envisioning a technical conference targeted towards undergraduate students all over the globe, the MIT IEEE Student Branch in 2015 inaugurated the IEEE MIT Undergraduate Research Technology Conference. This year we are organizing it again with the goal to make the conference a venue where undergraduate students can meet to present, discuss, and develop solutions advancing technology for humanity. Participants can attend a rich program with renowned speakers, technical sessions, a student design competition, exhibits, networking, and social activities, presenting a great opportunity for students to interact with leading industry experts.

The conference theme is "Meet Innovative Technology", and the six fields of focus are:

1. Machine Learning / Artificial Intelligence (AI)
2. Biological and Biomedical Engineering and Technology (BioEECS)
3. Robotics and Automation Technology
4. Systems and Networking
5. Embedded Technologies
6. Innovative Technologies and Others

Authors may submit content in the form of a technical paper, poster, or lightning talk.

All submissions must be written in English. Paper submissions must be no longer than 4 pages, single-spaced, with a minimum font of 10 point, and submissions may include figures, illustrations, and graphs. Abstract submissions for the poster and lightning talk are limited to 500 words.

All submissions will be peer-reviewed. Submissions are online, with a deadline of June 30th, 2017. Notification of acceptance will be sent via email by August 4th, 2017.

Please join the mailing list (MIT-Conference@ieee.org) for more information and updates on submission, the technical program, registration, and accommodation.

A conference proceeding of all the accepted papers that have been presented at the conference may be published and included in the IEEE Xplore journal. Electronic and online media containing all accepted submissions will be distributed to all registered attendees.

Meet Innovative Technology

Sponsored by MIT IEEE Student Branch and IEEE Boston Section

http://ieee.scripts.mit.edu/conference

Massachusetts Institute of Technology

IEEE BOSTON SECTION

Software Development for Medical Device Manufacturers *(Online Edition)*

New Online Course

Students have access to this self-paced course for 90 days!!

Course Description This course provides an introduction to the development of medical device software. The course is comprised of 4 modules that range from 30-45 minutes in duration. The focus is on complying with FDA Design Controls and IEC 62304 requirements.

This course is intended for software developers who are actively involved in developing medical device software.

Module 1
- Medical Device Definitions: FDA and European Union (EU)
- Regulatory Roadmap
- FDA/EU Device Classifications
- FDA QSR Regulation
- FDA Guidance Documents that pertain to medical device software

Module 2
- International Standards that pertain to medical device software
- Types of Software Regulated by FDA
- Quality System basics: Procedures, Work Instructions and Records
- ALL Software is Defective…

Module 3:
- Design Control Overview
- General Requirements
- Design and Development Planning
- Software Development Models
- Design Input
- About Requirements…
- Design Output
- Design Reviews

Module 4:
- Design Control (continued)
- Design Verification
- Software Verification Process
- Testing Overview
- Design Validation
- Software Validation Process
- Design Changes
- Design Transfer
- Design History File
- Course Summary

Speaker Bio:
Steven R. Rakitin has over 40 years experience as a software engineer including 25 years of experience in the medical device industry. He has worked with over 85 medical device manufacturers worldwide, from startups to Fortune 100 corporations. He has written several papers on medical device software risk management as well as a book titled: Software Verification & Validation for Practitioners and Managers.

He received a BSEE from Northeastern University and an MSCS from Rensselaer Polytechnic Institute. He earned certifications from the American Society for Quality (ASQ) as a Software Quality Engineer (CSQE) and Quality Auditor (CQA). He is a Senior Life member of IEEE and a member of MassMEDIC. He is on the Editorial Review Board for the ASQ Journal Software Quality Professional.

As President of Software Quality Consulting Inc., he helps medical device companies comply with FDA regulations, guidance documents, and international standards in an efficient and cost-effective manner.

http://ieeeboston.org/software-development-medical-device-manufacturers-line-course/

Fundamental Mathematics Concepts Relating to Electromagnetics (*Online Edition*)

New Online Course

Students have access to this self-paced course for 90 days!!

Course Summary This course is designed for people wishing to refresh or to learn the fundamental mathematical concepts that are used to describe electromagnetic wave behavior. The modules address all of the basic math concepts covered in a traditional undergraduate electromagnetics course in an ECE curriculum. These concepts include Vector Basics, Integral Vector Calculus, Differential Vector Calculus, Fundamental Coordinate Systems and Complex Numbers. After completing these modules, a person should have sufficient math skills to pursue graduate studies in electromagnetics and/or be able to decipher the math presented in an upper-level text on the subject.

Target audience: This course is designed for people wishing to refresh or to learn the fundamental mathematical concepts that are used to describe electromagnetic wave behavior.

Course chapters

1. Vector Basics
2. Dot Product
3. Cross Product
4. Contour Integration
5. Vector Algebra
6. Surface Integration
7. Metric Coefficients
8. Coordinate Systems
9. Vector Coordinate Conversion
10. Del Operator and the Gradient
11. The Curl
12. Divergence
13. Stokes Theorem
14. Divergence Theorem
15. Laplacian
16. Complex Numbers

Instructor's Bio:

Dr. Kent Chamberlin is the Chair and a Professor in the Department of Electrical and Computer Engineering. In his more than thirty-five years in academia, he has performed research for more than twenty sponsors, including the National Science Foundation. He has received two Fulbright awards, including the prestigious Fulbright Distinguished Chair, which he served in Aveiro, Portugal. He has also served as an Associate Editor for the Institute for Electrical and Electronics Engineers, and he continues to be active in performing and publishing in a range of research areas.

http://ieeeboston.org/fundamental-mathematics-concepts-relating-electromagnetics-line-course/

Reliability Engineering for the Business World *(Online Edition)*

Students have access to this self-paced course for 90 days!!

Course Description

This course is about becoming a leader in reliability engineering. While statistics are the tools of reliability engineering, it takes knowledge not only of these tools but also of the business. Developing knowledge of the business, from sales, engineering, customer service, to supply chain management can determine how effective you can be in improving reliability.

Never take anything for granted, even some rules of thumb in reliability can be misleading, this course will show you how to prove what truly happens in the real world and how to effect change in any part of the business where it is needed. We will explore the balance sheet, organizational structure, customers, service, and high volume manufacturing. It's not just about how often things fail, it is also about where the defect came from, what is the financial effect, the recovery, when should a business take field action, effect of human error, failure analysis/material science, reliability testing, and much more. I will also discuss how you develop executive buy in for change. The course assumes a basic knowledge in reliability statistics. There are 12 sessions that cover the following topics.

Course Outline

Basics – Measurements
Business Model
Design Model (HW and SW)
HALT/RDT/Predictions
Manufacturing Model
Early Life Failures
Wear Out and Mid Life Crisis
Advanced Reliability

Course Objective

To teach you how to become the go to person in your business for objective business sensed reliability answers and requirements.

Instructor's Bio

Kevin is an innovative leader in reliability methodologies with more than 30 years experience in the storage industry. In his latest role as Director of Engineering, he developed a top down reliability/availability management process for design organizations developing mission-critical storage systems. Kevin previously directed the most extensive HALT/HASS operation in the industry, with over 300 chambers worldwide. He has written several papers, consulted with many companies, 3 patents awarded and 2 pending related to systems reliability and test.

His most recent work has been performing system architectural analysis to optimize system availability, serviceability and costs. Providing guidance to development to maximize system reliability and reduce service costs. He has provided consultation to many large companies such as EMC, CISCO, AT+T, HP, Seagate and many others. His position and experience has enabled him to perform extensive field studies and design of experiments. Kevin has developed many

http://ieeeboston.org/reliability-engineering-business-world-line-course/

Introduction to Embedded Linux
(Online Edition)

New Online Course

Course Summary:
This first of a 2-part series introduces the Linux Operating System and the use of Embedded Linux Distributions. The course focuses on the development and creation of applications in an Embedded Linux context using the Eclipse IDE. The first part of the course focuses on acquiring an understanding of the basic Linux Operating System, highlighting areas of concern for Embedded Linux applications development using Eclipse. The latter part covers the methods for booting Embedded Linux distributions including embedded cross-development and target board considerations.

Who Should Attend:
The course is designed for real-time engineers who are building Embedded Linux solutions. It is also targeted at experienced developers requiring a refresher course on Embedded Linux. This course will clearly demonstrate both the strengths and weaknesses of the Linux Operating System in Embedded Systems.

Course Objectives:
To provide a basic understanding of the Linux OS and the Eclipse IDE framework.
To gain an understanding of the complexities of Embedded Linux Distributions and their use in embedded systems.
To give students confidence to apply these concepts to their next Embedded Linux project
Hardware and Software Requirements

The student should have a working Linux desktop environment either directly installed or in a virtualization environment. The desktop Linux should have the GNU compiler and binary utilities (binutils) already installed. A working Eclipse C/C++ installation or prior knowledge of C-based Makefiles is useful for completion of lab exercises. Lab solutions are also provided with the course. An Embedded Linux target hardware platform is useful but not absolutely required for this course.

Additional Reference Materials
Linux Kernel Development by Robert Love
Linux System Programming by Robert Love
Linux Debugging and Performance Tuning by Steve Best
Optimizing Linux Performance by Phillip G. Ezolt
Embedded Linux Primer by Christopher Hallinan
Pro Linux Embedded Systems by Gene Sally
Embedded Linux Development Using Eclipse by Doug Abbott
Linux Device Drivers by Jonathan Corbet et al
Essential Linux Device Drivers by Sreekrishnan Venkateswaran
Course Downloadable Content:

Video Lecture
Hands-On Lab Instructions
Hands-On Lab Solutions
Additional Related Materials

The Basics
Linux Terminology, History and Versioning
The Linux Community: Desktop & Embedded
The GPL
Linux References (Books and Online)

Getting Started
Kernel Source Code
Building the Kernel
Embedded Linux Kernels
Linux 2.6

Basic Kernel Capabilities
Process and Threads Management

Signals and System Calls
Synchronization, IPC and Error Handling
Timing and Timers
Memory Management and Paging
The I/O Subsystem: A Tale of Two Models
Modularization

Debugging
Process-Level and System-Level Debug
GDB and KGDB
GDB Server and Remote Debugging

An Eclipse Debug Example
Other Debug and Test Tools
Other System-Level Debug Approaches
Process & Threads Management
What are Processes and Threads?
Virtual Memory Mapping
Creating and Managing Processes and Threads
Thread-Specific Data (TSD) POSIX
The Native POSIX Threading Library (NPTL)
Kernel Threads

Signals
System Calls
Scheduling
Linux 2.4 and 2.6 Scheduling Models
The O(1) Scheduler
The Completely Fair Scheduler (CFS)

Synchronization
Via Global Data
Via Semaphores, Files and Signals

Inter-Process Communications (IPC)
Message Queues
Semaphores Revisited
Shared Memory
Pipes, FIFOs and Futexes
Remote Procedure Calls
Networking

Error Handling
errno and perror
strerror and strerror_r
oops, panics and Segmentation Faults

Timing
How Linux Tells Time
Kernel, POSIX and Interval Timers
High-Resolution Timers (HRTs)

Memory Management and Paging
Demand Paging and Virtual Memory
Allocating User and Kernel Memory
Mapping Device Memory
The Slab Allocator
The OOM Killer
Memory in Embedded Systems

Modularization
Creating a Module and Module Loading
Dependency Issues
In Embedded Systems

Shared Libraries
A Shared Library Example
Static and Dynamic Libraries

The I/O Subsystem: A Tale of Two Models
The Original Device Driver Model
The Standard I/O Interface
The New Device Driver Model and Kernel Object Classes
Initialization
Platform Devices, Busses, Adapters and Drivers
Comparing the Two Models

Embedded Linux Trends
Development, Monitoring and Testing

Some Final Recommendations

Lecturer:
Mike McCullough is President and CEO of RTETC, LLC. Mike has a BS in Computer Engineering and an MS in Systems Engineering from Boston University. A 20-year electronics veteran, he has held various positions at Tilera, Embedded Planet, Wind River Systems, Lockheed Sanders, Stratus Computer and Apollo Computer. RTETC, LLC is a provider of Eclipse-based development tools, training and consulting for the embedded systems market.

http://ieeeboston.org/introduction-to-embedded-linux-part-i-el201-online-course/

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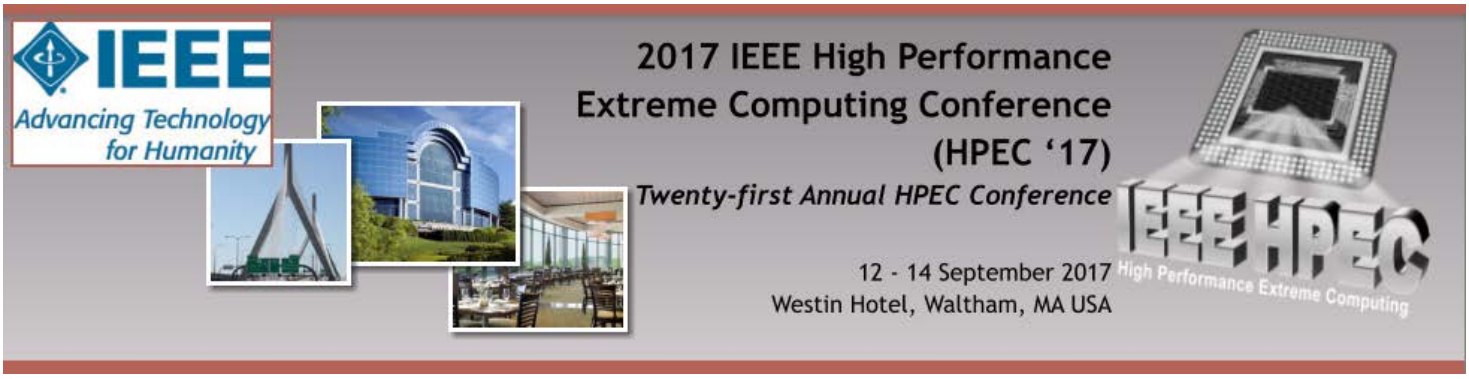

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The IEEE High Performance Extreme Computing Conference (HPEC '17) will be held in the Greater Boston Area, Massachusetts, USA on 12 – 14 September 2017. The HPEC charter is to be the premier conference in the world on the confluence of HPC and Embedded Computing.

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

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

HPEC accepts two types of submissions:

1. Full papers (up to 6 pages, references not included), and
2. Extended abstract (up to 2 pages, references included).

IMPORTANT DATES:

Submission Deadline: **May 19, 2017**
Notification of Acceptance: **June 16, 2017**

Preference will be given to papers with strong, quantitative results, demonstrating novel approaches or describing high quality prototypes. Authors of full papers can mark their preference for a poster display or an oral presentation. Presenters who wish to have hardware demonstrations are encouraged to mark their preference for a poster display. Accepted extended abstracts will be displayed as posters. All paper and extended abstract submissions must use the approved IEEE templates. Full paper submissions with the highest peer review ratings will be published by IEEE in the official HPEC proceedings available on IEEE eXplore. All other accepted submissions and extended abstracts are published on ieee-hpec.org. Vendors are encouraged to sign up for vendor booths. This will allow vendors to present their HPEC technologies in an interactive atmosphere suitable for product demonstration and promotion.

We welcome input (hpec@ieee-hpec.org) on tutorials, invited talks, special sessions, peer reviewed presentations, and vendor demos. Instructions for submitting will be posted on the conference web site shortly.

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

Practical Antenna Design for Wireless Products

An intensive Two-day Workshop

Time & Date: 9AM - 4:30PM, Thursday & Friday, June 1 & 2

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

Speakers: Henry Lau, Lexiwave Technology

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.

WHO SHOULD ATTEND

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

OUTLINE

Day 1 (1 June)
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 (2 June)
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 26 years of experience in designing RF systems, products and RFICs in both Hong Kong and US. He worked for Motorola and Conexant in US as Principal Engineer on developing RFICs for cellular phone and silicon tuner applications. Mr Lau holds five patents all in RF designs. He is currently running Lexiwave Technology, a fables semiconductor company in Hong Kong and US designing and selling RFICs, RF modules and RF solutions. He has also been teaching numerous RF-related courses internationally.

Decision (Run/Cancel) Date for this Course is Monday, May 22, 2017

Payment received by May 17
IEEE Members $405
Non-members $435

Payment received after May 17
IEEE Members $435
Non-members $455

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

Simulink Model based FPGA Digital Design and Digital Signal Processing

Time & Date: Course postponed until fall 2017

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

Speakers: Cherif Chibane, Rick Rosson; MIT Lincoln Laboratory

Description:

Over the last 30 years, applications for Field Programmable Gate Array (FPGA) designs have increased exponentially. FPGA's have moved from just digital designs to other areas such as embedded controllers, Digital Signal Processing, communication systems, and configurable computing. This has made exposure to and mastery of FPGA design crucially important for many people in industry and academia.

This course provides a detailed overview of FPGA technologies, a top-down design workflow, modeling and simulation, standard design tools, and applications. Using a mixture of theory and hands-on laboratories, the course provides students what they need to know in modeling, simulation, design, verification, and implementation of multi-disciplinary applications targeting FPGA's. This course provides plenty of hands-on lab exercises to reinforce the key concepts. While the material covered in this class targets Xilinx devices, it can be easily used for others devices such as ALTERA and other FPGA devices.

Presenters:

This course will be jointly presented by Cherif Chibane and Rick Rosson of MIL Lincoln laboratory. Their combined and complementary expertise will greatly benefit attendees from industry and academia.

Cherif Chibane is currently with MIT Lincoln laboratory as a research staff. He was one of the early adopters of FPGA's for configurable computing. Prior to MIT-LL, he was part of the BAE Systems team that pioneered the use FPGA's for Software Denied Radio (SDR). He has more than 25 years in the design of advanced configurable computing using FPGA's for DSP, digital logic, and embedded designs.

Rick Rosson is a senior modeling and simulation engineer at MIT Lincoln Laboratory. Prior to joining MIT-LL, Rick served as a senior applications engineer at MathWorks for 9 years, with a focus on digital signal processing, statistical signal processing, embedded systems design, modeling and simulation, and data analysis and visualization. Rick holds a Master of Science in Electrical Engineering from Boston University and a Master of Science in Management from the MIT Sloan School of Management.

Agenda

Session #1

- Course Overview
- Model based benefits in today's FPGA designs.
- Simulink/Matlab Overview
- Simulink Examples

Session #2
• FPGA Technologies Overview
• Xilinx ISE Overview
• Fixed point Vs floating point overview
• HDL/FPGA Examples

Session #3
• Preparing Simulink models for HDL code generation
• Generating HDL code from Simulink
• Verifying the generated code
• Code Generation Examples

Session #4
• Modeling Signal Processing and Communications Systems in Simulink®
• Signal Processing Examples
• Implementing Signal Processing Systems on FPGA's

Session #5
• Advanced Topics using FPGA's
• End-To-End Design and Verification
• End-To-End Design Example
• Course Summary

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@gamil.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.

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

Patenting Outside of the U.S.

Date & Time: 6 – 9PM, Monday, June 19

Location: Tufts University, Halligan Hall, Room TBD., 161 College Ave, Medford, MA

Speaker: Christine Kuta, Kuta Intellectual Property Law, LLC

Course Overview: Most countries in the world have a patent office where one can apply for protection of inventive ideas. There is, however, no global patent that provides rights everywhere. Operating in the global economy, though, requires some patent protection beyond the U.S. borders. Therefore, understanding the systems and strategies for determining how and where to apply for protection outside the U.S. is critical for operating in the global economy. This class will provide information about systems and strategies for obtaining patent protection outside the U.S.

Description: The class will provide an overview of the laws and requirements, and explain the procedures in obtaining foreign patent rights. International treaties such as the Patent Cooperation Treaty (PCT) will be discussed. The PCT enables the applicant to begin the patent process in most of the world's countries simultaneously. The European Union (EU) unitary patent, the first multinational patent, and unified patent court will also be discussed. The EU unitary patent and the unified court have been in development for a number of years and is about to launch despite delays caused by Brexit. Foreign filing rights are easy to lose and costs can be difficult to contain, however, the class will also provide some strategies for effective foreign filing in spite of the difficulties.

Target Audience: Engineers in large and small companies with new ideas, inventors, entrepreneurs seeking to develop a patent strategy, anyone interested in learning about patents and how to obtain a patent outside the U.S.

Benefits of attending: Understanding the process and requirements for obtaining a foreign patent; information about how to leverage U.S. patents rights in the foreign application process; understanding the procedures in order to make effective business decisions and contain costs. Course will include handouts including a list of resources.

Course outline:

I. Patents
A. Quick overview of what patents protect and why patent protection should be pursued.
B. High level view of process
C. Foreign filing license

II. Foreign patents
A. Basis for foreign patent protection
B. Representation
C. Differences in the process as compared to U.S.
  i. Patent eligibility
  ii. Inventorship
  iii. Patent Types
  iv. Process
  v. Fees

III. International applications – i.e., starting the foreign application process in many countries at once
A. Patent Cooperation Treaty
B. Regional applications

IV. The Unitary Patent and Unified Patent Court -- new developments in the Old World
A. What it is and how it works

B. Proposed dates of implementation
C. Filing options

V. Protection strategies

VI. A few words about enforcement

Christine Kuta is an Intellectual Property lawyer. Her practice includes Intellectual Property strategy, portfolio development and management, and patent and trademark prosecution, search and opinions. Ms. Kuta counsels clients in a wide variety of technical areas including computer systems and software applications, medical devices, lighting systems, optics, materials and manufacturing processes, complex data management systems, electronics, energy management systems and energy storage including fuel cells, mechanical devices and consumer products including clothing and accessories.

Decision (Run/Cancel) Date for this Course is Monday, June 5, 2017

Payment received by May 29	
IEEE Members	**$50**
Non-members	**$60**
Payment received after May 29	
IEEE Members	**$60**
Non-members	**$70**

http://ieeeboston.org/patenting-outside-u-s-spring-2017/

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