



May 2017 Newsletter
The IEEE Reliability Society
Joint Section Chapter: Boston - New Hampshire - Providence
Feb 2017 – May 2017
<http://www.ieee.org/bostonrel>

Greetings everyone! Since our last newsletter the Winter snow has melted and the trees are blooming with wonderful Spring colors. I write this greeting on May the 4th, which is known as “May The Fourth Be With You” day by all the unabashedly nerdy Star Wars fans among us, who may get confused and accompany it with the Vulcan peace sign made by Star Trek’s Spock played by New England native Leonard Nimoy who passed a little over two years ago. To make the most of your membership, I would encourage each of you to get involved in making our monthly meeting series as beneficial as possible by suggesting meeting topics/speakers, volunteering to help set up, suggesting alternate pizza flavors, etc. We have had a successful Q1 in terms of speakers and meetings, and are expecting to have an equally valuable Q2 as you’ll find mentioned in the remainder of this newsletter. As always, please drop me a line at charles.recchia@ieee.org if you have comments, questions or feedback about our best-in-region Chapter, which has developed over the decades into a closely knit community of technical exchange amongst colleagues.

Hope to see you at the next Chapter Meeting!
Cheers



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Recent Activities:

- March 18, 2017 “Reliability Engineering, The Headhunter’s View” presented by Leslie Gabriele, Gabriele & Company held at MIT/LL Lexington, MA.
- April 11, 2017 Focused Ion Beam Technology: Applications to Microelectronics
Marsha Abramo, Advisory Engineer – Scientist (Retired), IEEE
Distinguished Lecturer - meeting postponed until a later date
- March 21-22, 2017 Silicon Errors in Logic – System Effects Workshop, Northeastern University, Boston, Massachusetts
- On-line Course Reliability Engineering for the Business World Instructor:
Kevin Granlund President – Distributed Systems Analysts, LLC

Upcoming Events:

- May 17, 2017 **“Assessment of Copper Bond Wire for Use in Long Term Military Applications”** by Aaron Lecomte Raytheon Co
Visit [here](#) to register
- September 10-14, 2017 **39th Electrical Overstress / Electrostatic Discharge Symposium**,
Westin La Paloma, Tucson, AZ
Visit [here](#) to register
- September 28-30, 2017 **Accelerated Stress Testing and Reliability (ASTR) Conference**,
Hilton Garden Inn, Austin, TX
Visit [here](#) to register.
- October 8-12, 2017 **IEEE International Integrated Reliability Workshop**,
Stanford Sierra Conference Center, South Lake Tahoe, CA
Visit [here](#) to register

Recent Chapter Activities

“Reliability Engineering, The Headhunter’s View” presented by Leslie Gabriele, Gabriele & Company”

This meeting was an interactive discussion where they audience had the opportunity to investigate market trends, consider job prospects, and explore behind the scenes hiring behaviors, with an emphasis on reliability engineering in particular.

Leslie has worked in both retainer and contingency search environments and has specialized in recruiting manufacturing engineering talent for the past 30 years and discussed the roll of the recruiter in the job search: Does the fact of the recruiter’s commission help or hurt the candidate’s chances? What value is derived for the employer? How many recruiters should a job searcher connect with? What’s the difference between contingency and retained recruiters and how do I pick one?

The latest set of accepted standards for what a resume should look like: What works and what doesn’t work? A resume for visual impact or one to get by screening software? What steps do you take if the job you thought you had forever ends tomorrow? How has social media changed the job hunting process? What are the most common interviewing mistakes to avoid?



Link to past presentations <http://ewh.ieee.org/r1/boston/rl/presentations.html>

SELSE – Silicon Errors in Logic – System Effects; March 21-22, 2017

Northeastern University, Boston, Massachusetts.

This was a joint workshop with the Boston Chapter IEEE Reliability Society



The growing complexity and shrinking geometries of modern manufacturing technologies are making high-density, low-voltage devices increasingly susceptible to the influences of electrical noise, process variation, transistor aging, and the effects of natural radiation. The system-level impact of these errors can be far-reaching. Growing concern about intermittent errors, unstable storage cells, and the effects of aging are influencing system design and failures in memories account for a significant fraction of costly product returns. Emerging logic and memory device technologies introduce several reliability challenges that need to be addressed to make these technologies viable. Finally, reliability is a key issue for large-scale systems, such as those in data centers. The SELSE workshop provides a forum for discussion of current research and practice in system-level error management. Participants from industry and academia explore both current technologies and future research directions (including nanotechnology).

Keynote Speeches:

- Tolerating Hardware Faults in Commodity Software: Problems, Solutions and a Roadmap Prof. Karthik Pattabiraman
- Approximate Computing: It's not just good, it's good enough! Prof. Michael Carbin
- Errors in Modern Systems Dr. Vilas Sridharan, AMD

Panel Discussion Topic: Beam Experiments: Industry, Academia, and Facility Experiences Panelists: Vilas Sridharan, Carlo Cazzaniga, Ethan Cascio, Siva Hari, Paolo Rech

Presentations:

- A System-Level Voltage/Frequency Scaling Characterization Framework for Multicore CPUs
- System Call Logs with Natural Random Faults: Experimental Design and Application
- Characterizing The Impact of Soft Errors Across Microarchitectural Structures and Implications for Predictability
- Evaluation and Mitigation of Neural Network-based Object Detection in Three GPU Architectures
- Evaluating the Effects of Input Parameters on Program Vulnerability in GPU Applications
- Exploiting the Tradeoff between Program Accuracy and Soft-error Resiliency Overhead for Machine Learning Workloads
- Soft Error Hardened Flip-Flop Based on a Novel Bulk Potential Management Technique
- Reliability Analysis of Feed-Forward Artificial Neural Networks in System on Chips
- Adapting the DMTCP Plugin Model for Checkpointing of Hardware Emulation
- Temperature Dependence of SER Performance in 14nm FinFET Technology
- Deep Healing: Ease the BTI and EM Wearout Crisis by Activating Recovery
- Exploiting the Tradeoff between Program Accuracy and Soft-error Resiliency Overhead for Machine Learning Workloads

- A Fine-grained; Accountable; Flexible; and Efficient Soft Error Fault Injection Framework for Profiling Application Vulnerability
- Software Marking for Cross-Layer Architectural Vulnerability Estimation Model
- DRAM Scaling Error Evaluation Model with Variable Retention Time
- Deep Healing: Ease the BTI and EM Wearout Crisis by Activating Recovery
- ASAR: Application-Specific Approximate Recovery to Mitigate Hardware Variability



Reliability Engineering for the Business World – On-Line Course

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

Instructor: Kevin Granlund
President – Distributed Systems Analysts, LLC
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<http://www.linkedin.com/pub/kevin-granlund/5/114/320/>

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.

Visit [here](#) to register

Chapter Participation and Outreach Efforts

Chapter Seeks Volunteers



We are interested in having you help out as a volunteer, contributing as much or as little as you would like. We have a good team of volunteers that help us keep things going. If you would like to join us, there is probably ample opportunity to choose how you would like to contribute. Email or text any of us at the next monthly presentation, or attend one of our Advisory Committee meetings.

For updates on upcoming events: <http://ewh.ieee.org/r1/boston/rl/events.html>.

Readers can contact chapter newsletter editor Ken Rispoli (ken-rispoli@ieee.org) with any comment/suggestion or if interested in contributing to our next issue. Thanks.

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