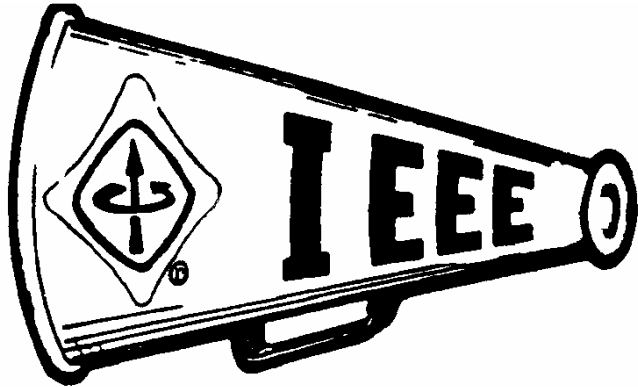# The Valley Megaphone

Newsletter of the
Institute of Electrical and Electronics Engineers, Inc. Phoenix Section
July 2007, Volume XXI, Number 7

Executive Committee

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This Issue of The Valley Megaphone Features:

Contacts:
- **Executive Committee (page 1)**
- **Chapters and Branches (page 1)**
- **Student Branches (page 2)**

Contents:

IEEE Phoenix Section Executive Committee meeting minutes can be found at: http://www.ieee.org/phoenix

Please send announcements for Valley Megaphone to Eric Palmer: ecpalmer@ieee.org.

Chapters

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Waves & Devices Society
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DeVry, Computer Society
Chair:

NAU, Engineering
Chair:
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Embry-Riddle, Prescott
Chair:
Advisor: Chuck Cone
conec@erau.edu

Phoenix Section Executive Committee Meeting – First Tuesday of the month.

Time: 6:00 pm to 8:30 pm

Place: Phoenix Airport Hilton, 2435 South 47th Street
Phoenix, AZ, 85034
Phone: 480-804-6017

Directions: From 143, exit University Ave, go west, turn right on 47th street.

More Info: Meetings held first Tuesday of month. No meetings in July and August. All interested IEEE members are welcome to attend.

Contact: Rao Thallam, Phoenix Section Chairman, ph: (602) 236-5481 or e-mail: thallam@ieee.org

<advertisement>

Instructors Needed Now for Fall Semester:

Instructors needed in:
   Electrical Math
   Electrical
   Computer Electronics
Positions available:
   Evenings & Part-Time
   Phoenix Metro Area

Fax or email your resume to:
Yolanda Price
Director of Education
602-277-9881 (fax)
yprice@electricleagueofarizona.org

The Electric League of Arizona Founded 1960

2007 IEEE-USA Annual Meeting
Technical Workshops
31 August 2007

The Phoenician Resort, Scottsdale, AZ
http://thephoenician.com/pages/index.html

Stay competitive through hands-on training and in-depth presentations. Meet industry experts. Share ideas and learn. Join us for technical workshops at the 2007 IEEE-USA Annual Meeting where you will participate in hands-on training highlighting some of the latest technologies. All attendees will receive a certificate for 7 PDHs.

Registration 7:00 – 8:00 am

Disaster Recovery	LabVIEW	Rational	Emerging Technology
Disaster Recovery Vishnu Pandey - HP	**LabVIEW & Computer-Based Measurements** Doug Kunz & Michael Bryner - NI	**Modern Software Best Practices & Techniques** Anthony Crane - IBM	**Technologies, Tools & Instructional Resources** John McLellan - Freescale
Keynote Luncheon – Technology Challenges Facing Engineering to Meet Cost & Performance **Dr. Gaurang Choksi, Manager, Intel Core Competency Group**			
Disaster Recovery Vishnu Pandey - HP	**LabVIEW RealTime** Doug Kunz & Michael Bryner - NI	**Modern Software Best Practices & Techniques** Anthony Crane - IBM	**RFID Technology Seminar** Emily Sopensky – IEEE Kristin Hedger & Gene Fedors **Virtual Training Environment** Jim Wrubel - SEI

Course Information:

Disaster Recovery: Need data availability 24/7? An overview of Storage Area Networks (SANs), followed by in-depth discussion of architecting a fully-redundant solution that provides the best protection for your data.

LabVIEW and Computer-Based Measurements Hands-On: Learn how to build measurement and control applications through practical examples using National Instruments LabVIEW graphical programming.

LabVIEW RealTime: Learn how to design real-time, deterministic data acquisition and control applications.

Modern Software Best Practices & Techniques: Learn essentials of iterative development with Rational Unified Process, requirements management in an iterative lifecycle, successful use cases and enabling Portfolio Management.

Technologies, Tools & Instructional Resources: A demonstration of learning environments, student educational kits, and accompanying lab modules designed for industry, educational institutions and hobbyists. Freescale Semiconductor will present their broad portfolio of technologies, innovative products, and services.

RFID Technology: Emily Sopensky, The Iris Company, Kristin Hedger, Killdeer Mountain Manufacturing, and Gene Fedors, RFID Technical Institute, will present an introduction to RFID technology and its applications.

SEI's Virtual training Environment: High-fidelity Web-based training using video and hands-on labs. This presentation will describe the key technologies used in VTE, demonstrate the application, and offer lessons learned.

Workshop Registration Fee (before July 15)* Includes keynote luncheon		Workshop Registration Fee (after July 15) Includes keynote luncheon	
Student/Life Member	$55	Student/Life Member	$60
IEEE Member	$150	IEEE Member	$195
IEEE Non-Member	$200	IEEE Non-Member	$250

Attendee Registration available on-line at
http://www.ieeeusa.org/calendar/conferences/2007annualmeeting/registration/default.asp
*Corporate discount - 5 conference attendees for $600, Contact Linda Hall at l.hall@ieee.org for corporate registration.
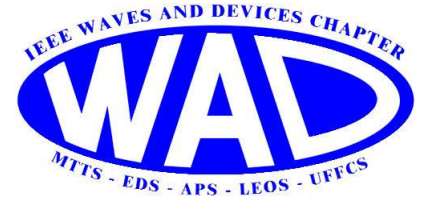
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INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

WAVES AND DEVICES
PHOENIX CHAPTER

July 11, 2007
www.eas.asu.edu/~wadweb

Cognitive Networking: Challenges and Directions

Ramesh Rao

Director, UCSD CalIT2 and Qualcomm Chair Professor
Department of Electrical and Computer Engineering,
University of California, San Diego, CA 92093-0436

Abstract

In the last two decades there was tremendous progress in research on Software Defined Radios (SDRs). SDRs enable transceivers with programmable operating parameters that can be altered by making a change in software and thereby controls the operation of the device without any changes in the hardware. This flexibility provided by SDRs paved way for Cognitive Radios (CRs). CRs could change its transmitter parameters based on interaction with the environment in which it operates. Today it appears that the ever increasing demand for spectrum and the exponentially increasing number of transceivers per unit area require that every transceiver be built with cognitive capabilities. While CRs soon lead to Cognitive Radio Networks (CRNs) and a whole lot of research issues such as co-existence of primary users and secondary users while maintaining the service conditions. All along the above mentioned research, practice lagged behind the research. However, recently, several programmable platforms, developed with such SDR flexibility, are available. One among them is CalRadio developed by UCSD. CalRadio series of research platforms provide programmable research platforms for wireless network research.

One question remains to be answered in all CR research is whether we could exploit the huge amount of information present inherent in the system and can the network learn and adapt itself as the situations vary? It is very likely that nodes face similar experiences repeatedly and inherent ability to learn would require capabilities beyond the networking domain. One important feature that is required for the next generation Internet is the system wide cognition that would help the network detect potential issues before they actually happen, share information in order to improve end-user experiences, or optimize the overall system as new applications emerge. Therefore, the SDR, CR, and CRN research now progresses towards Cognitive Networking (CN) research. In comparison to the CRNs, the CN research introduces the cognitive concepts across all layers. For example, a variety of systems have been deployed in recent years to provide users access over a wired or wireless network to a wide range of communication, information and entertainment services. These systems have been largely individually designed, deployed and optimized around information that is usually gathered within the elements of the particular system. While these systems demonstrate the feasibility of extending new innovative services, they fail to systematically gather and retain information useful to the effective use of the larger set of networked systems that the end users seek access to.

Biography

Ramesh Rao is a faculty member in the department of Electrical and Computer Engineering at the University of California, San Diego, where he is currently Director of the San Diego Division of the California Institute for Telecommunications and Information Technology (Calit2). In April 2004, he was named Qualcomm Endowed Chair in Telecommunications and Information Technology. His research interests include architectures, protocols and performance analysis of wireless, wire line and photonic networks for integrated multi-media services. Prior to his appointment as the Director of the San Diego Division of Calit2, he served as the Director of the UCSD Center for Wireless Communications (CWC) and was the Vice Chair of Instructional Affairs in the Department of Electrical and Computer Engineering.

Date: Wednesday, July 11, 2007

Location: Bernoulli Conference Rm, Bldg 99, Freescale Semiconductor, 2100 E. Elliot Rd., Tempe
Drive North on Country Club off Elliot on the western edge of the Freescale site, enter back parking lot

Time: 3:30 - 5:00pm Presentation
For more information, please call Chuck Weitzel (Chapter Chair) at (480) 413-5906.
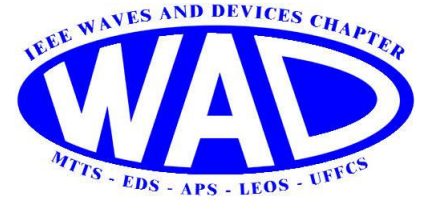
INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
WAVES AND DEVICES
PHOENIX CHAPTER

August 6, 2007
www.eas.asu.edu/~wadweb

Electrostatic Discharge (ESD) Protection for RF IC's
Juin J. Liou

Professor, Dept. of Electrical and Computer Engineering
Director, Solid State Electronics Lab and Device Characterization Lab
University of Central Florida, Orlando, Florida, USA

Abstract

Electrostatic discharge (ESD) is a process in which a finite amount of charge is transferred from one object (i.e., human body) to the other (i.e., microchip). This process can result in a very high current passing through the microchip within a very short period of time, and more than 35% of chip damages can be attributed to such an event. As such, designing robust on-chip ESD structures to protect microchips against ESD stress is a high priority in the semiconductor industry. An overview on the ESD sources, models, and protection schemes will first be given in this talk. This is followed by the development of a procedure to optimize the ESD structures for optimal robustness and minimal parasitic capacitance for RF applications.

Biography

Juin J. Liou received the B.S. (honors), M.S., and Ph.D. degrees in electrical engineering from the University of Florida, Gainesville, in 1982, 1983, and 1987, respectively. In 1987, he joined the Department of Electrical and Computer Engineering at the University of Central Florida, Orlando, Florida where he is now a Professor. His current research interests are Micro/nanoelectronics computer-aided design, RF device modeling and simulation, and electrostatic discharge (ESD) protection design and simulation.

Dr. Liou has filed 3 patents, and has published 6 textbooks (another in progress), more than 210 journal papers (including 13 invited articles), and more than 160 papers (including 58 keynote or invited papers) in international and national conference proceedings. He has been awarded more than $7.0 million of research contracts and grants from federal agencies (i.e., NSF, DARPA, Navy, Air Force, NIST), state government, and industry (i.e., Semiconductor Research Corp., Intel Corp., Intersil Corp., Lucent Technologies, Alcatel Space, Conexant Systems, Texas Instruments, Fairchild Semiconductor, Analog Devices, RF Micro Device, Lockheed Martin), and has held consulting positions with research laboratories and companies in the United States, China, Japan, Taiwan, and Singapore.

Dr. Liou received ten different awards on excellence in teaching and research from the University of Central Florida (UCF) and six different awards from the IEEE Electron Device Society (EDS). Among them, he was awarded the UCF Distinguished Researcher Award three times (1992, 1998, 2002), UCF Research Incentive Award two times (2000, 2005), and IEEE Joseph M. Biedenbach Outstanding Educator Award in 2004 for his exemplary teaching, research, and international collaboration. His other honors include Fellow of the IEE, Trustee Chair Professor of UCF, Cao Guang-Biao Endowed Professor of Zhejiang University, China, Consultant Professor of Huazhong University of Science and Technology, Wuhan, China, Courtesy Professor of Shanghai Jiao Tong University, Shanghai, China, IEEE EDS Distinguished Lecturer, and National Science Council Distinguished Lecturer.

Date: **Monday, August 6, 2007**
Location: **Bernoulli Conference Rm, Bldg 99, Freescale Semiconductor, 2100 E. Elliot Rd., Tempe**
Drive North on Country Club off Elliot on the western edge of the Freescale site, enter back parking lot
Time: **3:30 - 5:00pm Presentation**
For more information, please call Chuck Weitzel (Chapter Chair) at (480) 413-5906

IEEE Mentoring Connection

IEEE is offering its members the opportunity to participate in an online program which will facilitate the matching of IEEE members for the purpose of establishing a mentoring partnership. By volunteering as a mentor, individuals use their career and life experiences to help other IEEE members in their professional development.   I believe this program can be a great tool to provide our newest members of our profession guidance in their careers and provide experienced members a chance to hear first hand from the newly graduated about the latest training the next generation is receiving. This is a program for higher level members and is provided to help ease the transition out of school and into a career.

As a mentee, you lead your partnership by selecting your mentoring partner from among those who have volunteered to serve in this capacity. I ask that you review the time and effort commitment to the program to ensure a successful mentoring partnership. Participation in the program is voluntary and open to all IEEE members above the grade of Student Member.

If you are interested, please go to http://www.ieee.org/mentoring for information on the roles and responsibilities of each mentoring partner. I encourage you to take advantage of the IEEE network of technical professionals or offer your expertise and sign up for the online mentoring program today.

Who can be an IEEE Mentor?

IEEE higher-grade members (above Student Member grade) who are, but not limited to:

- Willing to give time and effort to the mentoring partnership (we suggest minimum of two hours per month)
- Able to communicate effectively with others
- Willing to share some career successes and failures
- Individuals who may be or have been executives, consultants, or in middle or upper management, or in research
- Individuals who may be or have been educators, entrepreneurs, or self-employed
- Individuals who may be or have been proven leaders offering inspiration and insight
- Individuals who may be or have been IEEE officers or volunteers
- Willing to review an orientation session to learn guidelines, tools of program and the mentee and mentor's role and responsibilities

Who can be an IEEE Mentee?

IEEE higher-grade members (above Student Member grade) who are, but not limited to:

- New professionals in their first or second job, or considering entering graduate programs
- Recent graduates entering the professional workforce for the first time
- Professional making a career move or career change
- Passionate for learning
- Willing to give time and effort to the mentoring partnership (we suggest minimum of two hours per month)
- Willing to identify and clarify their developmental goals
- Interested in learning from another professional "who has been there"
- Willing to participate in mentee orientation session to learn guidelines, and tools of program and their role and responsibilities as a mentee

This program deserves your consideration and doesn't require a large amount of time on your part. It can provide of great assistance to the next generation of engineers.

Russ Kinner
Membership Chair, Phoenix Section

RE-SEED
Retirees Enhancing Science Education through Experiments & Demonstrations

Overview

RE-SEED (Retirees Enhancing Science Education through Experiments and Demonstrations) is a Northeastern University program that prepares engineers, scientists, and other individuals with science backgrounds to work as volunteers, providing in-classroom support to upper elementary and middle school science teachers with teaching the physical sciences.

After completing a comprehensive free training program, participants volunteer in middle school classrooms on the average once a week for at least one year. RE-SEED began in 1991 with six volunteers. To date close to 500 RE-SEED volunteers have worked in schools in about 100 communities throughout the country offering about 500,000 hours of their time.

Nationally, 75 percent of 7th and 8th grade students are taught physical science by teachers who do not have a major or a minor in the subject (The National Science Board, Science and Engineering Indicators 2000). RE-SEED volunteers possess talent and expertise that complement those of science teachers. They bring with them a wealth of knowledge and experience that allows them to make science interesting and relevant to everyday situations.

RE-SEED volunteers work closely with the host science teachers to help them enrich and implement their school curriculum. Overall the volunteers become involved members of their schools' and even their districts' teaching team, sometimes taking part in curriculum adoption decisions.

Please contact us by email at reseed@neu.edu or phone 888-742-2424; Shelia Kirsch at Sheila.Kirsch@asu.edu and / or Deirdre Weedon, d.weedon@neu.edu. if you are interested in learning more about these training programs.