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Michael D. Ernst
University of Washington

Monday 09 September
4:00 pm
KAIS 2020/2030
2332 Main Mall, UBC

This event is sponsored
by the UBC
ECE Department
Colloquium Series

Verification games: Making software verification fun

Program verification is the only way to be certain that a given piece of software is free of (certain types of) errors—errors that could otherwise disrupt operations in the field. To date, formal verification has been done by specially-trained engineers. Labor costs have heretofore made formal verification too costly to apply beyond small, critical software components.

Our goal is to make verification more cost-effective by reducing the skill set required for program verification and increasing the pool of people capable of performing program verification. Our approach is to transform the verification task (a program and a goal property) into a visual puzzle task—a game—that gets solved by people. The solution of the puzzle is then translated back into a proof of correctness. The puzzle is engaging and intuitive enough that ordinary people can through game-play become experts.

This talk will present the design goals and choices for both the game that the player sees and for the

underlying program analysis. It will conclude with implications to gaming, programming, and beyond.

Speaker: Michael D. Ernst is an Associate Professor in the Computer Science & Engineering department at the University of Washington.

Ernst's research aims to make software more reliable, more secure, and easier (and more fun!) to produce. His primary technical interests are in software engineering, programming languages, type theory, security, program analysis, bug prediction, testing, and verification. Ernst's research combines strong theoretical foundations with realistic experimentation, with an eye to changing the way that software developers work.

Dr. Ernst was previously a tenured professor at MIT, and before that a researcher at Microsoft Research. More information is available at his homepage: <http://homes.cs.washington.edu/~mernst/>.

This talk should be of broad interest to many of us and although not sponsored by the IEEE Computer Society it appears here courtesy IEEE Vancouver Joint Computer chapter chair Sathish Gopalakrishnan sathish@ece.ubc.ca

10th International Workshop on Complex Systems and Networks

SFU Harbour Centre
December 11-13, 2013

<http://iwcsn2013.eie.polyu.edu.hk/Home.html>

The International Workshop on Complex Systems and Networks (IWCSN) is a strongly interdisciplinary workshop intended to bring together mathematicians, physicists, biologists, social scientists, and engineers working on different aspects of network dynamics. The focus of IWCSN 2013 will continue to be devoted to the impact of network structure on systems dynamics. This area continues to be a hot research topic in all branches of science and technology.

The objectives are to provide opportunities for participants to learn about state-of-the-art research in various related yet disparate fields. We plan to have both tutorial talks and in-depth technical talks describing the latest research results and ongoing projects. Furthermore, these workshops provide opportunities for researchers and students from diverse disciplines to interact, find common ground, share results and insights, and foster collaboration.

Some of the questions that we have and would like to address in this workshop are: What are the universality properties of complex networks? For a particular application, what is the best complex network to deploy? How does the topology of the network influence various aspects of the underlying system? What can we learn from biological and social networks that may be useful in engineering networked systems and vice

versa? What network models can be analyzed mathematically yet capture the salient features of the underlying ensemble systems? Can we build a taxonomy of complex network models that facilitates the identification of phenomena in ensemble systems?

The 2013 IWCSN will be divided into two main sections: theoretical works with a special focus on mathematical modeling and careful analytical studies a wide range of problems emanating from various applications in physics, chemistry, life sciences, engineering, and communications. There will be an opportunity for junior researchers and students to present their work including a session where researchers may pose interesting open questions.

Local organizer: The IRMACS Centre, Simon Fraser University

Sponsors: IEEE Circuits and Systems Society Centre for Chaos and Complex Networks, City University of Hong Kong, Hong Kong; IEEE Vancouver Section and IEEE Circuits and Systems Society joint Chapter of the Vancouver/Victoria Sections; Faculty of Applied Science and School of Engineering Science, Simon Fraser University

Inquiry: Ljiljana Trajkovic (Email: ljilja@sfu.ca)





Gurshan Sidhu
National Instruments

An introduction to software defined radio with NI LabVIEW and NI USRP

Join us for a National Instruments campus workshop: and discover how to use NI LabVIEW system design software to easily acquire, analyze, and record wireless signals from the NI USRP (Universal Software Radio Peripheral) software defined radio. Learn how to prototype a wireless communication receiving algorithm using this flexible, scalable radio.

This seminar will educate researchers and graduate students in the fields of science and engineering on the practical implementation of a software defined radio system.

This is an interactive hands-on session. Eight 8 laptops/8 USRP stations will be available.

Benefits of attending this seminar:

- introduce LabVIEW fundamentals necessary for wireless communication applications
- learn basic LabVIEW design patterns for wireless communications

- develop confidence that NI can meet the requirements of their application

Space is limited so please reserve your seat today.

Speaker: Gurshan Sidhu graduated with a mechanical engineering degree from the University of Victoria and with a diploma from Columbia Institute of Technology. Prior to joining NI, he was a senior systems engineer at Honeywell-Measurex. He joined NI in August of 1998 as an applications engineer and worked with different virtual instrumentation applications across various industries, platforms, and vendors. Since May of 1999, he has been based in the British Columbia area as a field engineer working to help local companies evaluate, design, and implement solutions for their measurement and control applications.

Preregistration is required. Please contact Dave Michelson at davem@ece.ubc.ca.

Monday 30 September

09:00 a.m. - 12:00 p.m.

MCLD 418
University of British
Columbia

Information

Joint Aerospace and
Electromagnetics chairs
Dave Michelson
davem@ece.ubc.ca
Steven McClain
StevenMcClain@ieee.org



**IEEE Joint Aerospace and
Electromagnetics Chapter**

INCOSE workshop broadcast

Systems Engineering is an engineering discipline that deals with a complex system as a whole, covering its entire lifecycle and all its functional and operational aspects. INCOSE, the International Council on Systems Engineering, has organized a workshop in Ottawa with multiple talks about Systems Engineering. The event from Ottawa will be broadcast and we will view and hear the talks here in Vancouver. Here in Vancouver, we are also planning to have at least one speaker. IEEE Vancouver GOLD will be hosting that event jointly with INCOSE Canada.

Saturday 28 September

10:00 am - 1:00 pm

Location: To be confirmed

The event in Vancouver is still being organized. An update will be updated here and posted on the IEEE Vancouver website as soon as the venue and event plan are confirmed. For event registration and any additional information or to participate as a volunteer, please contact Ophir Kendler at ophir2k@ieee.org



Information

GOLD chair
Ophir Kendler
ophir2k@ieee.org

EDOC 2013

Call for Participation

We invite you to participate in the 17th IEEE International EDOC Conference

09-13 September Vancouver BC

Enterprise of the future in a world of cloud, social and big data

Sponsored by IEEE Computer Society and IEEE Communications Society

<http://www.edocconference.org> http://twitter.com/ieee_edoc

Some highlights from the program

- Keynote 1: Rajkumar Buyya, University of Melbourne and Manjrasoft
“Market-Oriented Cloud Computing”
- Keynote 2: Keith Swenson, Fujitsu America Inc.
“System architects rely on their intuition when designing a system to support the work”
- Keynote 3: Francisco Curbera, IBM
“Integrating The Business Cloud”

About the conference

IEEE EDOC 2013 is the seventeenth conference in a series that provides the key forum for researchers and practitioners in the field of enterprise computing. EDOC conferences address the full range of models, methodologies, and engineering technologies contributing to intra- and inter-enterprise application systems. Since 1997, EDOC has brought together leading computer scientists, IT decision makers, enterprise architects, solution designers, and practitioners to discuss enterprise computing challenges, models and solutions from the perspectives of academia, industry, and government. The IEEE EDOC conference series emphasizes a holistic view on enterprise applications engineering and management, fostering integrated approaches that address and relate business processes, people and technology.

EDOC 2013 welcomes high quality scientific submissions as well as experience papers on enterprise computing from industry.

Registration is now open on the EDOC 2013 web site:

http://planet-si.org/edoc2013/index.php?option=com_content&view=article&id=264&Itemid=775&lang=en

The entire conference program is available on the EDOC 2013 web site:

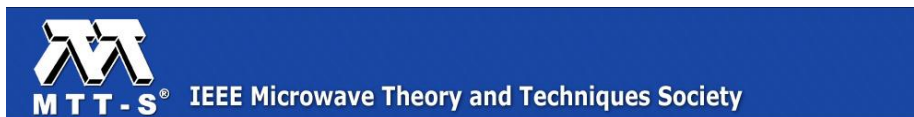
http://planet-si.org/edoc2013/index.php?option=com_content&view=article&id=316&Itemid=904&lang=en

The main theme of EDOC 2013 is the “enterprise of the future in a world of cloud, social and big data”. Distributed and cloud computing are fundamental pillars of this theme enabling collaborations based on service offerings, delivery and consumption within an enterprise and across enterprise borders. Expert panel discussions and keynotes will address current topics and issues in the domain.

Conference workshops

- 8th International Workshop on Vocabularies, Ontologies and Rules for the Enterprise and Beyond
Keynote: Gabor Melli (PredictionWorks Inc.)
- 6th International Workshop on Evolutionary Business Processes
Keynote: Manfred Reichert (Ulm University, Germany)
- 5th Workshop on Service-oriented Enterprise Architecture for Enterprise Engineering
Keynote: Eric Dubois (CRP Henri Tudor, Luxembourg)
- 1st International Workshop on Methodologies for Robustness Injection into Business Processes
Keynote: Thomas Erl (Arcitura Education Inc.)
- 4th International Workshop on Models and Model-driven Methods for Service Engineering
- 1st International Workshop on Methodical Development of Modeling Tools
- 8th Trends in Enterprise Architecture Research Workshop





IEEE Seattle EMC/MTT/AP Joint Chapter Meeting Announcement

Joint with the IEEE Vancouver EMC/MTT/AP/PSES/RL/AESS/GRSS Joint Chapter

Aerospace Electromagnetic Challenges and Solutions

A half day educational seminar at the Museum of Flight

This is a free seminar, but you must register to assure your space.

Contact: pat@andreconsulting.com to save your seat!

Date: Friday, September 20, 2013

Time: 12:00 pm Lunch and registration
1:00 pm – 4:30 pm Presentations, including 30-minute break
4:30 pm – 6:00 pm Self-guided tour of Museum of Flight

Speakers: Robert “Bob” Scully, IEEE Fellow, President-elect of EMC Society, NASA Johnson Space Center Electromagnetics Environmental Effects (E3) Group Lead Engineer
Brian M. Kent, Distinguished Lecturer IEEE Antennas & Propagation Society, Ph.D., Fellow - IEEE, AMTA and AFRL, Chief Scientist, Sensors Directorate, Air Force Research Laboratory, Wright Patterson AFB, OH

Location: Museum of Flight, Boeing Field, Seattle Washington
See www.museumofflight.org for more details

Directions: [9404 E Marginal Way S Seattle, WA 98108](#) (click for Google Maps)
(206) 764-5720
Take exit 158 from I-5. Go west.
Turn right at the first light (E. Marginal Way S.)
The Museum is on the right, 1/2 mile.

RSVP: Patrick Andre at pat@andreconsulting.com

Several exhibitors will be available to discuss your needs – see below for more information.

Guest Presentation: IEEE VTC 2014 Fall & IEEE AP-S/URSI 2015 - Vancouver

By Prof. Dave Michelson, UBC Electrical and Computer Engineering, Vancouver, BC

Abstract: This short guest presentation introduces the IEEE VTC 2014 Fall and IEEE APS/URSI 2015 conferences that will be held in Vancouver in September 2014 and July 2015, respectively.

Presentation 1: Ground in Space

*By Bob Scully, NASA Johnson Space Center Electromagnetics Environmental Effects (E3) Group
Lead Engineer, Houston, Texas*

Abstract: This presentation provides an introduction to space vehicle charging, the space environment that contributes to this charging process, and some of the various aspects of operations in that environment. The presentation includes a review of several means to mitigating the effects.

Presentation 2: Characterization of Space Shuttle Ascent Debris Based on Radar Scattering and Ballistic Properties – Evolution of the NASA Debris Radar (NDR) System

By Dr. Brian Kent, Chief Scientist, Sensors Directorate, Air Force Research Laboratory, Wright Patterson AFB, Ohio

Abstract: This is a presentation that introduces the NASA Debris Radar (NDR) system developed to characterize debris liberated by the space shuttle (and any follow-on rocket system) during its ascent into space. Radar technology is well suited for characterizing shuttle ascent debris, and is especially valuable during night launches when optical sensors are severely degraded. The shuttle debris mission presents challenging radar requirements in terms of target detection and tracking, minimum detectable radar cross-section (RCS), calibration accuracy, power profile management, and operational readiness. After setting the stage with background of the Columbia accident, I initially describe the NDR system consists of stationary C-band radar located at Kennedy Space Center (KSC) and two X-band radars deployed to sea during shuttle missions. To better understand the signature of the shuttle stack, Xpatch calculations were generated at C and X band to predict the radar signature as a function of launch time. These calculations agreed very well with measured data later collected. Various sizes, shapes, and types of shuttle debris materials were characterized using static and dynamic radar measurements and ballistic coefficient calculations. After an (Optional) break, my second Part discusses the NASA Debris Radar (NDR) successes, which led to a new challenge of processing and analyzing the large amount of radar data collected by the NDR systems and extracting information useful to the NASA debris community. Analysis tools and software codes were developed to visualize the shuttle metric data in real-time, visualize metric and signature data during post-mission analysis, automatically detect and characterize debris tracks in signature data, determine ballistic numbers for detected debris objects, and assess material type, size, release location and threat to the orbiter based on radar scattering and ballistic properties of the debris. Future applications for space situational awareness and space-lift applications will also be discussed.

SPEAKER BIOGRAPHIES



Bob Scully has worked for over 30 years in aviation electrical and electronics engineering and electromagnetic compatibility, with experience ranging from fixed wing business jets to military and commercial rotary wing aircraft to Space Shuttle and Space Station systems support. Bob is the NASA Johnson Space Center Electromagnetics Environmental Effects (E3) Group Lead Engineer, providing technical management of the EMI laboratory facility to the Center, and EMC engineering expertise to multiple projects and programs. He directly supports the Orion and Space Station Programs, and is currently serving as the Lead for Electromagnetic Environmental Effects (E3) for the Commercial Crew Development Program. Previously, Bob served as the Senior Co-Chair of the Space Shuttle E3 Control Panel for over 10 years. Bob is also the Lead for the Agency E3 Community of Practice. He holds a Master's degree in Electromagnetics, and will be completing his PhD in the coming fall. Bob is a member of Tau Beta Pi and Eta Kappa Nu, is a registered professional engineer, and holds certifications as an EMC Engineer from both the University of Missouri at Rolla and the International Association for Radio, Telecommunications and Electromagnetics (iNARTE). He is currently the President-Elect of the IEEE EMC Society, and is an IEEE Fellow.



Dr. Brian M. Kent, a member of the scientific and professional cadre of senior executives, is Chief Scientist, Sensors Directorate, Air Force Research Laboratory, Wright-Patterson Air Force Base, Ohio. He serves as the directorate's principal scientific and technical adviser and primary authority for the technical content of the science and technology portfolio. He evaluates the total laboratory technical research program to determine its adequacy and efficiency in meeting national, Department of Defense, Air Force, Air Force Materiel Command and AFRL objectives in core technical competency areas. He identifies research gaps and analyzes advancements in a broad variety of scientific fields to advise on their impact on laboratory programs and objectives. He recommends new initiatives and adjustments to current programs required to meet current and future Air Force needs. As such, he is an internationally recognized scientific expert, and provides authoritarian counsel and advice to AFRL management and the professional staff as well as to other government organizations. He also collaborates on numerous interdisciplinary research problems that encompass multiple AFRL directorates, customers from other DOD components, as well as the manned space program managed by NASA. Dr. Kent joined the Air Force Avionics Laboratory in 1976 as cooperative engineering student through Michigan State University. He began his career performing research in avionics, digital flight displays and radar signature measurements. Through a career broadening engineering assignment with the Directorate of Engineering, Aeronautical Systems Division, he modeled a number of foreign threat missile systems and performed offensive and defensive electronic combat systems assessments. He received a National Science Foundation Fellowship in 1979, working at both the Air Force Wright Aeronautical Laboratories and the

Ohio State University Electroscience Laboratory until the completion of his doctorate. Dr. Kent spent two years in the Passive Observables Branch of the Avionics Laboratory, later transferring to the AFWAL Signature Technology Office. From 1985 to 1992, Dr. Kent was involved with classified research efforts, managed through the Air Force Wright Laboratory, now the AFRL. During his tenure with AFRL and its predecessor organizations, Dr. Kent held a variety of positions. He has made pioneering and lasting contributions to the areas of signature measurement technology, and successfully established international standards for performing radar signature testing. Dr. Kent has authored and co-authored more than 85 archival articles and technical reports and has written key sections of classified textbooks and design manuals. He has delivered more than 200 lectures, and developed a special DOD Low Observables Short Course that has been taught to more than 2,000 scientists and engineers since its inception in 1989. Dr. Kent has provided technical advice and counsel to a wide range of federal agencies, including the Department of Transportation, the Department of Justice and NASA's Space Shuttle Program. He is also an international technical adviser for the DOD and has provided basic research guidance to leading academic institutions.

Calling All Exhibitors!

Seattle EMC Chapter: Exhibition on September 20, 2013 Museum of Flight – Seattle, WA

There will be a small tabletop exhibition during the September 20 half-day meeting at the Museum of Flight in Seattle. **Due to limited space, only 11 tables are available on a first come, first served basis.**

Details:

- Tables are each 30"W x 72"L and are available for **\$225 per table**.
- Promotional opportunities may be secured by issuing a check payable in full to "Seattle EMC Chapter" and sending to: Janet O'Neil, 22316 NE 19th Street, Sammamish, WA 98074. **Space will be confirmed in order of checks received until space is sold out.**
- Exhibitors are limited to what can be placed on the table only. No exceptions!
- Only one table is allowed per company.
- All exhibitors may set up starting at 11:00 am and must be torn down by 6:00 pm on Sept 20.
- Exhibit hours are 12:00 pm to 4:30 pm.
- All exhibitors will receive an attendee list prior to the seminar and a final version following the seminar.
- BONUS: The museum will be open for IEEE Chapter members and guests from 4:30 – 6:00 pm. See the great planes on display, tour the famous Boeing "Red Barn" and more during this viewing time. Museum closes to the public at 5:00 pm; 5:00 – 6:00 pm is our private viewing time.
- Contact Janet O'Neil at 425-868-2558 or at j.n.oneil@ieee.org to reserve your space.