



Joint Communications

DISTINGUISHED LECTURE TOUR

Next-Generation
Broadband Networks

Benny Bing
Georgia Institute of Technology

Monday 13 October 700 -900pm
BCIT SW3-1750

Broadband wireless access is viewed by many telephone and cable operators as a "disruptive" technology and rightly so. The broadcast nature of wireless transmission offers



ubiquity and immediate access for both fixed and mobile users, clearly a vital element of quadruple play services involving voice, video, data, and mobility. Unlike wired access (copper, coax, fiber), a large portion of the deployment costs is incurred only when a subscriber signs up for service.

The first part of the talk will provide a comparative assessment of the standards and technologies underpinning emerging broadband wireless access solutions. Wireless LAN applications have blossomed tremendously over the last few years. What started out as cable replacement for static desktops in indoor networks has been extended to fully mobile broadband applications involving moving vehicles, high-speed trains, and even airplanes. Wi-Fi data rates have also continued to increase from 2 to 54 Mbit/s with the current 802.11n draft topping 600 Mbit/s. This development may eventually render wired Ethernet redundant in the enterprise network.

An increasing number of municipal governments around the world and virtually every major city in the U.S. are financing the deployment of Wi-Fi mesh networks with the overall aim of providing ubiquitous Internet access and enhanced public services. In addition, cheap phone calls using Wi-Fi voice over IP may become one of the biggest ben-

efits of a citywide municipal network. This has led some technologists to predict that eventually we are more likely to see meshed Wi-Fi cells that are linked together into one network rather than the widespread use of high-powered WAN handsets cramming many bits into expensive and narrow slices of radio spectrum.

The second part of the talk focuses on emerging Wi-Fi technologies. Streaming live and on-demand video content over the Internet, and in telecommunications and broadcast networks, is becoming prevalent. In addition to broadband service providers (e.g., cable, DSL, satellite, 3G, WiMax) that employ a plethora of video-transport technologies such as IP-TV, switched digital video (SDV), video on demand (VoD), mobile TV, and peer-to-peer streaming, Web content providers have increasingly large volumes of video on their sites, and are making it more discoverable, helping drive usage and ad revenue. Service providers have also started to focus on video content and end-user quality of experience (QoE) to complement network-based QoS monitoring in order to meet rising customer expectations. The last part of the talk will focus on the optimization of video transmission for emerging access networks.

Speaker: Dr. Benny Bing is a research faculty member with the School of ECE at the Georgia Institute of Technology. He has published over 60 technical papers and 10 books. In early 2000, his book on wireless LANs was adopted by Cisco Systems to launch Cisco's first wireless product, the Aironet Wi-Fi product. He was subsequently invited by Qualcomm and the Office of Information Technology to conduct customized Wi-Fi courses.

He is an editor for the IEEE Wireless Communications Magazine. He has guest edited for the IEEE Communications Magazine (2 issues) and the IEEE Journal on Selected Areas on Communications. In October 2003, he was invited by the National Science Foundation to participate in a workshop on Residential Broadband.

Info: Email Joint Communications Chair Alon Newton, anewton.ieee@gmail.com

Computer

Software Best Practices:
Agile Deconstructed

Steven Fraser
CISCO Research
Monday 27 October
(place and time - TBA)

"Best" really depends on context – and this introduction to software "best" practices will focus on the evaluation and integration of the practices that constitute many of today's "Agile" methods.

One of the interesting observations made by members of the software community is that "what is old – is new again" when it comes to Agile. Another observation is that "best" is not universally applicable and boundary conditions do apply – due to variations in customers, competition, context, culture, tools, scale and scope - of the systems developed.

This talk – intended for researchers, practitioners, managers and educators and does not require any specific programming knowledge – has evolved over the past three years and is based on experience gleaned at several multinational organizations developing large software systems.

Speaker: Steven Fraser joined Cisco Research in July 2007 in San Jose, California as a Director (Engineering) where he is responsible for the Cisco Research Center. Previously, Steven was a senior staff member of Qualcomm's Learning Center in San Diego, California with responsibilities for technical learning. Steven held a variety of technology management roles at BNR and Nortel including: Process Architect, Senior Manager, Design Process Engineering Advisor, and Software Reuse Program Prime in BNR's Computing Research Lab (CRL). Fraser holds a doctorate in Electrical Engineering (software specification validation) from McGill University in Montreal - and is a member of the ACM and a senior member of the IEEE.

Computer

Agile 101

Saturday 27 September
1000 to 400pm UBC

Many of you in software development may still be very puzzled by all this agile stuff. Agile Vancouver are pleased to announce our free one day workshop "Agile 101" Saturday September 27th.

This is an "experiential" workshop where participants will actively engage in an agile project. This free workshop will be held at UBC. For more details and how to register, visit <http://www.agilevancouver.ca/?p2=modules/blog/viewcomments.jsp&bid=37>

Info: Philippe Kruchten, kruchten@ieee.org

Institute for Computing, Information
& Cognitive Systems
Distinguished Lecture Series

Brain on a Chip:
If We Build One, What Will It Say?
Bruce C Wheeler, University of Illinois

Thursday 23 October 330-450pm
Room 310 Hugh Dempster Pavilion, UBC

The wild idea that nerve cells grown in culture could have reliable computational function, while still a wild idea, is closer to reality than we



might expect, thanks to applications of both engineering and applied biology. The combination of electronics, microlithography, materials science, neuroscience and advanced culturing techniques make possible the controlled growth, recording, and

stimulation of nerve cells in a dish. What these neurons might be saying—their patterns of recorded electrical activity—is now gaining considerable attention as neural engineers struggle with data that is inherently very high dimensional and decidedly non-linear and non-stationary. This lecture will highlight the technologies that make possible designable "brains on chips," followed by both review and speculation as to how to interpret the signals in order to understand how neural information is being coded.

Speaker: Bruce Wheeler will become a Professor of Biomedical Engineering at the University of Florida this fall. He has been a Professor at the University of Illinois in the Bioengineering Department, (which he founded and where he was Interim Head), the ECE Department (Associate Head), the Neuroscience Program (Chair of Program), and the Beckman Institute. He is a Fellow of the IEEE and the AIMBE, and serves as Editor-in-Chief of the IEEE Transactions on Biomedical Engineering. He received his BS degree from MIT and MS and PhD degrees in Electrical Engineering from Cornell. His research interests lie in the application of electrical engineering methodologies, including signal processing and microfabrication, to the study of in vitro nervous systems in order to better understand the behavior of small populations of neurons and, ultimately, the functioning of the brain.

Info: 604.822.6894 or info@icics.ubc.ca

Circuits and Systems

Theodore Harold Maiman and the
History of Laser Invention

Dr. Andrew Rawicz
Simon Fraser University

Tuesday 21 October 130 - 230pm
SFU ASB 10900 (IRMACS Studio)

Dr. Maiman invented the laser in May 16, 1960 and passed away on May 5, 2007 just a few days shy of 47th anniversary of laser invention. The invention and the story behind



reveal like a Shakespearean drama with excellent science and political games as actors. Ted Maiman had built a compact ruby maser and began his laser research by testing ruby to learn why it emitted inefficiently as was reported by Towns, Shawlow and Gould. Instead, he

found that, if properly doped with chromium, ruby emitted light quite efficiently and calculated that it would work in a laser oscillator. With his engineering and physics background he quickly designed a pulsed ruby laser using commercially available components. This laser worked in the first trial and is still, after 48 years, in operating conditions. The first laser's original components will be shown.

In this talk my intention is to show Ted as a brilliant researcher and, most of all, as an exemplary human being. Part of Ted's life just before the laser invention, the momentous invention, and the life in fame and drama afterwards will be illustrated with a large number of photos and two short clips at which Ted explains his laser.

Speaker: Dr. Andrew Rawicz was educated in Poland, where he received his M.Sc in Physics, Krakow, 1973, followed in 1980 with a Ph.D. in Reliability Physics from the Faculty of Automatics and Real Time Informatics, Silesian Technical University, Gliwice. Dr. Rawicz later immigrated to Canada in 1982 after working at the Industrial Welding Institute in Gliwice for six years and as an Assistant Professor in Silesian Technical University.

After two year work as a designer of optical equipment for eye research at the University of British Columbia he moved to the School of Engineering Science at Simon Fraser University, where, at present, he is full professor. He proposed and is championing the interdepartmental Biomedical Engineering (BME) program, which was the first in Canada under-

High Performing
Chapter Award

On July 28, 2008, the recipients of the IEEE Power & Energy Society's High Performing Chapter Award for 2007 were announced. This award is to allow chapters that meet the criteria of a high performing chapter to help defray the future costs of its operation, including having a minimum number of activities, a website, and meeting various reporting requirements associated with the activities.

For 2007, twenty chapters from around the world received awards for meeting the various requirements of a High Performing Chapter as outlined by PES. Amongst the recipients, the PES Vancouver Chapter received the highest award for its activities. Other winners include the San Francisco, New York, and Malaysia Chapters.

Congratulations to the PES Chapter for this prestigious achievement! Glen Tang PES Chair glen.tang@bchydro.com



graduate curriculums. In the 90ties he served on the SFU Senate.

In 1986 he founded Andrew Engineering Inc. and in 1998 Applied Medical Devices Inc. Both these companies do R&D in developing new medical equipment and/or new medical technologies. In 1994 he co-founded OPCOM (Optical Processing and Computing Consortium of Canada) with financing totalling \$20MCan and served for five years as a director and steering committee member.

He serves on boards of Medical Device Development Centre and the BC Photonics Industry Association (as one of founders). Dr. Rawicz has authored and co-authored more than 70 research papers, 3 international standards and 7 patents.

Info: Ljiljana Trajkovic - ljilja@cs.sfu.ca
Webcast Information: The lecture will be webcasted. Please visit the following link for login information.

http://www.ensc.sfu.ca/~jie/ieee/2008_Rawicz.html

Sponsors: IEEE Circuits and Systems Society Joint Chapter of the Vancouver/Victoria Sections

MATLAB in Digital Signal Processing and Communications

Wednesday 15 October 500 to 700 PM
Room # 358, MACLEOD BUILDING 2356 MAIN MALL, UBC

5:00 - 5:40 (Zahra Ahmadian) Basics of MATLAB programming
5:40 - 6:00 Break and refreshments
6:00 - 7:00 (Dr. Jan Mietzner) MATLAB in Digital Signal Processing and Communications

Pre-registration is required since we only have total of 10 seats allocated for the IEEE Joint Communication Chapter. Please Email Zahra directly at: zahraa@ece.ubc.ca

Zahra Ahmadian received her B.Sc. in Electrical Engineering from Ajman University of Science and Technology (AUST), UAE in 2005 and her M.A.Sc. in Electrical and Computer Engineering from University of British Columbia (UBC) in 2007. She is currently a PhD. student in Communication Theory research group at UBC. Her research interests are coding, concatenated codes, ultra-wideband, multiple access interference and propagation in multi-path channels.

Jan Mietzner received the Dipl.-Ing. degree and the Ph.D. degree from the University of Kiel, Germany, in July 2001 and December 2006, respectively. Since January 2007 he is with the Department of Electrical and Computer Engineering, University of British Columbia, as a post-doctoral research fellow sponsored by the German Academic Exchange Service. His research interests concern physical layer aspects of future wireless communication systems, especially multiple-input multiple-output (MIMO) systems, spatial diversity techniques, and cooperative wireless networks.

*This event jointly organized by
IEEE Joint Communication Chapter and
UBC IEEE Student Branch*

The IEEE student branches of the University of British Columbia (UBC), British Columbia Institute of Technology (BCIT), and Simon Fraser University (SFU) will be hosting the

2nd Annual "Think Engineering" Network

This event will bring together students, industry leaders and academic researchers for a day of professional development and networking in the luxurious surroundings of Renaissance Vancouver Hotel Harbourside. Keynote speeches will be given by corporate leaders and successful entrepreneurs on their inspirational personal success stories.

Attendees will have the opportunities to join the panel discussion that address questions about successful engineering management, career progression and current challenges faced by the engineering industry.



YOUR LOCAL IEEE STUDENT BRANCHES PROUDLY PRESENT

Think Engineering 2008

THE UNIVERSITY OF BRITISH COLUMBIA IEEE

SFU SIMON FRASER UNIVERSITY BCIT BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY

THE SECOND ANNUAL "THINK ENGINEERING" NETWORKING EVENT

THURSDAY, OCTOBER 9TH

Renaissance Vancouver Hotel Harbourside
1133 West Hastings Street Vancouver, BC V6E 3T3

More information will be posted on UBC IEEE's website at www.ieeeubc.org. Companies can contact the UBC student branch via email, ieee@ece.ubc.ca, for event details and sponsorship

Solid State Circuits

VLSI Circuits for CT Scanners and SPECT Gamma Cameras

Dr. Kris Iniewski
Redlen Technologies
30 September 2008 200pm
UBC Kaiser Building, Room 2020



CT and SPECT are two medical imaging modalities that are undergoing dramatic changes due to transition from scintillators to semiconductor-based radiation detectors. Both modalities are highly complementary, CT scanners are used to image an anatomy while SPECT gamma cameras are used to monitor organ functionality. In this talk, we will highlight recent developments in merging CT and SPECT hardware into one imaging technology. The focus will be on VLSI integrated circuit design techniques that are currently being developed for that purpose. In addition, some related highlights from CMOS Emerging Technologies workshop (www.cmoset.com) recently held in Vancouver will be presented as well as internal VLSI developments at Redlen Technologies.

Speaker: Krzysztof (Kris) Iniewski is managing R&D at Redlen Technologies Inc., a start-up company in British Columbia. His research interests are in VLSI circuits for medical imaging and security applications. He is an editor of "VLSI Circuits for Bio-Medical Applications", Artech House, 2008, "Wireless Technologies: Circuits, Systems and Devices", CRC Press 2007 and co-author of "Network Infrastructure and Architecture", Wiley 2008. In his career Dr. Iniewski held management and research positions at University of Alberta (2004-2006), PMC-Sierra (1995-2003) and University of Toronto (1988-1994). He has published over 100 research papers and holds 18 international patents.

Info: Resve Saleh res@ece.ubc.ca




2008 Electrical Power & Energy Conference

Energy Innovation

October 6 - 7, 2008
Vancouver, BC

IEEE Canada PES IEEE

Conference Notification — EPEC 2008

A forum for industry experts, business communities and academia to exchange ideas and current information related to energy systems.

2008 Conference Topics

- Extending the Limits of Transmission and Distribution
 - Physical Asset Condition Monitoring
 - Real-time Operational Limits
 - Power Flow Control
 - Impact of Supply Continuity
- Generation and Alternative Energy Expansion
 - Large Generation Expansion
 - Environmental Impact of Large Generation Expansion
 - Small Distributed Generation
 - Energy Storage
 - Impact of Distributed Generation
- Intelligent Grid Technologies
 - Data gathering and information flow
 - Wide area operation, control, and protection
 - Cyber Security in the Automated Grid
 - Self-healing networks, islanding, load shedding
 - Microgrids operation
- Conservation and Energy Efficient Technologies
 - Shaping Consumer Habits and Smart Billing
 - Power Factor Correction and Power Quality
 - Energy Efficient Loads

Energy Policy and Innovation




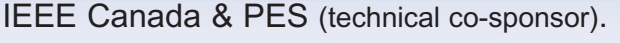

The topics at this conference will reflect innovations in the social and economic aspects of electric energy policy and initiatives, as well as traditional papers addressing technical issues.



Vancouver's Stanley Park offers a quiet place to relax with a great view of the city's skyline.

IEEE Canada is proud to present the 8th Annual Electrical Power and Energy Conference (EPEC). Attracting a worldwide audience of energy professionals, our theme for 2008 is *Energy Innovation*. The 2008 EPEC will take place in the beautiful city of Vancouver, on the Canadian West Coast in the province of British Columbia. Registration available on-line (see conference URL below).

EPEC 2008 is jointly sponsored by:

Conference occurs October 6-7th

For details and registration, please visit the conference website: <http://www.ieee.ca/epec08>