IEEE VANCOUVER CONTACT

WWW.IEEECONTACT.ORG

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Message from the chair

Dear IEEE Member,

I am pleased to announce that two new sponsors have joined in to support our centennial initiatives: APEG BC as gold sponsor and General Electric under the bronze sponsorship. They have joined the following list of current sponsors: BC Hydro, UBC, BCIT and SFU as platinum sponsors, Stantec and MDA as gold sponsors, Lex Engineering and Vector Drive Systems as bronze sponsors. We are extremely thankful for the financial support we have received this far.

The centennial sponsorship helped us:

- Start up our history search and exhibition with the first instalment presented at the Centennial Gala and AGM on March 12
- Fund prizes for the best student paper competition held on March 16 at BCIT
- Participate in the community outreach with APEG BC and E-fest on March 19
- Fund the reception and networking event at UBC on April 6 to celebrate 80 years of the UBC IEEE student branch and celebrate a long standing relationship between UBC ECE Department and IEEE Vancouver. This event was held in conjunction with the newly revived IEEE Project Fair 2011.

The upcoming months will be busy as well with the celebration/networking events planned to be held at BCIT and SFU. We are also working on many other initiatives, including the Section's new logo and centennial slogan, permanent IEEE Vancouver centennial display or sculpture, birthday events to mark the section's formation date later on this year. Some of these will be discussed in the upcoming centennial committee meeting, so please stay tuned for more updates.

I would also like to say a few words about the recent event at UBC, with the promise that detailed coverage with photos is coming soon. The event was well attended, with many section and student branch executives, ECE faculty and students present. Aryan Navabi, past UBC student branch chair, gave a presentation on the rich and eventful 8o year long branch history.

Department Head, Prof. Andre Ivanov congratulated IEEE Vancouver section and the student branch on the important milestones and successes over the years. He accepted the IEEE Vancouver centennial recognition plaque on behalf of UBC. UBC student branch also proudly presented their new IEEE T-shirts they will be wearing in the upcoming trip to Germany, which is organized by student branches and supported by our Section. I was delighted to see so many students wearing their IEEE shirts at this event – it was a great example of the strength of this student branch which is also the first student branch formed in Canada. Congratulations on the 80 years, and we look forward to celebrating your centennial in twenty years from now!

We are also saying good-bye to some of the current UBC student branch executives led by Frankie Angai, as they graduate this coming May and become the newest full-grade IEEE Members! I would like to welcome them into our engineering community and wish them all the luck in searching for new career opportunities.

Mazana Armstrong, Ph.D., P.Eng. IEEE Vancouver Chair

IEEE Vancouver Centennial Gala and AGM 2011

The IEEE Vancouver Section Centennial Gala & AGM was held on Saturday March 12, 2011 at the Vancouver Convention Centre. It was a great success, and we had an overwhelming response from our members and accommodated 165 attendees. There were 124 IEEE members in attendance with 41 guests.

The event included the regular officer reports of the section focusing on the Centennial activities and celebrating our achievements in the past. As the recipient of the MGA best large section award for 2009, we had every reason to be proud of a century of achievement made possible by local members and volunteers and our local industry partners and schools.

The second part of the evening was dedicated to celebrating the achievements of our dedicated volunteers and recognizing the achievements of individuals within IEEE Vancouver as follows:

Annual recognitions

New IEEE Fellows:

- Robert Schober, UBC (2010)
- Lei Wang, Powertech Labs (2011)
- Outstanding Chapter Chair Large Chapter (2010): Alon Newton, Joint communications chapter
- Outstanding Chapter Chair Small Chapter (2010): Shahriar Mirabassi, Solid-state circuits chapter
- Special Performance Recognition (2010): Okanagan Subsection and 2010 Chair Julian Cheng
- Past section chair (2009-2010): Dave Michelson
- PES Outstanding Engineer Award: Frank Plumptre, BC Hydro
- University Supporter (2010): SFU

Student scholarship awards:

- Thurb Cushing Scholarship Award: Brodie Lane, SFU
- John Deane Scholarship Award: Sherry Chua, UBC

Centennial Awards and Recognitions

Industry & university recognitions

- Outstanding support to IEEE Vancouver over the past 100 years: BC Hydro
- Outstanding support to IEEE Vancouver for over 80 years: UBC
- Outstanding support to IEEE Vancouver for over 50 years: BCIT Women Leaders
- Fiorenza Albert-Howard, leadership as a first female section chair inspiring women in engineering
- Meliha Selak, contributions to IEEE Vancouver and supporting students and women in engineering

Outstanding Sustained Contributions

- Nick Keenan, Contact newsletter editor for over 20 years
- Pieter Botman, Communications committee chair and volunteer for over 20 years
- Merrill Wittman, past section chair, for outstanding long-term service as AGM volunteer

Contributions to IEEE Vancouver and Profession:

- Jose Marti, past section chair and IEEE Fellow
- Charlie Henville, past section chair and IEEE Fellow
- Hermann Dommel, past section chair and IEEE Fellow

The third and the last part of the evening comprised of two presentations by IEEE members of distinction.

- Frank Plumptre of BC Hydro, presented a very lively talk on “100 Years of History IEEE Vancouver Section”. His presentation depicted the progress of the electrical engineering field alongside the local progress of the section in an interesting way.
- Dr. John MacDonald of Day4 Energy, presented the second talk on “Energy in the 21st Century” focusing on how the future trends in energy will be constrained by our environment and the limitations of our planet.

HERE for article with AGM photos

IEEE Vancouver logo and centennial slogan competitions

Voting open to all IEEE members - student and affiliate included
Vote for your preferred logo and slogan
at
http://vancouver.ieee.ca/centennial
by Saturday 30 April

Winners announced at an upcoming centennial event

Mostafa Anvari
CSA International

Thursday 26 May
700 - 800 pm

Alpha Technologies Ltd.
7700 Riverfront gate
Burnaby BC

Please register
in advance

Drinks and snacks
will be provided

Information
Joint Aerospace and
Electromagnetics execs
Dave Michelson
davem@ece.ubc.c
Steven McClain
StevenMcClain@ieee.org
Peter Lim
Peter.Lim@alpha.ca

IEC/UL 60950-1 second edition - impact of changes

IEC 60950-1 is the International Standard for the Safety of Information Technology Equipment. Its scope includes information technology equipment, communication technology equipment, office appliances and multi-media equipment for use in the home, office, business, school, computer room and similar locations.

The Second Edition of this standard was published on 27 March 2007. Since 1 December 2010, all new product submittals have been evaluated using all the requirements in the Second Edition. Accordingly, it is essential that all product designers and developers become familiar with it.

Upon completion of this presentation, attendees will:

- Know the differences between the latest versions of the CSA/UL/IEC Standards for Safety of Information Technology Equipment (ITE) and their predecessors
- Have the ability to analyze CSA/UL/IEC 60950-1 Second Edition and compare them to the existing first edition Standards
- Have the ability to analyze the changes to the IEC 60950-1 Second Edition and UL 60950-1 Second Edition and their potential impact on the construction, performance, components and other items related to future ITE submittals

Speaker: Mostafa Anvari obtained his Bachelor Degree in Applied Science from the University of British Columbia in Electrical engineering. Since graduation he has been working in various capacities as design engineer, engineering management and other managerial positions, in Montreal Quebec, and Vancouver.

He joined CSA international in 2000 and has been working as certification engineer in ITE group. He is a member of the Association of Professional Engineers and Geoscientists of British Columbia.

IEEE Joint Aerospace and Electromagnetics Chapter

Monday 09 May
6 - 7.30 pm

BCIT lecture room
SW1-1021

Information
To confirm your participation contact
Joint Management
chair Kouros Goodarzi
krs@ieee.org
or
vice-chair Adam Krolak
a.krolak @ieee.org

Product management - best practice

Thomas H. Steele
Honeywell

Product Management is an important part of any company's business, but commonly fails to maximize the opportunities in the market place. All too often, engineering-led firms have brilliant ideas that go nowhere or companies fail to predict the risks to their business. This talk will discuss ways that product management can bridge the gap between customers and suppliers to deliver products & services that customers will actually buy. Product Management is a marketing function that translates customers needs & opportunities into engineering & product requirements, and then manages the introduction of the new products to the marketplace.

Speaker: Mr. Steele has been involved with the sales, installation, service and marketing of Honeywell systems to the paper industry for more than three decades in various locations around the world. These are advanced digital process measurement and control systems designed to improve product uniformity with significant measurable economic advantage to the end user.
He holds a BS degree in Mechanical Engineering from Lehigh University, Bethlehem, PA., and spent many years in Japan and SE Asia as those markets were opening. He has resided in the Vancouver area with his family since 1997.

Dario Kresic
University of Zagreb

Thursday 28 April
4:00 pm to 5:00 pm

ASB 10900
(IRMACS
Presentation Studio)
Simon Fraser University
Burnaby

Information
Circuits and Systems
chair Ljiljana Trajkovic
ljilja@cs.sfu.ca

Modelling CAN communication for intra-vehicular applications

Today Controller Area Network (CAN) provides a modern infrastructure for automotive applications. It is a serial line architecture where bits can be dominant (representing a logical 0) and recessive (representing a logical 1). Medium access in CAN is based on the bit-wise arbitration schema, also called CSMA/BA (Carrier Sense Multiple Access with Bitwise Arbitration), where possible collisions are resolved by comparing sent and received bits on their type (dominant/recessive).
In this talk we present a timed automata model of the CSMA/BA as it is used in CAN, his implementation in UPPAAL and then we discuss some properties of this model. We also refer to the problem of estimating upper delay bounds of CAN messages.

Note: by popular demand this event is also scheduled as follows:

Thursday 05 May
15:30 - 17:30
KAIS 2020, UBC

Speaker: Dr. Dario Kresic is a postdoc at the University of Zagreb, Croatia. He received a Ph.D. degree in Computer Science from the University of Erlangen-Nuremberg, Germany (advisor: Ulrich Herzog), where he worked on verification techniques for real-time communication protocols.

To pursue his research he received a Ph.D. fellowship by the German Research Foundation. He also worked at Siemens AG in Munich, Germany, in the area of interoperability for object-oriented distributed systems. His current research interests include intra-vehicular communication protocols and time modelling.

IEEE CIRCUITS AND SYSTEMS SOCIETY

IEEE COMMUNICATIONS SOCIETY

Krzysztof Pawlikowski
University of Canterbury

Monday 27 June
11:00 am to 12:00 noon

ASB 9705
Simon Fraser University
Burnaby

Quantitative computer simulation as a paradigm of scientific investigations

Advances of computer technology initiated in the twentieth century have resulted in adoption of computer simulation as the most popular tool of performance evaluation studies of such complex stochastic dynamic systems as e.g. modern multimedia telecommunication networks. Such wide-spread reliance on simulation studies raises the question of credibility of results from such studies. This question needs to be answered before computer simulation can be objectively accepted as an independent, self-sufficient paradigm of scientific investigations.

In this talk, having briefly overviewed the main necessary conditions of any trustworthy simulation study conducted for performance evaluation of stochastic dynamic systems, we will focus on simulation studies with on-line output data analysis. The perils and pitfalls of quantitative discrete-event computer simulation will be considered, together with its fast distributed version, known as Multiple Replications in Parallel, implemented in Akaroa2, a unique controller of quantitative stochastic simulation.

Speaker: Dr. Krzysztof Pawlikowski is a Professor in Computer Science & Software Engineering at the University of Canterbury, in Christchurch, New Zealand. He received a Ph.D. degree in Computer Engineering from Gdansk University of Technology, Poland, and worked at that university until February 1983. The author of over 170 journal and conference papers and four books has given invited lectures at over 80 universities and research institutes in Asia, Australia, Europe and North America.

He was the Alexander-von- Humboldt Research Fellow (Germany) in 1983-84 and 1999, and a Visiting Professor at universities in Austria, Australia, Italy, Germany and the USA. His research interests include discrete-event computer simulation, performance modelling of multimedia telecommunication networks, on-line statistical analysis and modelling of teletraffic, and applications of experimental networking facilities.

Information
Circuits and Systems
chair Ljiljana Trajkovic
ljilja@cs.sfu.ca

IEEE CIRCUITS AND SYSTEMS SOCIETY

Tour of the Seymour-Capilano water filtration plant control centre

Saturday 07 May
10:30am

Meet at the parking lot of the Lower Seymour Conservation Reserve (end of Lillooet Road, North Vancouver)

Space is limited
Please RSVP
via Email to:
anewton.ieee@gmail.com
by Thursdat 05 May

Many of us in Canada and especially here in the lower mainland take water for granted. In many other parts of the world tap water may not be recommended for drinking, is metered and cost much more.

Many parts of the world do not have off limits water-shed areas either. Running one of the largest and most advanced facilities in North America is anengineering marvel and involves a lot of electrical control and electronics.

Remote control and monitoring of water delivery and consumption with advanced statistics analysis and social impacts are only few of the highlights.

You are invited to participate in a tour of the facilities and its control centre located at Lower Seymour Conservation Reserve. Registration is required and available space is limited.

To read more please visit:
http://www.metrovancouver.org/services/constructionprojects/water/pages/seymourcapilano.aspx
http://www.water-technology.net/projects/seymour-capilano/
http://www.waterbucket.ca/wcp/?sid=22&id=750&type=single
http://www.vancouverisland.com/parks/?id=490 (Lower Seymour Conservation Reserve)

IEEE COMMUNICATIONS SOCIETY

Sheila S. Hemami
Cornell University

Distinguished Lecturer

Friday 06 May
2:00pm to 3:00pm

Room KAIS 2020
Fred Kaiser Building
2332 Main Mall
University of BC

Information
Signal Processing
co-chair
Mehrdad Fatourechi
mehrdadf@ieee.org

From single media to multimedia - perception, coding, and quality

Humans are the ultimate consumers of multimedia information, and effective system design requires a performance metric. While such metrics have been extensively studied for single-media perception for one or more decades, those for multimedia perception and use are still in their relative infancy. In this talk, I will focus on the development of single-media quality metrics for audio and visual information, and contrast it with the development of appropriate metrics for multimedia information. I will describe how humans perceive single-media information, how an understanding of perception has been Incorporated into single-media coding and then quality measurement, and I will discuss the current state of understanding of multimedia perception as it has been applied to coding and quality measurement problems.

Speaker: Sheila S. Hemami (F) received the B.S.E.E. degree from the University of Michigan in 1990, and the M.S.E.E. and Ph.D. degrees from Stanford University in 1992 and 1994, respectively. Her Ph.D. thesis was entitled "Reconstruction of Compressed Images and Video for Lossy Packet Networks" and she was one of the first researchers to work on what we now call "error concealment." She was with Hewlett-Packard Laboratories in Palo Alto, California in 1994 and worked on video-on-demand. She joined the School of Electrical Engineering at Cornell University in 1995, where she holds the title of Professor and directs the Visual Communications Laboratory.
Dr. Hemami's research interests broadly concern communication of visual information, both from a signal processing perspective (signal representation, source coding, and related issues) and from a psychophysical perspective.

Dr. Hemami is an IEEE Fellow and has held various visiting positions, most recently at the University of Nantes, France and at Ecole Polytechnique Federale de Lausanne, Switzerland. She has received numerous college and national teaching awards, including Eta Kappa Nu's C. Holmes MacDonald Award. She is currently a Member-at-Large of the IEEE Signal Processing Society Board of Governors (2009-11) and an SPS Distinguished Lecturer (2010-11). She has chaired the IEEE Image and Multidimensional Signal Processing Technical Committee (2006-07), served as Associate Editor of the IEEE Transactions on Signal Processing (2000-06), and served as Editor-in-Chief of the IEEE Transactions on Multimedia (2008-10).

IEEE Signal Processing Society

Congratulations to Emily Landry for winning the 2011 ICF scholarship of $5000!

Emily is in the fourth year of electrical engineering at UBC Okanagan. She held the position of Vice-Chair of the IEEE Student Branch last year, and she was just elected as Chair for the coming year. She recently applied for and received an ICF McNaughton Learning Resource Center grant, and the center will be opening this fall in the new engineering building. She plans on running several educational programs through the center with the help of other volunteers, including a microprocessor course, computer programing and astronomy as well as regular peer tutoring.

She is also co-founder and past-president of a EWB Chapter Initiative on the campus, I she does research in the area of photonics for Dr. Jonathan Holzman. She created and operated a peer mentoring/ tutoring service for two years, and have held the positions of APSC Student Senator on the UBC Senate, and Internal Coordinator on the Engineering Undergraduate Society.

The ICF scholarship is intended to encourage awareness of and participation in the educational programs supported by the IEEE. It is intended to pay a major portion of the final year tuition fees and related academic expenses of a student who has demonstrated a previous commitment to the IEEE McNaughton Learning Resource Centre and related IEEE activities, and who indicates a desire to continue this activity.

For more information about the ICF scholarship please visit:
http://www.ieeecanadianfoundation.org/EN/mcn_sch.php

Energy efficient mm-Wave communication and medical imaging

Ali Niknejad
UCal - Berkeley

Distinguished Lecturer

Thursday 12 May
5:30pm

Rm 2020 Kaiser Bldg
2332 Main Mall
UBC Campus

Information
Solid-state Ciruits Chair
Shahriar Mirabbasi
shahriar@ece.ubc.ca

As silicon technology continues to scale with commercial transit frequencies (fT) exceeding 250 GHz, new applications and opportunities arise to exploit the technology. This talk will highlight projects at the Berkeley Wireless Research Center (BWRC) that strive to push the boundaries of the technology to new limits.

The first part of the talk will explore the application of 60 GHz spectrum for high data rate communication. We focus on extreme energy efficiency without compromising performance, targeting a complete 4-channel phased array in 65nm CMOS technology with record low 27mW/channel power consumption for the receiver and the transmitter with the capability to communication at 10Gbps. Details of the architecture and the performance of the transceiver will be discussed.

We are also exploring ultrawideband 90 GHz carrier signals for pulse-based medical imaging radars for non-invasive detection of tumors. The system-level considerations and measurements from our prototype transmitter will be shown in detail.

Speaker: Ali M. Niknejad received the BSEE degree from the University of California, Los Angeles, in 1994, and his Master's and Ph.D. degrees in electrical engineering from the University of California, Berkeley, in 1997 and 2000. During his graduate studies, he authored ASITIC, a CAD tool that aids in the simulation and design of passive circuit elements such as inductors into silicon integrated circuits. After graduation from Berkeley he worked in industry focusing on the design and research of analog RF integrated circuits and devices for wireless communication applications.

He is currently an associate professor in the EECS department at UC Berkeley and co-director of the Berkeley Wireless Research Center and the BSIM Research Group. He served as an associate editor of the IEEE JSSC and on the TPC for ISSCC/CICC. Prof. Niknejad was co-recipient of the Outstanding Technology Directions Paper at ISSCC 2004 for co-developing a modeling approach for devices up to 65 GHz. He is also co-recipient of the 2010 Jack Kilby Award for Outstanding Student Paper for his work on 90 GHz pulser with 30 GHz of bandwidth for medical imaging. His students have also been awarded the RFIC best paper awards in 2005, 2007, 2008, and 2009. He is a co-founder of HealthMicro and inventor of the REACH(™) technology, which has the potential to deliver robust wireless solutions to the healthcare industry.

His research interests lie within the area of wireless and broadband communications (RF, mm-wave, and sub-THz), including the implementation of integrated communication systems in silicon using CMOS, SiGe, and BiCMOS processes. His focus areas of his research include analog and RF circuits, device physics and modeling, and numerical techniques in electromagnetics, with an emphasis on the analysis and modeling of active and passive devices at microwave frequencies for communication and medical applications.

IEEE WIE TRY Engineering 2011

This month, parallel to the centennial efforts and celebrations at IEEE Vancouver, IEEE WIE and its volunteers have been working with the University of British Columbia to organize a new program called TRY Engineering, part of the students, teachers and research (STAR) outreach initiative at WIE. TRY gives high school students a chance to experience the undergraduate electrical and computer engineering (ECE) program at UBC. 26 University Hill secondary science students visited UBC April 20th to try engineering for one day.
Carol Jaeger, associate dean at ECE introduced the students to engineering majors within the department. Students were divided into 6 teams; each with an IEEE WIE volunteer guide. The program activities included
• Project display where three ECE project groups, presented their work to the students, described the project design and answered questions.
• Tour of the Robotics and Control Laboratory where students were given a demo of the da Vinci surgical robot and had a chance to operate the robot as well.
• Electronic circuit experiment where each of the student teams worked on assembling a flashing LED circuit using a timer chip. The students were introduced to the circuit components, learned to identify the values of the resistors from their color maps, read circuit diagrams and connect the circuit on a bread board.
The program was sponsored by the IEEE WIE, Westcoast women in engineering, science & technology (WWEST) and ECE department at UBC.

I wish to thank the following volunteers who have contributed to the success of the program: Sara Khosravi, Dana Hoffmann and Saba Aredeshiri as the organizer committee, Tanaya Guha, Fahimeh Raja, Hedyeh Rafii-tari, Rukhsana Ruby and Amy Wei You as team leaders, and Rubaiya Rahman as the supporting volunteer.

If you are interested in joining the STAR initiative group or willing to introduce schools who can benefit from our program send us an email to: wie.vancouver@ieee.org. More details on our STAR initiative are available at: http://vancouver.ieee.ca/wie/star_program .
Zahra Ahmadian – IEEE WIE Chair

David Su
Atheros Communications

Distinguished Lecturer

Monday 30 May
5:30pm

Rm 2020 Kaiser Bldg
2332 Main Mall
UBC Campus

Information
Solid-state Ciruits Chair
Shahriar Mirabbasi
shahriar@ece.ubc.ca

Challenges in designing CMOS systems-on-a-chip for wireless communications

This talk describes the challenges in designing CMOS systems-on-a-chip for wireless communications. RF transceiver building blocks for signal amplification, frequency translation, and frequency selectivity are examined with special emphasis on low noise amplifier, power amplifier, mixer, and frequency synthesizer.

System-on-a-chip integration issues are also discussed. The talk concludes with a case study of a wireless LAN SoC. .

Speaker: David Su is the VP of Analog/RF Engineering at Atheros Communications, engaging in the design of CMOS wireless SoC. Prior to joining Atheros, he worked at Hewlett-Packard Company designing CMOS mixed-signal/RF integrated circuits.

Dr. Su is an IEEE fellow and a consulting professor at Stanford University. He has been a JSSC associate editor and is currently the ISSCC wireless subcommittee chair. He holds a Ph.D. degree from Stanford University as well as MS and BS degrees from the University of Tennessee, Knoxville.

IEEE SOLID-STATE CIRCUITS SOCIETY
Where ICs are in IEEE

Graziano Chesi
University of Hong Kong

Monday 30 May
200 -300pm

Kaiser 2020/2030
UBC

Information
Control Systems chair
Ryozo Nagamune
nagamune@mech.ubc.ca

Robustness analysis of polytopic systems via SOS programming

Polytopic systems, i.e. linear systems affected by uncertain parameters constrained in a polytope, play a key role in automation and control systems.

Unfortunately, it is well known that fundamental problems such as establishing whether an equilibrium point is robustly stable for all admissible uncertainties, and determining worst-case system performances, are very difficult to solve for polytopic systems (NP-hard problems).

This talk addresses some of these problems, considering for instance the cases of time-invariant/time-varying uncertainties and linear/nonlinear dependence on the uncertainty, hence presenting our pioneering results based on sum of squares (SOS) programming, which have the nice properties to involve convex optimization problems and to be asymptotically non-conservative. The talk also briefly describes some of our results on SOS programming.

Speaker: Graziano Chesi received the Laurea in Information Engineering from the University of Florence in 1997 and the Ph.D. in Systems Engineering from the University of Bologna in 2001. He was with the Department of Information Engineering of the University of Siena during 2000-2006 and then he joined the Department of Electrical and Electronic Engineering of the University of Hong Kong. He was a visiting scientist at the Department of Engineering of the University of Cambridge during 1999-2000 and at the Department of Information Physics and Computing of the University of Tokyo during 2001-2004.

Dr. Chesi has served as Associate Editor for Automatica, BMC Research Notes, the European Journal of Control, the IEEE Transactions on Automatic Control, and Systems & Control Letters. Also, he has served as Guest Editor of the Special Issues on Positive Polynomials in Control, Systems Biology, and Visual Servoing for various journals. He is the Founder and Chair of the Technical Committee on Systems with Uncertainty of the IEEE Control Systems Society. He is author of the book “Homogeneous Polynomial Forms for Robustness Analysis of Uncertain Systems” (Springer, 2009) and editor of the book “Visual Servoing via Advanced Numerical Methods” (Springer, 2010). He is first author in more than 100 technical publications.

Further information can be found at
http://www.eee.hku.hk/~chesi

IEEE - Control Systems Society

IEEEOkanagan Subsection

Presents

Dr. Thomas Johnson

School of Engineering, UBC Okanagan

Radio frequency power amplifier technology: past, present, and future

Time & Date: 4:30pm-5:30pm, May 11, 2011
Location: ART 202, UBC Okanagan

Talk Abstract:

Radio frequency (RF) technology has evolved from the first implementations using vacuum tubes in the 1920s to mass produced solid state power amplifiers that are now incorporated in virtually every wireless transmitter. A significant factor which has driven innovation in RF power amplifier technology has been the quest to improve power efficiency. Although power efficiency is a significant metric, in most applications such as communication systems, power efficiency must be balanced with distortion and bandwidth requirements. Many of the innovations in RF power amplifier technology have been coupled with architectural changes in the transmitter where the classical amplifier subsystem has been augmented with signal processing and active power supplies to dynamically control bias points in the RF circuits. In this presentation, we review some novel transmitter architectures and concepts that have been used to improve power efficiency, and then look at current research and what might be expected in future RF power amplifier designs.

Speaker Biography:

Thomas Johnson joined the School of Engineering at the University of British Columbia, Okanagan in July 2009. He was formerly a Technical Fellow at Pulsewave RF in Austin, Texas where he was collaborating in the research and development of RF switch-mode power amplifiers and nonlinear feedback linearization techniques for wireless infrastructure applications. He received his Ph.D. in 2007 from Simon Fraser University where his research focused on the analysis of power efficiency in RF switch-mode amplifier architectures employing bandpass delta-sigma modulation. Dr Johnson received his MASc in 2001, and contributed to the invention of wideband feedforward linearization techniques, and DSP algorithms for calibrating and adjusting multitap RF equalizers. Prior to graduate studies, he spent twelve years as a technical lead in various companies including ADC Telecommunications, MPR Teltech, and Norsat.