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Stéphane Savard
Honeywell

Thursday 06 December

.Presentation 4 - 5 pm
Tour 5 - 5:30 pm

Honeywell Process
Solutions
500 Brooksbank Ave
North Vancouver
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Please RSVP by email to
Michael Hughes

Information

Applied Physics chair
Michael Hughes
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Terahertz measurement for paper industry: challenges from lab to harsh environment

Since 2007 Honeywell Vancouver Center of Excellence has been investigating Time-Domain Terahertz Spectroscopy to create a breakthrough product for the paper industry. A successful sensor will replace three well established, robust and cost-effective technologies to measure thickness, moisture and areal density of paper. The main motivations behind this project are to lower the cost for the end-user in order to stay competitive and have a product differentiator on the market: few companies to date can claim to measure all three parameters with one sensor at one spot in a non-contacting way and free of nuclear radiation.

A brief introduction to the terahertz field will launch this presentation followed by a review of the different technology evolutions necessary for the advent of the first Time-Domain terahertz spectrometer. After highlighting some of the available suppliers of such technologies and describing few of their products, the presentation will describe the technique, principles, and the parts required to build a spectrometer in a well controlled environment (lab). At this point, one could legitimately ask: 'why is the kick-off of such technology so slow?' To address that question, the challenges and solutions related to building such a spectrometer for use in a harsh environment will be presented. In order to give you a flavor of one of the challenges, the paper thickness measurement repeatability has to be submicron yet the scanner heads can have relative motion greater than 250 microns.

After filing 7 patent applications, working closely with antenna suppliers and waiting for the field to mature, we have come-up with a very competitive time-domain terahertz spectrometer. We will introduce the prototype

we have tested on the field and present results indicating the feasibility to develop a product. But because we have pushed the technology to its limit at 1550 nm, many innovations are still needed and a few issues remain to be addressed. The conclusion highlights the work done in the last few years and the challenges to be addressed in the near future in preparation of the next generation of our THz sensor.

Speaker: Stéphane J.G. Savard received a B.Sc. degree in condensed matter physics with a specialization in microelectronics from Université de Sherbrooke in 2001, and a M.Sc. and Ph.D. degrees in physics developing superconducting high frequency and photosensitive micro-components from Université de Sherbrooke in 2004 and 2009 respectively. From 2009 to 2010, he was a postdoctoral researcher at Simon-Fraser University physics department under the supervision of Pr. Steven Dodge collaborating with Honeywell to push the theoretical frontier of an applied time-domain terahertz sensor.

In 2010, he first joined Honeywell, for the two first years as a NSERC Industrial Postdoctoral Fellow and was recently promoted to Engineer/Scientist Research III. He is pursuing the development of a terahertz sensor for the paper industry and is also seeking for new opportunities for terahertz sensors. During his Ph.D., he fabricated and studied superconducting terahertz antennas using pulsed laser deposition. He performed the first study of this kind in Canada. With a strong background in theory, fabrication and over 8 years of experience in terahertz, he is a strong addition to Honeywell's sensor team for developing a terahertz sensor.

Your 2012 IEEE Vancouver annual election ballot will be emailed to you on 26 November 2012.
The balloting period will be open until the end of day, 23 December 2012.

You will need your IEEE Account (username and password) to authenticate access.

If you have any questions, or if you do not receive your electronic election ballot,
please contact the chair of the Nominations Committee, Mazana Armstrong, at mazana.armstrong@ieee.org.



Jonathan Rose
University of Toronto

Creative applications for mobile devices: bringing apps to other disciplines

We can be justly proud of the avalanche of progress that has occurred in the past 5 years in mobile devices, making use of every branch of Electrical and Computer Engineering. Their computational capability, mixed with high-speed wireless networking, friendly user interfaces and sophisticated sensors (accelerometers, gyroscopes, barometers, proximity detectors, light sensors, high-resolution cameras and microphones) have given rise to a burst of creativity from the authors of new apps. Despite all the novel apps already invented, I believe we have only scratched the surface of what is possible, as we learn how to use and create with these devices, and as the forces of competition and economics bring new technology to the consumer.

This seminar will describe a new graduate course 'Creative Applications for Mobile Devices' that is open to all graduate students at the University of Toronto. Graduate students in every field are mixed with programmers to enable the creation of new research-oriented, and field-specific apps. The course has been taught for two years, and I will describe how it is structured (with an eye to convincing one of you to do the same) and some of the delightfully creative results in surgery, museum studies, physiotherapy, nursing, driving, education, and many more.

Closer to my research home, I will also describe some recent work on using FPGAs to accelerate computer vision tasks inside smartphones, and will contemplate the advent of embedded FPGAs inside the highly integrated systems on chip inside modern phones.

Speaker: Jonathan Rose is a Professor in the Edward S. Rogers Sr. Department of Electrical and Computer Engineering at the University of Toronto. He received the Ph.D. degree in Electrical Engineering in 1986 from the University of Toronto. From 1986 to 1989, he was a Post-Doctoral Scholar and then Research Associate in the Computer Systems Laboratory at Stanford University. In 1989, he joined the faculty of the University of Toronto. He spent the 1995-1996 year as a Senior Research Scientist at Xilinx, in San Jose, CA, working on the Virtex FPGA architecture. From 1989 until 1999 he was an NSERC University Research Fellow.

In October 1998, he co-founded Right Track CAD Corporation, which delivered architecture for FPGAs and Packing, Placement and Routing software for FPGAs to FPGA device vendors. He was President and CEO of Right Track until May 1, 2000. Right Track was purchased by Altera, and became part of the Altera Toronto Technology Centre, where Rose was Senior Director until April 30, 2003. His group at Altera Toronto shared responsibility for the development of the architecture for the Altera Stratix, Stratix II, Stratix GX and Cyclone FPGAs. His group was also responsible for placement, routing, delay annotation software and benchmarking for these devices, and for the placement and routing software for the Altera Apex 20K and Flex 10K FPGAs. From May 1, 2003 to April 30, 2004 Rose held the part-time position of Senior Research Scientist at Altera Toronto. He has worked for Bell-Northern Research and a number of FPGA companies on a consulting basis.

Thursday 29 November
4:00 pm

MCLD 418
2356 Main Mall
UBC Vancouver Campus

Information
Computer Society chair
Sathish Gopalakrishnan
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Ahmed Hussein
UNBC

Dual Fluid Reactor: A novel design that will revolutionize nuclear power

The Dual Fluid Reactor, DFR, is a novel nuclear reactor concept based on the Generation IV Molten-Salt Reactor (MSR) concept and the liquid-metal cooled reactors (SFR, LFR) with the major improvement that the molten-salt fuel is not used as coolant but the heat is removed in a separate liquid-lead loop. It is a fast reactor, that consumes all fissionable materials like U235, U238, Pu239, natural Thorium, etc. It has much simpler design, and produces much less nuclear waste than currently used nuclear power reactors. It does not emit any radioactivity or green house gases during operation. It costs as much as a coal fired power station to construct and operate. There are more benefits that will be discussed in the talk.

Speaker: 2005-present Professor Emeritus of Physics at UNBC. 2011-present Associate Member of Institute of Nuclear Solid State Physics (ISNP), Berlin, Germany. 1994-2005 Founding Professor and Chair of Physics at

UNBC. 1976-1993 Assistant, Associate, Full Professor at King Fahd university of Petroleum and Minerals(KFUPM), Saudi Arabia. B.Sc. Applied Physic, University of Alexandria, Egypt. M.Sc. and Ph.D. Nuclear Physics, University of Alberta.

Conducted research in Nuclear and Particle Physics at TRIUMF and Los Alamos National Laboratory(USA). Currently active in research projects at TRIUMF in nuclear Astrophysics and Particle Physics. At ISNP we are developing a new type of a nuclear power reactor, the Dual Fluid Reactor(DFR).

Over \$68 million research grants in individual and group projects from KFUPM and NSERC. Editor, International Journal of Engineering Education.

Member of IEEE, and the Canadian Association of Physicists (CAP).

Friday 30 November
10:30 - 12:00

Room 7-158
(Agora Building)

Information
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IEEE NorthernBC chair
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A live stream of this presentation
can be followed at
<http://livestre.am/1mMjm>

Welcome.. recent arrivals to IEEE Vancouver!!

Aaron Abraham	ST	Baiely Hu	ST	Joseph Petilla	M
Mazy Abulnaga	ST	Shi Huang	ST	Nunziatina Petralia	ST
Rushil Aggarwal	ST	Billy Huang	ST	Eric Pospisil	M
Hamed Ahmadi	GS	Eddie Hung	GS	David Pugh	M
Saud Almahri	ST	Shawn Hunter	M	Abtin Rasoulia	GS
Alborz Amir-Khalili	GS	Husam Husseini	ST	Rafael Roman Otero	ST
Andrew Au	M	Yonatan Indrajaya	ST	HanGyeol Ryu	ST
Gautam Bacher	GS	Md Shariful Islam	GS	Reza Sabzehgar	M
Elliot Barer	ST	Al-Shahna Jamal	ST	Peter Saffold	ST
Ryan Bernath	ST	Fan Jiang	ST	Russell Sampson	ST
Simon Beyer	GS	Cameron Johnston	ST	Jagroop Sarai	ST
Baljot Bhatti	ST	Harsh Juneja	GS	Remy Savard	ST
Nora Bishop	ST	Alexis Katigbak	ST	Andrew Schlosser	ST
Joanna Boetzkes	ST	Peter Kazakoff	ST	Kathrin Schmidt	GS
Sergey Boriskin	ST	Kamyar Keikhosravy	GS	Andrew See	M
Brian Borrero	ST	Sara Kianparvar	M	Jonathan Sehn	ST
Dana Brand	GS	Youngsok Kim	ST	Syed Karim Shah	M
Jeremy Brysh	GS	Jeff Kim	ST	Navid Shirzad	M
Joshua Burnside	ST	Angus Kinkade	GS	Pooneh Shooshtari	M
Michael Bystryk	ST	Young-Joon Ko	M	Tony Shum	ST
Wei Cai	GS	Kristopher Koiner	ST	Brian Sieu	ST
Fabiano Camargo	M	Kyle Kotowick	GS	Rohit Singla	ST
Michelle Chan	ST	Charles Krempeaux	M	Vathen Sivagurunathan	ST
David Chan	GS	Nicholas Kroeker	ST	Paul Smith	M
Philip Chan	ST	Clarence Kwan	ST	Craig Spanza	ST
Hong Kei Chan	ST	Sally Kwok	ST	Greg Stortz	ST
Hong Ting Chan	ST	Stella Kwok	ST	Yan Sun	ST
Kwok-yu Chan	ST	Carrie Lai	ST	Alistair Sutherland	ST
Brandon Chang	ST	Lester Hing Kwok Lao	ST	Victor Tai	GS
Allan Chee	ST	Brian Lau	ST	Len Takeuchi	GS
Xun Chen	GS	Simon Law	ST	Kousha Talebian	GS
Joey Cheng	ST	Scott Lawson	ST	Kevin Tan	ST
Harris Chou	ST	Brian Le Cappelain	ST	Nick Tan	ST
Edmond Chui	ST	Brandon Lee	ST	Stephen Tang	ST
Gabriel Constantinescu	M	Ryan Lee	ST	Roy Tannar	ST
Jean-Sebastien Cote	M	Mandy Lee	ST	Mark Teo	M
Vitali Dmitrenko	ST	Jason Leung	ST	Treydon Teo	ST
Binh Do	GS	Andrew Leung	ST	Tatiana Teslenko	M
Bryn Drew	M	Johnathan Lewis	ST	Michael Thomas	ST
Nicolaas Dreyer	ST	Raymond Li	ST	Justin Ting	ST
Dylan Dumesnil	ST	YAN LI	M	Horace Tong	ST
AHmed Eltantawy	GS	Jackson Li	ST	Richard Tortorella	M
Hamed Eslamie	ST	Shijie Li	ST	Tim Tseng	ST
Mark Every	M	William Lin	ST	Stephen Tsui	ST
Kam Farahavar	ST	Junyan Liu	ST	Gus Vos	M
Hamza Faran	ST	Jessica Loo	ST	Xu Wang	ST
Jason Finishen	ST	Jeremy Lord	ST	Xiaoqiang Wang	ST
Michael Forbes	M	David Low	GS	Kelvin Wang	M
Cody Fournier-Vieira	ST	Tommy Lu	ST	Luke Warkotsch	ST
Jared Gaertner	M	Johnson Lu	ST	Andrew Watson	ST
Aviral Garg	ST	Seddrak Luu	GS	Darlene Webb	M
Abdullah Gharaibeh	GS	Calum MacAulay	M	Rob Weishuhn	ST
Robyn Gill	ST	Curtis MacPherson	ST	Micheal Wells	ST
Ygor Gonzalez	ST	Chinmaya Mahapatra	GS	Rita Williams	M
Tera Green	GS	Ray Mass	M	Godwin Woo	ST
Chaouxun Guan	ST	Rafaat Mir	ST	Galen Wu	ST
Zhenyu Guo	GS	Parsa Mohammadi	ST	Han Wu	ST
Chahna Gupta	ST	Charles Moore	M	Junfeng Xian	ST
Alireza Haghnegahdar	GS	Elham Nasserri	M	william Yan	ST
MohamadSadegh Hajhashemi	GS	Norris Ng	ST	Frank Yao	ST
Peter Halim	GS	Alvin Ng	GS	Ryan Yao	ST
Daniel Hall	ST	Tuan Nguyen	ST	Ying Yao	ST
Brian Hanley	ST	Hossein Omidian Savarbaghi	ST	Rex Yeung	ST
Matthew Harvey	ST	Hesam Ostadfar	M	Hansel Yu	ST
Lin He	ST	Damon Pang	ST	Mahshid Zeinaly Baraghoush	GS
Jorden Hetherington	ST	Kyle Parhar	ST	Fan Zhang	ST
Kenton Hirowatari	GS	Andrew Park	M	Rongjia Zhang	ST
Naz Houshmand	ST	Alisa Paterson	GS	Lei Zhang	GS
Justin Hsu	ST	Joshua Paul	ST	Chi Zhou	ST
				Chunsheng Zhu	GS

AF Affiliate - AM Associate Member - F Fellow - GS Graduate Student Member - LF Life Fellow
LM Life Member - LS Life Senior - M Member - SM Senior Member - ST Student Member