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Dear members,

Chair's message

Happy new year. It is a tremendous honour to serve you as the new IEEE Vancouver chair for 2012. Since I started volunteering with the section in early 2000s, I have been amazed by the dedication and hard work of so many



volunteers, making it the best IEEE large section in the world. Besides the recognition of our peers at the IEEE Section Congress, the volunteers get satisfaction from the kind words of our local members congratulating them on an event well organized or a technical meeting being educational.

To be able to renew old acquaintances and make new ones and to establish and expand one's professional network is what we are all about. IEEE Vancouver has been providing these opportunities for the past 100 years. Many events and activities celebrated this fact last year and our centennial was nicely wrapped up with the publication of a fantastic commemorative booklet (get yours if you haven't done so yet). The centennial year was a natural follow-up to celebrate receiving of the best section award in 2010.

The past chairs have done an amazing job of setting the bar high for the rest of us. They have made us proud to be part of an organization with nothing but excellence as a goal.

As the new chair, following in their footsteps, I can only hope that I will be as successful in making local members proud. To be able to achieve this goal, I have started on a plan to focus on a few things for 2012. Our centennial committee will be wrapping up the hundredth anniversary activities and I will support them in the final task of erecting a monument to celebrate IEEE in Vancouver.

My main focus this year will be on increasing our member base to allow us to grow even stronger. We will also continue to support the local chapters, sub-sections, and student activities with special attention to the newly established units. And last not the least, I am planning on expanding our cooperation with local professional organizations related to the fields of interest of our members. We can only achieve these goals through utilizing new channels of communication and attracting more volunteers.

I would also like to take this opportunity to thank all the current and past volunteers, knowing we would not have been able to achieve all the good things without their dedication and hard work. The start of the new year can be an excellent time for you to start being active with the section and volunteering, so please contact myself or any of the other executives to get involved. I promise you that the rewards will be gratifying and something you can cherish for years to come.



mPower Week

Empowering Business with Wireless Connectivity

February 7-9, 2012 | Vancouver, Canada

Wavefront presents **mPower Week** - a unique three-day series of North American conferences bringing together business and technology industry leaders, wireless and M2M solution providers, academia and mobile operators to highlight and deepen the understanding of the rapidly expanding global wireless and Machine-to-Machine (M2M) opportunities.

The opportunities in wireless and Machine-to-Machine (M2M) are exploding with the wireless industry generating \$41B in economic value for Canada, 84% of Canadians carrying mobile devices and an estimated 50 billion global devices to be wirelessly connected by 2020. Enterprise companies across various sectors, such as healthcare, energy and transportation, are adopting wireless and M2M technologies to drive productivity and improve service operations.

This growth means tremendous opportunities for Canadian technology developers and researchers who can successfully build solutions for these rapidly expanding markets.

Wavefront invites IEEE members to gather with other **mPower Week** participants to:

- Identify critical technical industry challenges to generate needs-driven product innovation
- Discuss wireless / M2M technology solutions to improve enterprise operations
- Learn industry-specific best practices and proven strategies on ROI models, technologies, implementation, deployment and support
- Hear leading industry innovators present case studies on lessons learned and technology challenges/trends impacting future development
- Collaborate and engage with leading industry stakeholders in M2M and enterprise wireless ecosystems to create new strategic relationships

Confirmed mPower Week speakers include:

- [Philippe Guillemette](#), Chief Technology Officer — **Sierra Wireless**
- [Markus Breitbach](#), Head of Partner Development M2M Competence Center— **Deutsche Telekom**
- [Mansell Nelson](#), Vice President, M2M — **Rogers Wireless**
- [George Le Bron](#), Head of Market Development — **Telenor Connexion**
- [Christoph Inauen](#), Head of Business Development, New Markets — **Nokia Siemens Networks**
- [Steve Pazol](#), President — **nPhase**
- [Anthony Bartolo](#), Business Solutions Business Development — **Samsung**
- [Sean McManus](#), Director, Platform Advocacy — **RIM**

Session Topics:

mPower M2M

- Understanding the M2M Landscape and Critical Success Factors for M2M Deployments using Cellular Technology
- Top opportunities in M2M
- Interdependence in the M2M Ecosystem
- The operator's role in M2M
- Planning Your M2M Solution (Technical track)
- Building M2M Solutions (Technical track)
- Solving industry business challenges (3 Industry deep dive tracks: energy, health, transportation)
- Canadian Innovation in M2M
- Industry Solution Case Study

mPowerBusiness

- Setting your company's mobile strategy
- Mobile tools and opportunities to improve cash management
- Impact of Mobile Payments on the Future of Business
- How to support traditional revenue streams with digital technology
- Consumerization of IT
- Mobile Wallet, NFC and Identity Management
- Tracking Employees – Best Practices for Managing Privacy
- Platforms and opportunities to develop custom business solutions
- Multi-device platform management
- Gamification of customer engagement to drive marketing results
- Consumer Engagement through Connected Multimedia Experiences
- Meeting the changing needs of the mobile consumer

Technically co-sponsored by the IEEE Joint Aerospace and Electromagnetics Chapter - Vancouver

Learn more and Register today - Use Code 'IEEE2012' to save 15%: www.mpowerresults.com

Sensor networks: recent advances and applications



MengChu Zhou
Tongji University

Friday 17 February - 2pm

Kaiser 2020/2030
UBC

Sponsored by the joint chapters of IEEE Control Systems, Robotics and Automation, and Systems, Man and Cybernetics societies

This seminar intends to offer an overview of recent research and development of sensor networks at New Jersey Institute of Technology. It focuses on some fundamental issues related to securing sensor networks, interference due to various sources, and applications to environmental monitoring, health monitoring, intelligent buildings, and military communications. To secure a mobile ad hoc network (MANET) in adversarial environments, a particularly challenging problem is how to feasibly detect and defend possible attacks on routing protocols, particularly internal attacks, such as a Byzantine attack. We propose a novel algorithm that detects internal attacks by using both message and route redundancy during route discovery. The route-discovery messages are protected by pairwise secret keys between a source and destination and some intermediate nodes along a route established by using public key cryptographic mechanisms. We also propose an optimal routing algorithm with routing metric combining both requirements on a node's trustworthiness and performance. To better position sensors and build a reliable mesh sensor networks, we have also studied the interference maps in buildings. We have dealt with various interference sources including microwave ovens, Hi-Fi, Bluetooth, and other co-existing wireless networks. Building a feasible body sensor network is an important application of sensor networks. The use of ZigBee standards for this purpose is explored. In cognitive radio and military applications, adaptive modulation is one of the mostly desired capabilities that can modify transmission characteristics and waveforms to control the spectrum and ensure its effective and efficient use by friendly forces. The research of sensor networks for such modulation recognition is presented. Biography

Speaker: MengChu Zhou (S'88-M'90-SM'93-F'03) received his B.S. degree in Electrical Engineering from Nanjing University of Science and Technology, Nanjing, China in 1983, M.S. degree in Automatic Control from Beijing Institute of Technology, Beijing, China in 1986, and Ph. D. degree in Computer and Systems Engineering from Rensselaer Polytechnic Institute, Troy, NY in 1990. He joined New Jersey Institute of Technology (NJIT), Newark, NJ in 1990, and is currently a Professor of Electrical and Computer Engineering and the Director of Discrete-Event Systems Laboratory. He is presently a Professor at The MoE Key Laboratory of Embedded System and Service Computing, Tongji University, Shanghai, China. His research interests are in intelligent automation, lifecycle engineering and sustainability evaluation, Petri nets, wireless ad hoc and sensor networks, semiconductor manufacturing, and energy systems. He has over 400 publications including 10 books, 200+ journal papers (majority in IEEE transactions), and 17 book-chapters. His recently co-authored include Modeling and Control of Discrete

Event Dynamic Systems, Springer, London, 2007 (with B. Hruz), Deadlock Resolution in Automated Manufacturing Systems: A Novel Petri Net Approach, Springer, New York, 2009 (with Z. Li), and System Modeling and Control with Resource-Oriented Petri Nets, CRC Press, New York, 2010 (with N. Wu).

He was invited to lecture in Australia, Canada, China, France, Germany, Hong Kong, Italy, Japan, Korea, Mexico, Singapore, Taiwan, and US and served as a plenary speaker for several conferences. He is founding Series Editor- of IEEE Press Book Series on Systems Science and Engineering. He served as Associate Editor of IEEE Transactions on Robotics and Automation from 1997 to 2000, and IEEE Transactions on Automation Science and Engineering from 2004-2007, and currently Editor of IEEE Transactions on Automation Science and Engineering, and Associate Editor of IEEE Transactions on Systems, Man and Cybernetics: Part A and IEEE Transactions on Industrial Informatics. He served as Guest-Editor for many journals including IEEE Transactions on Industrial Electronics and IEEE Transactions on Semiconductor Manufacturing. He was General Chair of IEEE Conf. on Automation Science and Engineering, Washington D.C., August 23-26, 2008, General Co-Chair of 2003 IEEE International Conference on System, Man and Cybernetics (SMC), Washington DC, October 5-8, 2003, Founding General Co-Chair of 2004 IEEE Int. Conf. on Networking, Sensing and Control, Taipei, March 21-23, 2004, and General Chair of 2006 IEEE Int. Conf. on Networking, Sensing and Control, Ft. Lauderdale, Florida, U.S.A. April 23-25, 2006. He was Program Chair of 2010 IEEE International Conference on Mechatronics and Automation, August 4-7, 2010, Xi'an, China, 1998 and 2001 IEEE International Conference on SMC and 1997 IEEE International Conference on Emerging Technologies and Factory Automation. He organized and chaired over 80 technical sessions and served on program committees for many conferences. Dr. Zhou has led or participated in 40 research and education projects with total budget over \$10M, funded by National Science Foundation, Department of Defense, NIST, New Jersey Science and Technology Commission, and industry. He was the recipient of NSF's Research Initiation Award, CIM University-LEAD Award by Society of Manufacturing Engineers, Perlis Research Award by NJIT, Humboldt Research Award for US Senior Scientists, Leadership Award and Academic Achievement Award by Chinese Association for Science and Technology-USA, Asian American Achievement Award by Asian American Heritage Council of New Jersey, and Distinguished Lecturership of IEEE SMC Society. He is a life member of Chinese Association for Science and Technology-USA and served as its President in 1999. He was recently elevated to Fellow of American Association for the Advancement of Science (AAAS) and is a fellow of the IEEE.

Information

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



Sumit Roy
U. Washington

RFID sensor networks: system design considerations

Radio Frequency Identification (RFID) is the future of present-day optical scanning. The promise of RFID and its eventual widespread successful deployment within a commercial supply chain is predicated on low cost, passive tags that support reliable, fast reading of tag IDs. In this talk, we describe some recent work aimed at enhancing RFID components for use in creating sensor nets that support higher data rates/throughput and/or greater ranges. The required system 'reverse engineering' challenges to meet the above goals will be described, along with the following accomplishments by our research group –

- i. Prototyping a new tag – Wireless Identification and Sensing Platform (WiSP) – based on a programmable low power micro-controller and a USRP based Software Defined Reader – suitable for laboratory research/experimentation platform.
- ii. Improved (beyond Gen 2) uplink spectral efficiency via higher order modulation and forward error correction (FEC) coding schemes that are compatible with Gen-2 binary modulation.
- iii. A new energy aware model and estimate for achievable tag read rate that considers tag availability (duty cycling) due to harvested energy constraints.

Speaker: Sumit Roy (Fellow, IEEE) received the B. Tech. degree from the Indian Institute of Technology (Kanpur) in 1983, and the M. S. and Ph. D. degrees from the University of California (Santa Barbara), all in

Electrical Engineering in 1985 and 1988 respectively, as well as an M. A. in Statistics and Applied Probability in 1988. Presently he is Professor of Electrical Engineering, Univ. of Washington where his research interests include analysis/design of wireless communication and sensor network systems. His research areas of interests broadly includes wireless and sensor networks, with a recent emphasis on multi-standard wireless inter-networking and cognitive radio, sensor networking involving RFID technology and emergent vehicular networks. He spent 2001-03 on academic leave at Intel Wireless Technology Lab as a Senior Researcher engaged in systems architecture and standards development for ultra-wideband systems (Wireless PANs) and next generation high-speed wireless LANs. Between Jan-Jun 2008, he spent a sabbatical at Univ. College Dublin as an SFI Isaac Walton Fellow and was a RAE (UK) Distinguished Visitor during July 2011.

His activities for the IEEE Communications Society (ComSoc) includes membership of several technical and conference program committees. He has served as Associate Editor for IEEE Trans. Communications and IEEE Trans. on Wireless Communications and currently serves on the Editorial Board for IEEE Trans. Communications (2nd tour), IEEE Trans. Intelligent Transportation Systems and IEEE Trans. Smart Grid.

Tuesday 21 February
2:00pm

MCLD418
UBC

Information
Joint Communications
Chair Alon Newton
alon.newton@gmail.com



Call for nominations – Association for Professional Engineers & Geoscientists of BC

Many IEEE members are professional engineers in British Columbia and I would like to take this opportunity to encourage you to become actively involved in APEGBC. In particular, for those of you who meet the candidate qualifications, I urge you to consider seeking a term on APEGBC Council.

IEEE and APEGBC members hold many interests in common. Your breadth of experience and knowledge and valuable insights

into the profession and the industry would benefit and help guide the course of APEGBC in the years ahead.

Complete information including eligibility, commitments, and nominating process can be found on the APEGBC web site at: www.apeg.bc.ca/about/council/nominationcriteria.html

Or email me at pastpresident@apeg.bc.ca.

Frank Denton PEng, Chair, APEGBC Nominating Committee





Ruska Patton
EMSCAN

Thursday 09 February
09:00 - 16:00

MacLeod Building
Room 418
UBC

Map:

<http://www.maps.ubc.ca/?312>

Co-sponsored by
ACA TMetrix and EMSCAN

Preregistration required.
Please contact
Prof. Dave Michelson,
davem@ece.ubc.ca

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

IEEE Electromagnetic Compatibility workshop

Session one - 09:00 - 12:00

EMC/EMI Testing in less than One Second - Very-Near-Field Techniques for Far-Field Problems

We show that very-near-field measurements of radiated emissions are fast and easy to make and avoid the delays and set-up needed for far-field measurements in a chamber. They allow EM and RF testing in less than one second! Using these techniques a designer can get an "emissions map" of a PCB or product in "real-time" to solve EMI and EMC problems early in the design cycle thus saving time and cost. Participants will have the opportunity to test their own devices and get hands on experience.

Session two - 13:00-16:00

Antenna Testing in Less than One Second - Very-Near-Field Techniques for Far-Field Measurements

Very-near-field measurements of radiated emissions are fast and easy to make and avoid the delays and

set-up needed for far-field measurements in a chamber. New techniques developed by EMSCAN allow very-near-field Antenna testing in less than one second! A designer can get an antenna or wireless device pattern in "real-time" to characterize the performance early in the design cycle thus saving time and cost. Participants will have the opportunity to test their own devices and get hands on experience.

Speaker: Ruska Patton, M.Sc., Director of Product Management, is responsible for the evolution of EMSCAN's real-time near-field measurement solutions. He has a comprehensive understanding of general EMC, EMI and RF design and troubleshooting, with excellent skills in related software applications and programming.

Mr. Patton holds both a B.Sc. and M.Sc. in Electrical Engineering from the University of Saskatchewan. During his time at University, he was recognized with numerous IEEE awards and a distinguished research scholarship.



**IEEE Joint Aerospace and
Electromagnetics Chapter**

Centennial booklet now available

IEEE Vancouver's Centennial booklet, edited by History chair Chris Scholefield, contains articles and photos illustrating the story of IEEE Vancouver, its members and the progress of electrical engineering in British Columbia.

A limited number of free copies are available to IEEE Vancouver members. Contact secretary Bob Gill at bgill@ieee.org to make arrangements to pick up a copy.

You can also download a copy in PDF format - it's 40.5Mb - may take several minutes.
http://www.ieeeahn.org/wiki/images/a/a7/IEEE_van_centennial_booklet_FINAL.pdf

For updated and complete historic information about IEEE Vancouver, please visit
http://www.ieeeahn.org/wiki/index.php/IEEE_Vancouver_Section_History

Welcome.. recent arrivals to the best IEEE section on Earth! *

Ameer Abdelhadi	GS	Norbert Knauer	M	Greg Rae	M
Bader Alahmad	ST	Joseph Kwuen	ST	Alireza Rafipour	ST
Md.MuntasirUI Alam	GS	Jose-Carlos Laguio	ST	Rubens Rahim	M
Ted Alley	ST	Sukhchandan Lally	GS	Bill Robertson	M
Shahram Arabi	M	Gorden Larson	ST	Oliver Schneider	GS
Aleksandr Aravkin	AM	Manny Lee	ST	Yasaman Sefidgar	GS
Aleksandar Arsovski	ST	Jaehong Lee	M	Dustin Shargool	ST
Ema Baksa	ST	Shiyu Liang	ST	Shabnam Shariaty	GS
Milan Balag	M	Yitian Liu	ST	Fahime Sheikhzadeh	GS
Ernie Bennett	M	ChengChe Liu	ST	Han Shi	ST
Lizann Brooks	ST	Wei Lu	GS	Xinmei Shi	GS
Edgar Cave	ST	Daniel Ly-Ma	ST	Hossna Shirshekar	GS
Jeannie Chan	M	Xiaoqiang Ma	GS	IRC Specialist	M
Marcus Cheung	ST	Sadia Mahboob	M	Shinjiro Sueda	M
SungWoo Cho	ST	Gabor Melli	M	Diane Tam	GS
Simon Dahonick	ST	Hengameh Mirzaalian	ST	Hassene Tmar	ST
Adam Dekleer	ST	Atoosa Moghimi	GS	Fakhar UI Islam	GS
Priyanka Deshmukh	GS	Nima MohseniKiasari	GS	Angel Valerio	GS
Joe Edwards	ST	Zachary Moshansky	ST	Maximillian Verbeurgt	ST
Simon Ferguson	ST	Ali Moshref	M	Haiyang Wang	GS
Anna Flagg	GS	David Mountain	AM	Richard Wang	ST
Ignacio GalianoZurbriggen	GS	Maryam Nasri	GS	Darren Wang	ST
Gleb Ganeline	GS	Louise Oram	GS	Carol Wong	M
Richard Gel	ST	Vasil Panov	ST	Jack Wu	ST
Jeffrey Goeders	GS	Zhila Pirmoradi	GS	Jessica Yan	M
Daniel GuerreroMohajir	ST	Katrina Prieto	ST	Yaodong Yu	ST
Ann Han	ST	Yongquan Qiao	GS	Arash Zargaran Yazd	GS
Filip Juristovski	ST	Rafael Quintero-Bermudez	ST	Xiaolang Zhang	GS
Idin Karuei	GS	Sina Radmard	GS	Jack Zheng	ST
Ivan Klyuzhin	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

* IEEE Vancouver named Outstanding Large Section for 2009!

Innovation doesn't just happen.
Read first-person accounts of
IEEE members who were there.

IEEE Global History Network
www.ieeeahn.org

Photo: NASA

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