KITCHENER-WATERLOO SECTION

December 2010

The Kitchener-Waterloo Section of the Institute of Electrical and Electronics Engineers serves members whose mailing address is in Bruce, Grey, Perth, Waterloo or Wellington counties. It collects news relevant to local engineers and is published monthly.

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http://www.ieeekw.com/executive.php

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University of Waterloo Student Branch - Stream B	Ms. Joanna Ma

Upcoming Events

Updated information can be found at http://www.ieeekw.com/activities.php.

International Conference on Autonomous and Intelligent Systems

June 22 – 24, 2011
Burnaby, BC

Paper submission deadline is January 17, 2011.

The 2nd International Conference on Autonomous and Intelligent Systems (AIS 2011) is held in conjunction with the 8th International Conference on Image Analysis and Recognition in the beautiful city of Burnaby on the outskirt of Vancouver, Canada. It aims at providing a platform for researchers, engineers, academics and industrial professionals to present their recent research work and to explore future trends in various areas of autonomous and intelligent systems. The conference will address recent advances in theory, methodologies and applications in the field.

The scientific program will include keynote and invited speakers and fully refereed contributions. The organizers are working with Springer to have the proceedings published as a special volume in Springer Lecture Notes in Computer Science Series. It will be also indexed in major indexing sites. As with the first edition of AIS, selected articles will be published in the International Journal of Robotics and Automation and The International Journal on Control and Intelligent Systems, among other journals. AIS 2011 is technically co-sponsored by the IEEE.

http://www.ais.uwaterloo.ca/ais11/

Canadian Conference on Electrical and Computer Engineering – Technology Driving Innovation

May 8 – 11, 2011
Niagara Falls, ON

CCECE provides researchers, students, and practicing professionals in the area of Electrical and Computer Engineering with a Canadian venue in which they can present the latest technological advancements and discoveries. It is also a valuable opportunity to network, exchange ideas, strengthen existing partnerships and foster new collaborations. CCECE 2011 will feature mini-symposia with papers presented from a broad range of areas in Electrical and Computer Engineering. There will be tutorial sessions in leading topics, plenary talks from senior executives in industry and academia, special sessions in hot topics, social programs, the IEEE Canada Awards and Banquet night, best student paper awards luncheon, and industrial exhibitions.

This conference, organized by local IEEE sections, provides a forum for Canada's best emerging Engineering talent and industrial leaders to present, participate, sponsor and network between partners in Canada's High Technology Frontier.

http://www.ieee.ca/ccece11/index_en.php

21st International Conference on Noise and Fluctuations

June 12 – 16, 2011
Toronto, ON

The International Conference on Noise and Fluctuations (ICNF) is a biennial event, with the aim of bringing together specialists in fluctuation phenomena from different fields in science and engineering, to address both fundamental and applied issues. Recent past conferences in this series were organized in St. Louis (1993), Palanga (1995), Leuven (1997), Hong Kong (1999), Gainesville (2001), Prague (2003), Salamanca (2005), Tokyo (2007), and Italy (2009).

For queries about ICNF 2011 you can use the e-mail address
icnf2011@icnf2011.org

Electrical Field Testing of Distribution and Transmission Class Cables - Application and Case Stories

Mark Fenger
Kinectrics Inc.

December 9, 2010, 3:30PM
Trinity Square
483 Bay St., South Tower
Basement Floor, B1 Conference Centre, Room 01
Toronto, ON

The presentation will outline various electrical test methodologies for Condition Assessment of Distribution & Transmission Class Cables for both commissioning and maintenance. Specifically DC, VLF and AC Withstand Testing as well as diagnostic tests such as Partial Discharge and TanDelta (dielectric spectroscopy) will be discussed along with the advantages, the disadvantages and practical application of each test methodology. As well, practical applications will be discussed and several case studies will be presented.

DEIS President Dr. Hulya Kirkici will make a special trip from Auburn University in Alabama to present an award to Dr. R John Densley for his work as Editor of the Electrical Insulation Magazine. Please join us to meet the DEIS president, and in thanking John for all his work.

Mark Fenger, Senior Engineer, Transmission and Distribution Technologies, has over 10 years experience in diagnostic testing and cable assessments and is an active contributor to multiple technical committees and societies. His area of expertise is aging of solid insulation materials, particularly partial discharge detection, measurement, and interpretation, as well as dielectric spectroscopy measurement on solid dielectric cable. Mark Fenger is a licensed engineer with the province of Ontario, holds a M. Sc. E.E. from the Technical University of Denmark as well as an M.B.A. from the Schulich School of Business, York University.

http://ewh.ieee.org/r7/toronto/events/dec0910.htm

IEEE UW Guest Speakers

IEEE UW Student Branch

Keep an eye on the IEEE UW Student Branch website for further details on two very exciting guest speakers that will be visiting in the fall.

Canadian astronaut, Dr. Robert Thirsk will be sharing his experiences with the American and Russian space programs and his recent involvement on the International Space Station.

A representative from Blizzard Entertainment will be returning to Waterloo for the second year to talk about products and career opportunities.

http://ieee-sb.uwaterloo.ca/upcoming_events.aspx

Recent Events

6th International Conference on Network and Service Management

October 25 – 29, 2010
Report by Dr. Raouf Boutaba, Communications Chapter

The 2010 edition of CNSM, the International Conference on Network and Service Management, is a special edition in many aspects. On one hand, it is the continuation of a long tradition of network management events taking place annually in the fall. On the other hand, it is a new incarnation of these events with a new name and structure.

Organized in a 5-full day program held in Niagara Falls, CNSM 2010 offered different types of activities and had more than 180 participants. The 3 day main conference was composed of 9 single track technical sessions, as well as 2 keynotes, 1 panel, and 6 poster sessions co-located with the coffee breaks. The 4th day of the conference was composed of 4 mini-conference sessions and 2 full-day workshops. Finally, we had 1 full-day tutorial and 1 full-day workshop on the 5th day that completed the CNSM 2010 technical program.

In addition to the technical program, CNSM 2010 also hosted 6 committee meetings (CNSM steering committee meeting, CNOM/IFIP WG6.6 meeting, TNSM editorial board meeting, NISC steering committee meeting, IM 2011 TPC meeting, and IM 2011 OC meeting) and 4 social events (reception, banquet, TPC victory dinner, and IM 2011 OC/TPC dinner).

The CNSM 2010 program featured two engaging keynote talks. Dr. Maheswaran Surendra, Director of services management from IBM, opened the conference with a keynote on “IT Service Management and Delivery for an Enterprise.” In this talk he presented an overview of IT from the Service Delivery perspective.

The keynote from Professor Alberto Leon-Garcia, noted Canadian network expert from the University of Toronto, is titled “Designing the Future Network.” In this talk, he presented an overview of the research work to design networks where new applications can be readily deployed on a converged pool of computing, communications, and storage resources that are managed by autonomic management systems.

CNSM 2010 also featured a state-of-the-art panel on the management of the cloud infrastructure titled “Cloud computing management: where next?” It was organized by Thierry Coupaye and Prosper Chemouil (both from Orange Labs, France). The panel members included Marcus Brunner (NEC Europe, Germany), Jonathan Bryce (Rackspace, USA), Michelle Sibilla (IRIT, France) and Vanish Talwar (HP Labs, USA).

Our single tutorial, titled “Mathematical Models for Network and Service Management,” explored different types of modeling techniques that can be used in management modeling and decision making.

We believe CNSM 2010 activities formed a very exciting set of research work that enabled authors, presenters and attendees to exchange valuable experiences that will advance the state of cross-layer management.

Four More Canada Research Chairs Named

Novmeber 29, 2010
University of Waterloo News Release

Four Waterloo researchers were named to Canada Research Chairs this week and will receive a total of $5.6 million in federal funding over the next five to seven years. Another four professors received renewals worth $2.9 million for their existing Canada Research Chairs.

One of the new CRCs will investigate the future of the Internet, another will probe wireless communications networks, a third Waterloo professor will study nanotechnology in radio-frequency systems and a fourth will explore multimedia data compression.

"This generous funding allows the University of Waterloo to continue to create an environment conducive for ground-breaking research and offers a stimulating environment for our graduate students to engage in research," said a statement from George Dixon, vice-president (university research), after the new positions were announced during a Toronto symposium marking the 10th anniversary of the CRC program. The Canada Research Chairs are described as positions that allow a faculty member to focus on research as well as on training the next generation of scientists.

All four of the new chairholders are in the electrical and computer engineering department, and each is funded at $200,000 a year for seven years.

One is former department chair Catherine Rosenberg, who will hold the Canada Research Chair in the Future Internet. Her research explores novel directions in wireless networks, social networks and incentive-based mechanisms between Internet stakeholders. Rosenberg aims to create breakthroughs in the design and practical implementation of the future Internet and develop highly efficient protocols and techniques to improve the Internet user’s experience.

The second new chair goes to Weihua Zhuang, who will be Canada Research Chair in Wireless Communication Networks. Her research involves developing distributed radio resource allocation and network control algorithms and protocols for vehicular ad hoc communications. Zhuang seeks to provide a deep understanding on how a large number of vehicles on road and high vehicle speed can impact network stability

and performance, as well as to design networking protocols for efficient and reliable information delivery.

Raafat Mansour is the new Canada Research Chair in Micro and Nano Integrated RF Systems. His research looks at introducing a new class of RF (radio-frequency) systems and instrumentations that leverage the benefits of integrating RF, Micro and Nano technologies on a single-chip. This innovative chip-scaled technology platform will enable the development of highly advanced RF systems for use in applications such as wireless communication, biomedical and nano-instrumentations.

En-hui Yang becomes the Canada Research Chair in Information Theory and Multimedia Data Compression. Yang's research investigates how to improve the areas of information theory, multimedia compression and multimedia communications efficiency, reliability and diversity by proposing and exploring advanced concepts/paradigms. He explores the development and use of new information transmission, storage, protection theory and algorithms.

The four Waterloo researchers who won renewals for their Canada Research Chairs are Grainne Fitzsimons, psychology, CRC in Social Cognition, funded $500,000 over five years; Michel Gingras, physics and astronomy, CRC in Condensed Matter Theory & Statistical Mechanics, $1.4 million over seven years; Debbie Leung, combinatorics and optimization, CRC in Quantum Communication, $500,000 over five years; and Justin Wan, computer science, CRC in Scientific Computing, $500,000 over five years.

Engineers and the World

Conestoga the Place for Solar Studies

November 2010
Business Times

At the Solar Industry Networking Group held in Cambridge this past September the question was put to the crowd ‘How many of you have been in solar for more than two years?’ Only a few hands went up. That response underscores how very new the industry is, and how much training is needed.

This is a time of rapid economic and industry sector change. As traditional manufacturing and the jobs it provides disappear, new industries requiring new skill sets are emerging.

Our economic survival and ability to compete globally requires that we help workers adapt quickly to new job descriptions.

Shawn DeBruyn, Corporate Training Consultant at Conestoga College Institute of Technology and Advanced Learning says that because of the College’s existing Continuing Education and Corporate Training divisions, they can react to the changes and industry needs very quickily. As a result they have been able to set up and offer training in renewable and solar energy technology. He says that with the speed of this new solar industry’s emergence and growth, there hasn’t been time for many post-secondary educational institutions to set up a full-time degree or diploma program, but the need is definitely there.

DeBruyn says Conestoga has moved to fill the solar knowledge gap with a Three year diploma - Energy Systems Technologist program, along with a number of Continuing Education and online courses under the title of Renewable Energy and Green Solutions. There are courses that cover the kind of basic information homeowners might want if they're considering using solar panels on their roofs to qualify for the Ontario government's Micro-FIT program as well as courses that feature advanced information suitable for electricians or engineers looking to generate income from solar work.

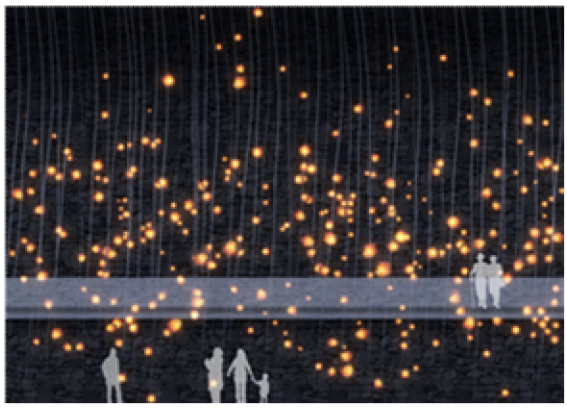
As well, Conestoga is partnering with the Solar Living Institute in Hopland California (a leading provider of green technology training) to offer an Online Solar PV Design and Installation Training course.

DeBruyn says Conestoga also won the contract to run a six month program in renewable energy on the Six Nations reserve that provides training in geothermal, solar, solar-thermal and LEED- core concepts, as well as courses like business, math, computer and safety training related to green energy. Conestoga also plans to offer this as a public program in the future. In addition to their online and campus offerings, DeBruyn says that the Corporate Training division of the College is able to offer tailor-made corporate training for solar or other renewable energies to companies that need more training for their employees.
http://blogs1.conestogac.on.ca/news/2010/11/at_the_solar_industry_networki.php

Nuit Blanche Installation a Winner with the People

November 10, 2010
University of Waterloo ECE News

Waterloo Architecture Professor Philip Beesley's responsive 'forest of light' installation developed for Toronto's Scotiabank Nuit Blanche has been honoured with the People's Choice Award for the event. Beesley collaborated on the project entitled Aurora with a team including Rob Gorbet, a Waterloo electrical and computer engineering professor, and Waterloo architecture and electrical and computer engineering students. The annual contemporary art exhibit took place this year from dusk to dawn throughout downtown Toronto on October 2.



PBAI, Artist's rendering of Aurora

http://www.scotiabanknuitblanche.ca/exhibition.aspx?zone=A&mapID=5

ECE Technology to Be Used By the OLG

November 17, 2010
University of Toronto ECE News

Visiting a casino is a positive experience for most people -- an outing where the food and entertainment are as much fun as the gambling. For some, gambling becomes an addiction that can ruin their lives.

ECE Professor Kostas Plataniotis and his team have come up with a solution that the Ontario Lottery and Gaming Corporation will use to help these people.

Tom Marinelli, Acting CEO of the Ontario Lottery and Gaming Corporation (OLG) and Ontario Information and Privacy Commissioner Dr. Ann Cavoukian, released a white paper today announcing a major development in privacy-protective facial recognition technology.

This critical system, to be rolled out in 2011 at OLG gaming sites across the province, embeds a design protocol based on *Privacy by Design*, that will enable the OLG to better support its customers who have enrolled in a completely voluntary self-exclusion program, while protecting the data of all OLG customers.

Speaking at the Toronto CIO Executive Summit, Commissioner Cavoukian said, "This collaboration is based on the application of an emerging technology called Biometric Encryption - which enables both the functionality of the system and privacy to be strongly respected."

Only when the live facial biometric of a self-excluded user is detected as present, will the system alert the OLG and "unlock" the necessary information, for security to do a manual check. No single key can unlock the complete database of enrolled persons.

"Facial recognition technology will enhance OLG's current ability to spot self-excluded patrons who fail to stay away from gaming sites. This system helps to strengthen the deterrent for self-excluders to return to our gaming sites," said OLG's Marinelli.

"I congratulate our University of Toronto researchers for advancing the application of an emerging technology to produce a made-in-Ontario solution that has the potential to positively impact privacy worldwide," said Dr. Ann Cavoukian, Ontario Information and Privacy Commissioner. "This Biometric Encryption-based technology will offer dramatically improved privacy protection over simple facial recognition, without compromising any functionality, security or performance – the hallmarks of a*Privacy by Design* application."

The new system, developed in collaboration with Oakville, Ontario video surveillance and biometric firm iView Systems and University of Toronto researchers Professor Kostas Plataniotis and Dr. Karl Martin, is scheduled to be implemented by OLG in gaming sites across Ontario in 2011, starting with OLG Slots at Woodbine Racetrack.

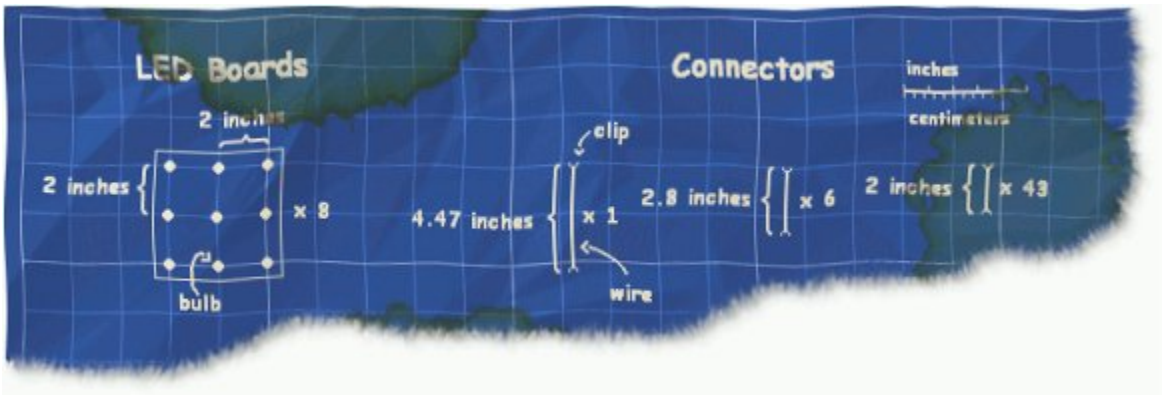
Privacy by Design (*PbD*), a concept developed by Commissioner Cavoukian, prescribes that privacy be embedded directly into the design and operation, not only of various technologies, but also of business processes and networked infrastructure. Instead of treating privacy as an after-thought - "bolting it on after the fact" - *PbD* is

proactive and preventative in nature. A landmark Resolution adopting *PbD* as an "essential component of fundamental privacy protection" was recently approved by the Council of International Data Protection and Privacy Commissioners in Jerusalem at their annual conference this year.

For Fun...

Brain Teaser

by Joe McCrea (Logain), The Grey Labyrinth



You are led into a room where the shelf is clean and a pile of lighting equipment is on the floor. A note hangs from the shelf saying, “Sorry, but I spilled coffee on the shelf and in cleaning it up I completely ruined your light display, so I just disassembled it and left it on the floor”.

On the floor is an assortment of 3x3 LED boards used for lighting any combination of the 9 bulbs by tying them together with a connector. All bulbs are in an off state unless a connector is placed between two of them. The bulbs are 2 inches apart in width and height.

There are 43 connectors of length 2 inches, 6 connectors of a length around 2.8 inches, and 1 connector just less than 4.5 inches. Also, there are 8 LED boards in all. Picking up the boards in no specific order, you find the following information written on the back of them. Note, that on most of these there is no indication of which side is up, so the numbering of the nine bulbs is arbitrary and it may need to be turned to face another way.

1 - Only info is that bulbs 1,2,3,4,6,7,8,9 are ON
2 - Only info is that bulbs 3,4,5,6,9 are ON
3 - Only info is that bulbs 1,2,3,4,5,7,8,9 are ON
4 - Labeled this side up, and bulbs 1,3,4,5,6,7,9 are ON
5 - Labeled this side up, and bulbs 1,2,3,5,7,8,9 are ON
6 - Only info is that bulbs 1,3,4,5,6,8 are ON
7 - Only info is that bulbs 1,2,3,6,7,8,9 are ON
8 - Labeled this side up, and bulbs 1,3,4,5,6,7,9 are ON

You start to say that you don’t know if they can be reassembled without making an assumption, but on the floor you notice labels that were numbered 1 through 8

which used to tell the correct order the boards were placed in. It's a shame they fell off. But, you only notice seven of them. As you pick up the boards again, a label marked "#1" falls off of a board and lands on the board you temporarily called "#3". Unfortunately you are unsure which board it fell off of.

Thinking it over, and looking at the label, you exclaim, "Well if you can tell me what the problem was, I'm sure you can now tell me the correct answer as well."

Engineering Humour

Q: Why did the humble engineer break down after a good design review?
A: Too much positive feedback.

Q: Why did the electrical engineering student prefer resistance to capacitance and inductance?
A: Because impedance is much too complex.