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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://kw.ieee.ca>

IEEE KW Section, c/o Electrical & Computer Engineering (EIT 3028)

University of Waterloo

Waterloo, ON, N2L 3G1

## KW Section Executives

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

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GOLD (Graduates of the Last Decade)

Vacant

WIE (Women In Engineering)

Dr. Ladan Tahvildari

Consultants Network

Dr. Shahab Ardalan

LM (Life Members)

Vacant

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Mr. Justin Swance

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Vacant

University of Waterloo Student Branch - Stream A

Mr. Haosen Cai

University of Waterloo Student Branch - Stream B

Ms. Joanna Ma

## Vacant Positions

The IEEE Kitchener-Waterloo Section is looking for interested volunteers to fill a number of available positions on the board. Anyone interested should contact one of the executive for further details.

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

## Upcoming Events

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

## Waterloo Engineering to Award Four Honorary Degrees

June 18, 2011

University of Waterloo, ON

During Waterloo Engineering's two convocation ceremonies, doctor of engineering degrees will be presented to George Baird, an acclaimed academic, architect and theorist; Robert Magee (BASc '78, Chem), a leading business executive; Jamal Deen, a McMaster University professor and senior Canada research chair in information technology; and John Keating, the chief executive officer of COM DEV. Retired electrical and computer engineering professor Victor Quintana will be honoured with the title of distinguished professor emeritus.

<http://newsrelease.uwaterloo.ca/news.php?id=5282>

## 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](mailto:icnf2011@icnf2011.org)

## Delivering Photonics Circuits to Transform the New Information Age - Smaller, Faster and Energy Efficient

IEEE Toronto Section

June 15, 2011, 2:00 PM

University of Toronto, ON

Speaker:

Professor Benjamin J. Eggleton

ARC Federation Fellow and CUDOS Director

University of Sydney, Australia

Optical science stands at the edge of a revolution in miniaturisation and integration, directly analogous to the silicon electronics revolution that has reshaped the world

over the past 50 years. CUDOS will develop the science and engineering to transform photonic integrated circuits into a practical, powerful technology employing optical signal processing to enable critical applications spanning communications, sensing and security. This will enable the Internet to transfer vast amounts of data with significantly improved energy efficiency; it will lead to secure transmission using quantum photonics-based devices, and to the detection of mid-infrared signatures of light from distant stars and complex molecules of environmental or biochemical importance. We will achieve this by developing new nano-scale materials with striking optical properties to control light and engineering them into miniature photonic processors. Our work will establish CUDOS and Australia as world leaders in this 21st-century technology, linking fundamental research to technology development and end-users in the communications and electronics industries.

CUDOS is one of a small number of flagship research centres funded under the Australian Research Council's prestigious Centres of Excellence program. CUDOS is a collaboration between Australia's leading universities with photonic research programs - The University of Sydney, ANU, Macquarie University, Swinburne University of Technology, RMIT, Monash University and UTS - and partner investigators from the world's leaders in photonic research, both globally and locally.

<http://toronto.ieee.ca/events/jun1511.htm>

## Introduction to Nature Photonics

IEEE Toronto Section

June 17, 2011, 1:00 PM

University of Toronto, ON

Speaker:

Dr. Rachel Won

Associate Editor, Nature Photonics

Launched in January 2007 by Nature Publishing Group, Nature Photonics is a monthly journal that publishes top-quality, peer-reviewed research in all areas of light generation, manipulation and detection. The objective of this talk is to tell fellow researchers how to get their papers published in Nature Photonics.

Rachel will talk you through the concept of scientific detailed information and guidelines on scientific manuscript preparation and submission, as well as an overview of editorial process and the peer-review system. You will learn what editors seek, how to write a good cover letter and a good scientific paper, how to review a manuscript and how to make an appeal.

<http://toronto.ieee.ca/events/jun1711.htm>

## Open Source Platforms for Collaborative Research - Examples from 3D Slicer

IEEE London Section

June 15, 2011, 5:30 PM

London, ON

Speaker:  
Dr. Ron Kikinis  
Brigham and Womens Hospital, Harvard Medical School

This seminar will discuss the use of an open source software platform (3D Slicer) that has been developed for the analysis and visualization of biomedical images and will illustrate a range of multi-disciplinary and multi-institutional collaborations that have been enabled by the use of this platform. 3D Slicer is an extensible algorithm and application development platform with a powerful plug-in architecture. It is available as a free, open source package on multiple operating systems (Windows, MAC, Linux). The talk will discuss Slicer's role in delivering image computing technology for personalized medicine research and will provide examples from multimodality visualization and analysis; Surgical Planning; and Image-guided therapy.

[http://meetings.vtools.ieee.org/meeting\\_view/list\\_meeting/6953](http://meetings.vtools.ieee.org/meeting_view/list_meeting/6953)

## International Conference on Autonomous and Intelligent Systems

June 22 – 24, 2011  
Burnaby, BC

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 outskirts 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/>

## Recent Events

### Waterloo, 'Perfect Place' to Talk About Energy

By Karen Kawawada  
Communications and Public Affairs, University of Waterloo  
June 5 – 9, 2011

A high-profile international conference that aims to do no less than transform the energy future kicked off yesterday with remarks from Governor General David Johnston, who helped set the conference in motion when he was president of the University of Waterloo.

The Equinox Summit: Energy 2030 is hosted by the Waterloo Global Science Initiative (WGSi), which is a partnership between the University of Waterloo and the Perimeter Institute for Theoretical Physics. The Equinox Summit is the first of a series of major conferences, which will be put on every two years to catalyze what WGSi calls “long-range policy and investments in technological solutions for the future.”

This week, ten of the world’s top energy researchers, including Waterloo chemistry professor Linda Nazar, will be working with a group of up-and-coming young leaders and a group of industry and policy experts on developing a 20-year roadmap for transforming the way we generate, distribute and store energy.

In introducing the Governor General, Waterloo president Feridun Hamdullahpur, himself a leading energy researcher, spoke of how Waterloo is the “perfect venue” for a conversation on the future of sustainable energy. Waterloo, he said, is home to “a critical mass of researchers” such as the people affiliated with the Waterloo Institute for Sustainable Energy and the Waterloo Institute for Nanotechnology.

Johnston spoke not only of Canada’s culture of innovation, but also about Renaissance Florence, a town of some 50,000 people that, in a relatively short period of time, produced world-changing leaps in art, science and scholarship. It wasn’t mere coincidence that produced Da Vinci, Michelangelo and Machiavelli — it was collaboration, Johnston asserted. He gave the example of the dome of Santa Maria del Fiore, which was not only a marvel of engineering, but also gave rise to an advance in astronomy that, in turn, improved ocean navigation.

The catalyst? The architect inviting his astronomer friend to place a bronze plate on top of the dome, turning it into a giant sundial that allowed him to calculate the exact moment of the summer solstice and vernal equinox with unprecedented accuracy.

The point of the story is “to emphasize the fruitful and often unexpected results of innovation and knowledge sharing,” said Johnston, commending the summit participants on their commitment to working together on big ideas.

“The world needs this summit,” he declared. “Let us imagine ourselves creating a renaissance of our own in Canada, where we learn from the past, embrace the future and above all work together for a smarter, more caring world.”

The summit is taking place at the Perimeter Institute building in central Waterloo. Today through Wednesday, the daily schedule includes plenary sessions at 9 a.m., public lectures at 4 p.m., and TVO panel discussions at 7:45 p.m. On Thursday at 2 p.m., the fruits of the private discussions between experts — the Equinox Communiqué, which will later be expanded into a blueprint with solid policy recommendations — will be presented. All these events will be live-streamed by TVOntario and on WGSi’s own site, and the university web site has a special page with Summit news, photos and tweets.

<http://wgsi.org/>

## Waterloo ECE Teams Take Two Top Spots in Design Contest

University of Waterloo ECE News  
May 11th, 2011

Two electrical and computer engineering student teams came in second and third in the IEEE humanitarian design competition finals held in Niagara Falls on May 8. The competition challenged students to look at ways to improve parts of the WE CARE (Women's Emergency Communication and Reliable Electricity) solar system.

<http://ewh.ieee.org/mu/r7-hic/student-competitions/>

## Nanorobotics Team Victorious in Shanghai

University of Waterloo Bulletin  
May 13, 2011

A Waterloo team rules the world in microrobotics this week after taking the championship in a student competition held in Shanghai as part of the International Conference on Robotics and Automation (ICRA) 2011.

The University of Waterloo Nanorobotics Group (UW\_NRG) won the Microassembly Challenge, defeating ten other registered teams from top institutions based in the United States, France, and Italy, says a news release issued yesterday. Last year, the Waterloo entry placed third.

It goes on: "UW\_NRG's microrobot, measuring a mere half-millimetre in width and a hundredth of a millimetre in height, was the only robot at the competition to successfully manipulate microscale triangles into a tightly packed formation — a formidable challenge requiring extreme precision and reliability. These principles have several critical applications in everything from minimally-invasive surgery to advanced electronics manufacturing.

<http://www.icra2011.org/>

## Google Unveils New Kitchener 'Playground'

By Rose Simon  
Waterloo Record  
May 18, 2011

It looks like a playground, with a big orange tube slide for those who don't want to take the staircase down to the common area, where the catered food arrives each workday.

There are walls painted in bright blue, red, yellow or green. There are Star Wars themed rooms, toy Nerf guns and stuffed animals. There is a games room and even a hockey-themed lounge, complete with a beer fridge.

Yet this "playground" is serious workspace for international search giant Google. The new 34,000 square foot Google Waterloo office space in the old Tannery building at Charles and Victoria Streets was unveiled at a grand opening event on Wednesday.

More than 100 “Googlers” are now working there, and the company is still hiring, says Steve Woods, engineering director at Google Waterloo.

Google came to Waterloo in 2005 when it bought a small Waterloo mobile software startup called Reqwireless. It grew and moved to the Waterloo Research and Technology Park. It outgrew that space and moved to the Tannery at the beginning of this year.

Besides tapping talent from the University of Waterloo’s engineering programs, Google brings workers from across North America, Europe and elsewhere to Kitchener.

Nathan Bullock, 34, for example, arrived about 18 months ago from Edmonton, where the masters of computer science graduate worked on “storage virtualization” software. “I loved what Google was doing, so I sent off my resume,” he says.

The office may be small compared to the company’s global workforce of more than 20,000 people, but has attracted the attention of the Mountain View head office, says Stuart Feldman, vice-president of engineering for Google’s east coast region.

The office here spearheaded, for example, the “conversion optimizer” which allows companies to pay for online advertising based on the number of customer actions. That generates more than \$1 billion in annual revenues for Google. The Google Chrome browser was also the creative work of Googlers in Waterloo.

Feldman said Google likes to have its offices in the unique “industrial chic” spaces of converted factories. The Tannery, once a primary supplier of leather goods for the British Empire, is a perfect example, he added. The old, wood floors, huge windows and exposed pipes give the office a lofty feel.

Now, it sports micro kitchens with ingredients for healthy snacks, a “think tank” semicircle enclosure with futon bed and pillows. There is even a massage room.

“We do our best to make our engineers comfortable so that they will work longer,” says Feldman, who came from New York City to attend the grand opening. “But along with the light sabres, they also play with a lot of code here,” he adds. Google Waterloo works heavily on mobile, social and commerce applications, as well as optimizing Google ads, Google Chrome and G-mail.

The success has led the company to look at expanding its footprint here. It is now planning to take more space in the Tannery, although how much more has not yet been announced.

It is also getting more involved in research at the University of Waterloo. At the grand opening, Google announced plans to donate \$900,000 to the University of Waterloo over the next three years for research into “context-aware mobile social networking.”

The money will support graduate students working, for example, on smarter ways of sharing information while protecting privacy, and smarter ways of directing Twitter feeds and Facebook status updates based on what individuals are interested in.

Woods says Google Waterloo is one of the "strategic innovation centres" along with offices in cities such as New York, London, England and Zurich.

Kitchener mayor Carl Zehr said it is also part of the city's ongoing transformation from its industrial roots into a technology research cluster.

"You are part of not only an evolution, but in this particular case a revolution, in terms of the positive changes that are happening here," he said.

## Waterloo Programmers Win Bronze

University of Waterloo Bulletin  
May 31, 2011

The "Waterloo Black" team of undergraduate student programmers that won a regional competition in December had another triumph yesterday, winning a bronze medal for finishing in 12th place in the world and second in North America. At the world championships of the ACM International Collegiate Programming Contest, Waterloo was represented by Tyson Andre (1A software engineering), Brian Bi (1A computer science), and Hanson Wang (2A computer science), coached by CS professor Ondrej Lhoták. "Waterloo teams have now been medalists at 16 of the last 19 of these annual programming competitions," Amy Aldous, director of communications for the faculty of mathematics, points out. In yesterday's six-hour coding session for the international title, the Waterloo squad solved seven of eight problems. Just two teams, from China's Zhejiang University and the US's University of Michigan at Ann Arbor, solved eight problems, to place first and second. Lower placings were determined by the number of total minutes taken to devise solutions.

<http://cm.baylor.edu/welcome.icpc>

## Engineers and the World

### Waterloo PhD Student Wins Chinese Government Award

University of Waterloo ECE News  
June 6th, 2011

Jun Chen, a Waterloo electrical engineering doctoral candidate, recently received the 2010 Chinese Government Award for Outstanding Self-financed Students Abroad. The world-wide annual competition is open to all Chinese graduate students studying overseas. Chen, who is working on developing organic/inorganic hybrid optical upconversion devices for near infrared imaging applications, has to date published five journal papers and five conference papers.

For Fun...

## Brain Teaser

Joe McCrea (Logain)  
The Grey Labyrinth

She pricked her finger, so I wrote what I saw. Then he looked and said what he saw that I wrote; she then wrote what she heard him say. Using my pen, I wrote just the opposite. He then looked and said what he saw that I wrote; she then wrote what she heard him say. Using my pen, I wrote just the opposite. But somehow we had gotten it wrong.

What has been said...what has been written?

## Engineering Humour

If it weren't for C, we'd all be programming in ++, #, and VisualBasi.

Q: How many programmers does it take to change a light bulb?

A: None. It's a hardware problem.