



AURUM

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The Canadian Newsletter for IEEE GOLD

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From the Editor

This is the fourth and last issue of 2004. It is short because not many activities took place since the 3rd issue. Most events are usually scheduled for spring and summer, and fall and winter are generally quieter.

Overall though, 2004 was a good year for IEEE GOLD. Five new Chapters were formed as more members in different cities and regions across Canada learn of the benefits of GOLD membership. I hope that this interest will continue in the coming year as well.

For 2005 there is a new submission and publishing schedule. The new dates are as follows.

Aurum Submission deadlines:

January 28, April 29, July 29 and October 28

Aurum Publishing dates:

March 18, June 17, September 16 and December 16

As always, I encourage your submissions and feedback. I look forward to another successful year for Aurum!

All the best in the New Year!

Ahsan Upal, P.Eng.
Publisher, Aurum

GOLD Canada Chairs

Hamilton:

Deborah Messina, deborah@ieee.org

Kitchener:

Kevin Ma, kevin.ma@ieee.org

Montréal:

Peter W. Guy, pguy@ieee.org

Northern Canada:

Shyam Chadha, shyam.chadha@adc.com

Northern Saskatchewan:

Dan Coode, dac337@mail.usask.ca

Ottawa:

Sonya Goodanetz, sonya_goodanetz@ieee.org

Peterborough:

Nick Stranges, nick.stranges@indsys.ge.com

Southern Alberta:

Jason Long, JasonL@bwt.net

St. Maurice:

Dominic Rivard, d.rivard@ieee.org

Toronto:

Aleksandra Jeremic, aleksandra@ieee.org

Vancouver:

Jin Ng, jin_ng@ieee.org

Victoria:

Subhasis Nandi, snandi@ece.uvic.ca

Winnipeg:

Dawn Nedohin-Macek,
dnedohinmacek@hydro.mb.ca

GOLD Canada Chair

Verona Wong, vwong@ieee.org

GOLD Canada Website

<http://gold.ieee.ca>

About Aurum

“Aurum” is Latin word for “gold” and is where the periodic symbol Au originates. The Aurum newsletter is published quarterly each year, with the next issue being for January/February 2004. The next deadline for submissions is January 28, 2004.

Aurum Contacts

Publisher:

Ahsan Upal, P.Eng. ahsan@ieee.org

English Editor:

Ahsan Upal, P.Eng. ahsan@ieee.org

French Editor:

Peter W. Guy, pguy@ieee.org

Lunch with Jennifer Flexman

Helen Ho, Vancouver GOLD

Jennifer Flexman is an electrical engineer from McGill University, whom is now a PhD candidate at the University of Washington's bioengineering department. She's an expatriot Canadian; part of her funding is from a NSERC fellowship. While Jennifer was working at Terdyne Inc. as a Microwave engineer, she actively volunteered at the IEEE GOLD Boston. I caught up with her at the Health Sciences Centre at the University of Washington on September 10th, 2004. As we eyed the campus cafeteria, we ran into her PhD supervisor, Satoshi Minoshima. He said to me "thank you for coming, the only thing you can't take a picture of are the rats!" Luckily, I'd forgotten to bring my camera.

Jennifer's research involves investigating techniques using imaging to extract information at a molecular level. As we munched on our chicken tortillas, Jennifer shared more on her research. "Specifically, my group is looking at adding a 'magnetic tag' (very small iron oxide nanoparticles) to neural stem cells to observe their behavior in the brain using MRI (magnetic resonance imaging). People are really excited about stem cell research, but there are so many unknowns about how they actually behave in the body that imaging can help address. The alternative is to extract the brain post-mortem and then try to find the cells, but this interrupts the continuity of long-term observation of cell behavior in a single brain and the micro-environment of the cells."

I bite my tongue as I refrained from chiming in "yes I would think extracting brain cells from a dead subject would be a bit of a showstopper in terms of getting a look at the engine while it's running". Of late, my jokes haven't quite had the same efficacy.

I'd ordered an extra basket of chips. Jennifer graciously volunteered to go looking for it. As she came back, she apologized for the service, set down some face-rippingly hot chip sauce and continued.

"I see this research being applied in a huge range of neurological diseases like: stroke, Alzheimer's, Parkinson's, and brain injury. I hope that it will help answer some important questions about what stem cells can do in the brain in terms of regeneration, and that we will potentially be able to correlate cell activity observed through imaging to some sort of clinical outcome. Ultimately, I think all bio-engineers want to see their research applied in humans!" Then I remember the guinea pigs (err, rats) I wasn't supposed to take pictures of.

Back in her lab space, Jennifer showed me this massive animal PET machine. She explained to me that this massive 10 ft tall 7 ft wide (from the angle I could see) machine wasn't big enough for humans. She stressed that it was a big privilege having a PET (positron emission tomography) machine for her lab's use. "While it was built for animal imaging, we also image humans on it as well. There is a MRI available to us in the dept of Radiology for research, which I use a lot and which is a valuable resource." Jennifer added. She must have noticed I looked bewildered. I thought these things belonged in hospitals. "You're probably wondering where the EE part comes in. We do a lot of image processing and statistical analysis that requires programming. There is also a lot of physics around MRI for which EE comes in handy! Basically, I mostly use my skills in problem solving and analytical processing that are kind of general engineering skills, and there is a traditional engineering emphasis on clinical practicality."

After Jennifer showed me more her research, she asked me about the biotech market back home in Vancouver. I made some snide remark that probably will rouse some hostility in the local biotech market. I said, "Jennifer, with talent like yours, the time to come back will be when you're

ready to be a CEO of a company. Nothing up here happens without government or government related funding. It's a completely different world. There's little in the way of private entrepreneurial funding." She reminded me that she's benefiting from an NSERC fellowship; nor did she look discouraged. So there may be hope that we can convince this very talented expatriot to come back to Canada.

Contacting Jennifer Flexman

Email:

jflexman@u.washington.edu

Postal Address:

Jennifer A. Flexman, Research Assistant
Image Computing Systems Laboratory
Department of Bioengineering
University of Washington
Electrical Engineering Building,
EE1 407 Box 352500,
Seattle, WA, USA
98195

CCECE 2005

The Canadian Conference on Electrical and Computer Engineering 2005 (CCECE05) is an international conference with a broad range of submission topics available. It is being held 1-4 May 2005 in Saskatoon, SK. Accepted papers will be published in the Conference Proceedings as well as available through IEEE Publications.

The deadline for abstract submissions to CCECE05 has been extended to January 7, 2005. This is an excellent opportunity for Canadian authors to publish and present papers on a wide variety of topics to an international audience. Please visit conference's web site at <http://www.ieee.ca/ccece05> for additional information and links to the Paper Submission System.

New IEEE Journals

IEEE Announces New Journals for 2005

IEEE Transactions on Industrial Informatics

Industrial informatics refers to architectures that seamlessly link multiple applications and systems in real-time. In the next five to ten years, there will be a split in the field of intelligent automation systems and real-time middle-ware technologies. This divergence will allow for a completely new marketplace of intelligent automation products and services that facilitate new production concepts and the creation of new products that are agile and integrated.

The IEEE Transactions on Industrial Informatics journal uses this expected transition toward more knowledge-based production and systems organization as the foundation for its scope. The journal considers production from a holistic perspective, encompassing not only hardware and software but also people and the way in which they learn and share knowledge.

IEEE Journal of Display Technology

Displays are key component technologies for many electronic systems, and the primary means for visual communication. According to market projections at Stanford Resources, growth in the display industry is expected to accelerate over the next ten years.

The IEEE Journal of Display Technology will publish papers covering theory, design, fabrication, manufacturing and application of information displays and aspects of display technology that emphasize the process in device engineering, device design, materials, electronics, physics and reliability aspects of displays and the application of displays. In addition, it aims to encourage technical societies to develop a broader interest in display technology. and more effectively begin to address the needs of those working in this area.