

IEEE NEWSLETTER

KITCHENER-WATERLOO SECTION

May 1999

Meetings

Please mark these dates on your calendar

May 17	U Waterloo	Prof Haraway on Computational Intelligence	see page 8
May 29-30	Mohawk College, Hamilton	Gold Leadership and Project Management skills development	see page 3

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EDITORIAL

This issue of the IEEE Kitchener-Waterloo newsletter will be distributed using an up to date mailing list. Unfortunately, several previous issues have been mailed from an old database, so that new members may not have received them. We hope that we have solved all problems, and that all current members will receive this and future issues.

If it had to be redirected because you moved,
please send the IEEE your new address: you can send an e-mail message to

<http://services1.ieee.org/membersvc/coa/intro.htm>

giving your new home and work address, phone numbers, membership number, also e-mail address

If a colleague does not receive this when you do, ask him or her whether they renewed their membership!

If you graduated within the last ten years, see page 3, and the ad for the GOLD program on the back page.

Those of our members who are in positions of power are urged to review the article on page 4 about WARG - The Waterloo Aerial Robotics Group. The group is asking for help.

Tom East, Editor.

Please note my new e-mail address:

tieast@ieee.org

The Kitchener-Waterloo Section of the Institute of Electrical and Electronics Engineers serves all members whose mailing address is in Bruce, Grey, Perth, Waterloo or Wellington counties.

GOLD LEADERSHIP AND PROJECT MANAGEMENT SKILLS DEVELOPMENT TO BE HELD IN HAMILTON

Leadership skills are important in all aspects of life. Whether you are at home, at work, working with peers or supervising juniors, taking part in volunteering activities, it quickly becomes obvious that you cannot get something done without some leadership skills. IEEE has put together a committee to look at issues in leadership development. This is new ground for the IEEE which up to now has been mostly focusing on technical aspects of the development of its members. Last year, a workshop introducing leadership skills was conducted in Toronto. The participants responded very enthusiastically to this initiative. Therefore, a second workshop will be held on **May 29 and 30 in Hamilton**. Given that these are introductory workshops, they are primarily focused at IEEE GOLD (Graduates Of the Last Decade) members; however, all IEEE members who wish to participate are welcome to attend. The IEEE GOLD program has been in effect for a few years (see <http://www.ieee.org/organizations/Rab/gold> for more details). One of the goals of the GOLD program is to promote leadership development skills for IEEE professionals just starting out in their careers.

On **Saturday May 29**, the leadership skills part of the workshop will be held (**9 AM - 4.30 PM**). The facilitator will be Dr. Ray Findlay, an electrical engineering professor at MacMaster University. This workshop will focus on developing group skills (i.e. teamwork), communication skills such as persuasion, negotiation and conflict management and how to run meetings. The second part of the workshop focusing on project management will be held in the morning of **May 30 (9 AM - 12:0 PM)**. The facilitator will be Cinda Voegtli, President of the IEEE Engineering Management Society. Both facilitators have extensive practical experience related to the topics they will be addressing.

IEEE Leadership Workshop Outline

1. Introductions
2. Holistic Communications: Introduction
3. Barriers to Communications
4. Brainstorming
5. Personal Interactive Skills: Myers-Briggs Type Personality Indicators (MTBI)
6. Introduction to Group Skills (using MBTI as a basis)
Sample case drawn from industry settings
7. Oral Communications: barriers, categories and language
8. Sample cases (some incorporating MBTI as well)
9. Persuasion: the Communications Process
10. Negotiating skills and conflict management: conflict management styles
11. Case studies drawn from industrial settings
12. Meetings: types, purposes, some hints
13. Wrap-up and evaluation

Project Management Workshop Outline

For each subject below, the course will cover key principles and management techniques and show how it relates to our work - whether in industry, government or academia - and to our work in the IEEE. We will use lectures, discussions, examples and related exercises.

1. Introduction to the project management course.
2. Overview of project management and its relationship to company-wide management
3. Starting a project
4. Managing a project
5. Special situations
6. Making it all work
7. Wrap-up discussion and closing

The workshop is free for IEEE members. The exact location of the workshop is not known at this time.

If you are interesting in attending please contact:

Cathie Lowell, IEEE Canada Administrator at c.lowell@ieee.org phone and fax (905)628-9554

The GOLD coordinator for the KW Section is Slawo Wesolkowski at

swesolko@exchange.Waterloo.NCR.com

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STUDENT PAPERS NIGHT 1999

The KW section Student Papers Night was held in the UW Davis Centre on March 24th. Three teams from Conestoga College Student Branch competed for the Ken McKenzie Award. Wai-Cheung Tang, chair of this section, commended all three teams for the impressive format of their presentations.

The judges were

Mr. Slawo Wesolkowski, NCR Canada Ltd. Waterloo

Dr. Robert Downey, School of Engineering, University of Guelph

Dr. Li Deng, Department of Electrical and Computer Engineering, University of Waterloo

Mr. Brent Clements, IEEE Student Branch, Conestoga College, Kitchener

The prizes were awarded as follows:

1st prize (\$100) to Binush Paul, Adrian Cooke and Jamie MacDonald for
AWireless LAN Solution@

2nd prize (\$75) to Caris Coggins and Ed Coutts for
ACellular Paging Automobile Security System@

3rd prize (\$50) to Tim Sommerfield, Paul Corbeil and Dan Stackowski
for AWireless Fire Alarm Monitor@

Unfortunately, neither the University of Guelph Student Branch, nor the University of Waterloo Stream B Student Branch entered the contest. Accordingly, the Overall Best Paper Prize of \$150 (which would have gone to the best paper overall in all three categories) was awarded to Paul, Cooke and MacDonald. A generous donation of \$300 from Raytheon Canada Limited of Waterloo helped to cover the cost of the prizes.

WATERLOO AERIAL ROBOTICS GROUP GIRDS FOR ROUND TWO

The Waterloo Aerial Robotics Group (WARG) is a University of Waterloo team entered in the 1998 Millennial International Aerial Robotics Competition, a competition sponsored by the Association for Unmanned Vehicle Systems. The goal of the project is to modify a model helicopter to fly autonomously into a simulated disaster environment and identify human survivors and victims of the disaster. The helicopter must also identify pre-specified objects, such as barrels of hazardous waste and dangers such as jets of water and fire. The vehicle must avoid any obstacles in its path, and have enough intelligence to accomplish its mission without human intervention.

The system planned by WARG is composed of several discrete hardware components, including 3 on-board cameras, an orientation sensor and a Differential Global Positioning System (GPS). The

control, vision and intelligence algorithms are all implemented using hardware mounted on the helicopter. The only need to communicate with a ground station is for a few simple commands. This allows for greater flexibility, permitting a straightforward expansion to a multivehicle team. Additional vehicles will require a small change in the hardware and software at the ground station. Furthermore, by processing most of the data on each vehicle, time-critical data can reach the necessary processor sooner and reduce the amounts of data transmission. Most on-board processing will be done using an x86-processor style Single Board Computer (SBC).

The WARG helicopter runs the QNX operating system. The QNX system is a Unix-like operating system with a very different, much more streamlined, underlying architecture which provides excellent real-time facilities. This makes it ideal for a real-time critical application.

After the 1998 qualifying event the Waterloo team is currently in second place, having outscored many large American Engineering schools. But preparing for the second round of the competition is an extremely challenging process, requiring countless hours of work and substantial financial costs. **WARG is always looking for financial sponsorship and assistance.** For more information on WARG, please visit our web site:

<http://www.ece.uwaterloo.ca/~warg>

Bill Rosehart April 1999

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CONFERENCES IN CANADA

1999

- May 11-14 WWW8 - 8th International Conference on the World Wide Web. Toronto
 e-mail: info@www8.org
<http://witanweb.iit.nrc.ca/www8>
- May 25-28 ISPSD >99 International Symposium on Power Semiconductor Devices & ICs.
 Toronto. Kinzer (310)726-8561
 e-mail: dkinzer1@inf.com
- June 1-3 IEEE BSS=99 - 3rd IEEE International Workshop on Broadband Switching Systems
 Kingston, Ontario H.Mouftah
 (613)545-2934 e-mail: mouftah@eleceng.ee.queensu.ca
<http://www.ece.queensu.ca/dept/bss.html>
- June 2-4 Fifth Real-Time Technology & Applications Symposium. Vancouver. V.F. Wolfe
 e-mail: wolfe@cs.uri.edu
<http://www.cs.uri.edu/rtas99>
- June 5-11 ICC >99 IEEE International Conference on Communications
 Vancouver. P. Shepard
 (604)681-5226 e-mail:
congress@venue.west.com
- June 6-10 CTMC - Eighth Communication

Theory Mini-Conference. Vancouver. C.Naporano
(973)596-8474 e-mail: Clare@megahertz.njit.edu
<http://www.comcoc.org/confs/icc/99/ctmc/html>

- June 6-10 Quality of Service Miniconference. Vancouver
A.Mishra (630)979-8109
e-mail: mishra@lucent.com
- June 7 MAST=99 - IEEE Multimedia Applications, Services & Technologies Workshop - 7
June Vancouver. V.K.Bhagavath (732)949-2837 e-mail: vkb@attmail.com
<http://www.comsoc.org/confs/icc/99/mast.html>
- June 10-11 ISIT=99 - IEEE International Symposium on Internet Telephony
Vancouver. isit99@comsoc.org
<http://www.comsoc.org/confs/isit/99>
- June 13-15 HKK Conference on Graph-Theoretic and Entropy Methods in Engineering Analysis
and Optimization (Waterloo section) Waterloo. Ontario. G.J. Savage
or P.H.Roe (519)888-4567ext2600
hkkconf@systems.uwaterloo.ca
- June 16 HKK Symposium on Engineering Education. Waterloo. Ontario
G.J. Savage or P.H. Roe
(519)888-4567ext 2600
hkkconf@systems.uwaterloo.ca
- June 15-18 IEEE 5th International Test Mixed Signal Testing Workshop
Whistler, BC. A.Ivanov
(602)822-6936
ivanov@ee.ubc.ca
<http://www.ece.ubc.ca/IMSTW>
- June 21-24 IEEE Digital Cross Connect Systems Workshop VIII. Whistler, BC.
R.Hamley (613)781-7969 e-mail:
hamleyrd@stentor.ca

Aug 2-5 IECEC 34th Intersociety Energy Conversion Engineering Conference. Vancouver.

2000

April 9-12 INTERMAG 2000. Toronto.

Sept 10-13 7th IEEE International Conference on Image Processing. Vancouver.

2002

June 24-28 IGARSS 2002 IEEE International Geoscience and Remote Sensing Symposium.

Toronto

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NEWS FROM ACADEMIA

Conestoga College has applied to the CRTC for a license for a campus instructional FM radio station at 88.3 MHz. Hearings were to be held May 3rd in Vancouver.

Computer Science students from the University of Waterloo came first in the 23rd International Collegiate Programming Contest, which was held in Eindhoven, the Netherlands April 10-11. The team, coached by Gordon Cormack, consisted of Ondrej Lhotak, David Kennedy and Viet-Trung Luu, with Donny Cheung as alternate. They solved six programming problems. Sixty-two teams took part in the contest, which was sponsored by IBM. The UW team won scholarships worth \$9,000 US, and other prizes.

The University of Waterloo has received funding of \$5.4M for digital communication labs, infrastructure in the Institute of Vision Science and Technology and improving the university's network and cabling, under the Canadian Foundation for Innovation.

NEWS FROM INDUSTRY

Inscriber Graphics of Waterloo has been awarded a contract by the NBC network for its new Namedropper XL system. The system allows NBC or its affiliates to insert lettering into network programs. Inscriber products can be seen at work on the Weather Channel and on the Headline Sports Network. The company, which has been in existence for 13 years, has 80 employees, mostly at Allen Square in Waterloo, but also in Toronto, New York, Amsterdam and Tokyo.

Mitra Imaging of Waterloo has set up a joint company with Agfa-Gavaert of Belgium to be called Impax Technology. The new company will serve the medical radiology market. Impax will be based in the former Hewlett Packard building on Phillip Street in Waterloo. A recent fire, in which arson is suspected, has forced Mitra to move its Cambridge staff to the Waterloo building.

Open Text of Waterloo has recently started doing business with Chase Manhattan, CIBC Insurance and Halifax Insurance.

Pixstream Inc. of Waterloo introduced its PDS5000 video networking system at the National Association of Broadcasters convention in April. The system uses IBM's MPEG-2 video compression and decompression chips to transmit video at low bit rates. It is aimed at telephone companies who wish to compete with cable companies. Pixstream is an associate of Newbridge Networks.

RDM Corporation of Waterloo has demonstrated the transmission of cheques by the internet. Its eCheck software, used on its Inter@ctive Pager, will allow one to make secure transfer of payments to an e-mail address. The system, which will greatly reduce the cost of processing cheques, is expected to be

generally available in 2000.

Unitron Limited of Kitchener, which designs and manufactures hearing aids, has received \$6.4M from Southbridge Management of Cambridge, a venture capital company. This funding will allow Unitron to finish developing a digital hearing aid, and to expand the company's operations to meet the needs of baby boomers, whose hearing is shrinking.

Virtek Vision International of Waterloo has recently developed three products, including a DNA imaging device, to be used in hospital and university research labs for comparing human DNA to disease DNA.

FUEL CELLS MAKING NEWS

BMW proposes to install fuel cells in some cars to provide electric power for lights, heating and cooling independent of the gasoline motor. Daimler/Chrysler is proposing a five passenger car in which a fuel cell, supplied by Ballard Power Systems of Burnaby, BC would actually drive the car. Ballard fuel cells are already being used in buses. The inputs are hydrogen and air: the outputs are electricity, heat and water. Such cars would have longer range than other electric cars which store their energy in batteries.

Avista labs of Spokane, Washington, are developing a fuel cell for domestic use, and claim that a battery of fuel cells the size of a refrigerator could supply the power needs of a home.

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TAKE A LOOK AT DIGITAL TV

LOOK Communications of Milton, Ontario offers Awireless cable@, an alternative to cable television. The last mile to the subscriber is provided by local transmitters, with a small antenna at the subscriber's home. The signal is digital, and a set top box separates out the channel the viewer has chosen from the bit stream. This means that the subscriber can sign up for only the channels of interest (after a basic group of channels) instead of for groups of channels as in cable TV. Look Communications has started operations in Cambridge and is scheduled to offer its services in Guelph, Kitchener and Waterloo about now. One problem that has surfaced in Toronto is that in an apartment building, the signal does not penetrate, and must be carried from an antenna on the roof to all apartments on the existing cable system, which means cutting off the existing cable service. Monthly costs for Look are expected to be lower than for cable, but the set top box is a new cost.

RADARSAT-2 LOOKING FOR NEW LAUNCH COUNTRY

Radarsat, the Canadian satellite, was launched by NASA in late 1995. A favourite project of Flora MacDonald when she was in the cabinet, and carrying Com Dev components, it brought valuable data about the 1997 Manitoba flood, and has earned substantial revenue by sales of its pictures to many

countries. Radarsat-2, scheduled for launch in 2001, will have even better resolution, showing details only 3 metres across. The trouble is, the Americans consider that any reconnaissance to a resolution of better than 5 metres is a threat to US security, so NASA would not be willing to launch it, nor contribute to its cost. There are many other launch facilities available, so Canada may approach China, France or Russia.

FUNDING FOR THE CANADIAN LIGHT SOURCE

The Canadian Foundation for Innovation has approved funding of \$56.4M for the Canadian Light Source (CLS). It is to be built in Saskatchewan at a total cost of \$173.5M. This research facility consists of a synchrotron which speeds electrons to almost the speed of light. When the stream of electrons rounds a corner, it emits an intense light which is many times brighter than the sun.

According to the Canadian Association of Physicists it will be a great tool for materials research by scientists for all parts of Canada, physicists, chemists, biologists and those from many other fields. It will also be an important training ground for students and will help to retain more of our best innovators. @

ANAGRAMS

An anagram is a word or phrase made by rearranging the letters of another word or phrase.

The Morse Code	Here come dots
Slot machines	Cash lost in >em
Dormitory	Dirty room
Desperation	A rope ends it
Semolina	Is no meal
The earthquakes	That queer shake
Animosity	Is no amity
A decimal point	I=m a dot in place
Snooze alarms	Alas! No more Z=s

HELP WANTED

Companies looking for electrical, electronics and computer engineers can advertise in this space. E-mail your requirements to:

John Mowbray
mowbray@golden.net

and follow-up with a certified cheque for \$50.00 made payable to **AIEEE Kitchener-Waterloo Section@**. This will cover the fee for a quarter page in one issue of this newsletter.

PROFESSOR EL-HARAWAY ON COMPUTATIONAL INTELLIGENCE

Date: May 17 1999 Monday 5.30 pm
Place: University of Waterloo, Davis Centre Room DC 1302
Subject: Computational Intelligence and its Applications
Speaker: Dr. El-Haraway

Subject: This presentation will deal with some recent applications of computational intelligence tools such as neural networks and fuzzy systems in operational planning problems in electric power systems. The presentation will highlight elements of the methodologies used as a prelude to the main part of the presentation. In the latter, he will discuss the areas of unit commitment, economic dispatch, environmental dispatch and maintenance scheduling. The neural network implementations discussed will include both the Hopfield network model and the well-known Back Propagation model. The fuzzy system models discussed will include a treatment of issues such as membership function selection and potential benefits of the methodologies.

Speaker: Dr. El-Hawary is Associate Dean of Engineering and Professor of Electrical and Computer Engineering at DalTech of Dalhousie University. Dr. El-Hawary served at Memorial University of Newfoundland for eight years, becoming Chairman, Electrical Engineering Programme in 1976. Prior to service at MUN, he was Associate Professor of Electrical Engineering at the Federal University of Rio de Janeiro for two years..

He has a B.Sc. in Electrical Engineering from the Alexandria, Egypt, 1965, and a Ph.D. in Electrical Engineering, University of Alberta, Edmonton, 1972, where he was an Izaak Walton Killam Memorial Fellow from 1970 to 1972. He is a Fellow of the IEEE.
He is a P.Eng in Labrador and in Nova Scotia.

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