

IEEE NEWSLETTER KITCHENER-WATERLOO SECTION

March 2001

Meeting

Please mark this date on your calendar

20 March Student Papers Night 6.00 pm
University of Waterloo Davis Centre Room DC1301/1302 page 4

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Stream A:)
Summer 2001)Siva Sivoththaman
Stream B:)
Winter 2001)

EDITORIAL

We did not produce a January issue so this is our first opportunity to wish you a happy and prosperous new year.

Sometimes an opportunity arises to have a visiting expert give a presentation which would be of great interest to you, but it can only be arranged at short notice. Because of the time it takes to get a hard copy of this newsletter printed and mailed, it is not always possible to put details of a meeting into an issue in time to give you adequate notice. In such a case, we would send out a notice by e-mail to all members whose e-mail address we have.

Therefore we urge you to send us your e-mail address if you have not already done so.

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.
Address:

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AGM 2000 SENIOR MEMBERS RECEIVE PLAQUES

The Annual General Meeting of the Kitchener-Waterloo Section was held on 15 November 2000.

Chair John Mowbray and Treasurer Mauro Rossi reported on a successful year.

Martyn Exon of Raytheon Systems Canada Limited gave a very lucid description of Primary Surveillance Radar, in particular the Air Traffic Radars being built in Waterloo and supplied to countries all over the world: in 1999 the company had the largest share in this world market. Martyn also described a 3-5 MHz ground propagation radar which surveys the surface of the sea out to beyond 200 nautical miles.

At the meeting handsome plaques for wall mounting were handed out to these senior members:

Nicholas Cercone	John Kay
Frank De Winter	Novica Losic
Douglas Dykaar	Raafat Mansour
Shesha Jayaram	R. Pynn
Chris Jouppi	Herb Ratz

Mahammed Kamel

The following senior members have also received plaques:

Sujeet Chaudhuri	Derek McNamara
W. Clark	Elden Olsen
Tom East	Matthias Perz
Li Deng	Victor Quintana
Surin Kalra	Clayton Reid
H. Kesavan	Daniel Van Rensburg
Anwural Hasan	Manoj Sachdev
Khaled Hassanein	Magdy Salama
R. Van Heeswijk	Lynn Watt
Bosco Leung	Lizhong Zhu

TWO NEW FELLOWS

Two members of our Section were elected to the grade of Fellow on 1 Jan 2001. They are: Wai-Cheung Tang and Raafat Mansour. Congratulations to both!

EXECUTIVE CHANGES

Although we did not hold elections at the AGM in November, there have been a few changes recently. The current list of the executive can be seen on page 2, beside the editorial.

In the combined chapter of Computers, Control Systems, Information Theory and Communications, Raouf Boutaba is chair. David Wang was the Computer chair, and Slawo Wesolkowski chair of the other three.

Robert Dony has stepped down as chair of the Signal Processing chapter: this position is now vacant. Anyone interested in filling this post should contact Slawo Wesolkowski at s.wesolkowski@ieee.org

Magdy Salama is now Education chair, replacing Rosalind Hood-Morris. Tony Kormos is Membership and Development chair, replacing Arvind Vyas.

We welcome the new members of the executive, and thank all those who have stepped down for their efforts on behalf of our section.

STUDENT PAPERS NIGHT TUESDAY 20 MARCH 2001

Presented by: K-W Section Student Branch B, University of Waterloo; and Student Branch, Conestoga College.

Date: 20 March 2001 Time: 6 pm.

Place : University of Waterloo Davis Centre Room 1301/1302

You are cordially invited to the Annual Student Papers Night. Teams from Conestoga College and from the University of Waterloo are expected to deliver oral presentations of their technical papers. The best paper from the College will receive the Ken McKenzie Award and the best paper from the University of Waterloo will receive the George Dufault Award. The best papers from each institution will be awarded cash prizes. The best paper of the whole evening will receive an additional award. So far, Conestoga College has three papers being prepared, and the University of Waterloo one.

Refreshments will be provided.

For further information contact Richard Hornsey at 519 885 1211 ext 5336
e-mail: rhornsey@venus.uwaterloo.ca

OBITUARY - J.B. KNOX

We regret to report that last year, Mr. J.B. (Bert) Knox passed away. He was a Life Fellow of the IEEE and was actively involved in the revival of this Section in the 1980's, serving as Secretary and on the Program Committee.

Bert worked in China for a number of years. At RCA Limited in Montreal, he took part in the building of a microwave network across Canada. He was Engineering Manager at Raytheon Canada Limited of Waterloo, and retired in that city.

GET LOW COST R AND D DONE IN UKRAINE

Any Canadian small or medium enterprise (SME) which needs to develop a product can get it done at far less cost in the Ukraine than here. The Canadian International Development Agency (CIDA) and the Science and Technology Centre of Ukraine (STCU) are undertaking to increase the interface between scientists from the Ukraine and SMEs in Canada.

Ukraine has 1% of the world=s population and 6 % of its scientists.

Rates for Ph.D.s in Technical Units in the Ukraine are claimed to be \$25US **per day**.

An SME which wants to take advantage of this situation, and have development (including prototype) done in Ukraine, can apply to the Industry Liaison Office of Manitoba through:

Directions Plus Inc.
Terence Sellen
phone 204 444 2703
fax 204 444 2202
e-mail: direct@man.net

CIDA will contribute to the cost, including travel to the Ukraine in Spring 2001.

Examples of applications already made are:

Development of soft magnetic amorphous and nanocrystalline alloys
Radarsat image identification
Software adaptation for medical services
Electronic sensors

Projects will not include manufacturing, nor ones with military applications.

NEWS FROM ACADEMIA

Conestoga College Centre of Engineering Studies is now offering courses which will allow immigrant engineers to pass the qualifying examinations to become Professional Engineers, thus being permitted to practice in Canada: such courses used to be given only in Toronto.

At **Conestoga College**, radio station CJIQ-FM is now on the air at 88.3 MHz. Run by journalism students, it carries college and community news, and music.

The University of Waterloo has been given shares worth about \$7 million by Rod Coutts, retiring chairman of Teklogix International and a 1964 graduate of the University. This is the largest gift the University has received to date, and will be used to expand the Engineering Lecture Building (which at present is mostly underground and will be renamed the Rod Coutts building), for support for the Centre for Learning and Teaching through Technology, and for bursaries and scholarships.

The University of Waterloo has also received the gift of an IBM RS/6000 computer, worth \$1.8

million. The presentation was made by John Wetmore, President and CEO of IBM Canada, a UW graduate. The computer, in two cabinets, occupies a small room in the Math building, but must have far more capability than the IBM computers that used to occupy the entire atrium of the building when it was first built in 1968.

A new name to be reckoned with is the **Perimeter Institute for Theoretical Physics**, to be built in downtown Waterloo on the site of the Memorial Arena, next to Silver Lake. It is being funded by a donation of \$100 million from Mike Lazaridis, founder of Research In Motion, and donations by Jim Balsillie and Douglas Fregin, also of RIM. The Institute will not be part of any university, and will be independent of RIM.

NEWS FROM INDUSTRY 1 November 2000 to 31 January 2001

Cisco Canada (formerly Pixstream Inc.) of Waterloo has been chosen by GMi Digital to provide switched digital TV to GMi broadband access networks, which include Fiber to the Home (FTTH) and Asymmetrical Digital Subscriber Line (ADSL). The company is also collaborating with DMX Music to provide means for putting information about an artist, the music and the album on audio-only TV channels.

Com Dev International Space Group of Cambridge has received contracts worth over \$40M for filters and other components for satellites. The company's Wireless Group has received a contract worth over \$100M, but will subcontract out some of the work to a Calgary company.

Dalsa Corporation Life Sciences division of Waterloo has reached an agreement with Rad-Icon Imaging Corp of California to develop and manufacture digital radiography equipment for mammography. The other divisions, formed in a recent reorganisation are: Digital Cinema, Vision for Machines, and Vision Systems.

Descartes Systems Group of Waterloo has acquired the transportation logistics messaging service of BCE Emergis. By merging these two operations, Descartes now handles half of air cargo messaging world wide. BCE Emergis was part of BCE which includes Bell Canada and the CTV television network.

The Kitchener office of **Entrade**, which closed a few months ago, has been reopened as an office of Metiom Inc of New York. Metiom software provides electronic procurement between companies and their suppliers.

Finline Technologies of Waterloo has a joint venture with First Nations Equity Inc. to supply wireless communications systems to aboriginal communities. Finline also has a joint venture with WeCU of Panama to provide systems in Costa Rica. The systems include telephone, video and internet services.

Hammond Manufacturing of Guelph has split its operations into three separate companies. **Hammond Manufacturing** will continue to make cabinets. The dry transformer business has become **Hammond Power**. The oil-filled transformer business has been transferred to **Moloney Electric**, partly owned by the other two companies.

JPH International of Waterloo has been bought by EVER SA of Lyon, France. JPH software is used by utilities and municipal governments to handle customer relations including billing. The move will allow JPH to enter the European market, and EVER to enter the North American market.

Kaparel of Waterloo, an offshoot of Pixstream, has been bought by Rittal-Werk of Herbon, Germany. Kaparel makes backplanes for computer systems for telecommunications companies. Rittal-Werk makes the computer chassis into which the backplanes fit.

Northern Digital of Waterloo was named one of the fifty best managed Canadian private companies by National Post newspaper.

Open Text Corporation of Waterloo has acquired Bluebird Systems of California. Bluebird makes software for expense reporting, accounts payable and personnel.

Research In Motion (RIM) of Waterloo continues to penetrate the US market with agreements with IBM Corporation, America Online Inc. and BellSouth to supply wireless e-mail devices to their customers. An arrangement with Intelligent Decisions Inc. of Virginia also make RIM's BlackBerry pagers available to US federal agencies. RIM is making a new version of its BlackBerry compatible with Lotus Domino. The Kitchener plant is able to make one million units a year, but to meet anticipated demand, RIM is converting a building it bought in Waterloo, currently occupied by Stack-A-Shelf (and formerly by Waterloo Spring), to a facility able to make five million units a year. RIM is also building a three storey laboratory in the University Business Park, and converting a building formerly occupied by the UW extension department, all on the west side of Phillip Street.

RIM's BlackBerry 957 was named one of the top ten Cybertech Atoys@ by Time magazine. Mike Lazaridis, RIM founder, was named a distinguished Canadian by MacLean's magazine for 2000. Jim Balsillie, chairman and CEO, has earned one of twelve awards by the Leaf Initiative of Toronto.

Unitron Industries of Kitchener has been bought by Phonak Group of Switzerland. The combined company is claimed to be the world's second largest manufacturer of hearing aids. Unitron was named one of the fifty best managed Canadian private companies.

Waterloo Maple Inc. has reached an agreement with ENGINEERING.com, Inc. of Woodbridge, Ontario in which anyone can access Maple's solutions of mathematical problems. Apparently, this is done by calling up <http://www.engineering.com> and registering with ENGINEERING.com.

CONFERENCES IN CANADA

2001

- Apr 28-May 2 2001 IEEE 43rd Cement Industry Technical Conference. Vancouver. A. Moore
604 946 0411. amoore@tilbury.lehighcement.com
- May 12-19 2001 IEEE 23rd International Conference on Software Engineering. Toronto. H.A
Muller. 250 721 7630. hausi@csr.uvic.ca
- May 13-16 2001 Canadian Conference on Electrical and Computer Engineering. Toronto. C
Lowell: 905 628 9554. c.lowell@ieee.org
- Jun 11-13 2001 IEEE 14th Computer Security Foundations Workshop. Keltic Lodge, Nova
Scotia. I. Cervasato: 202 404 4909. iliano@itd.nrl.navy.mil
- Jun 17-21 2001 IEEE Power Electronics Specialist Conference PESC 2001. Vancouver. R.
Tate: 604 822 1052. Rowenat@hauscag.ubc.ca
- Jun 25-28 2001 BMW IX IEEE Bandwidth Management Workshop. Montebello, Quebec. J.
Hopkins: 613 763 4591. Hopkins@nortelnetworks.com,
trevor.truman@sasktel.sk.ca
- Jul 7-13 2001 IEEE 8th International Conference on Computer Vision (ICCV).
Vancouver. (IEEE Computer society): 202 371 1013
- Jul 8 2001 IEEE Workshop on Multi-Object Tracking. Vancouver. J. Krumm: 425 703
8283. jckrumm@microsoft.com
- Jul 15-19 2001 IEEE Power Engineering Society Summer Meeting. Vancouver. Y.
Mansour: 604 473 2730 mansour@bchydro.bc.ca
- Jul 16-20 2001 IEEE Nuclear & Space Radiation Effects Conference. Vancouver. M.
Shaneyfelt: 505 844 6137. shaneymr@sandia.gov
- Aug 13-17 2001 IEEE International Symposium on Electromagnetic Compatibility - EMC
2001. Montreal. (EMC 2001 secretariat): 514 287 1070. Emc2001@jpd1.com
- Aug 26-28 PACRIM 2001 - 8th IEEE Pacific rim Conference on Communications, Computers
and signal Processing. Victoria BC. A Gulliver. Agullive@ece.uvic.ca
<http://www.citr.ece.uvic.ca/pacrim01>
- Sep 10-12 2001 IEEE Holm Conference on Electrical Contacts - CPMT. Montreal. J Lopez:
732 981 3437. j.m.lopez@ieee.org

Toronto. F.A. DeWinter: 519 740 4736. Fadewinter@ra.rockwell.com

Oct 14-17 2001 Conference on Electrical Insulation and Dielectric Phenomena. Kitchener Ont. S.H.Jayaram 519 888 4567x533 jayaram@sunee.uwaterloo.ca
<http://www.eeel.nist.gov/ceidp>

2002

May 26-30 2002 IEEE 29th International Conference on Plasma Sciences (ICOPS). Banff, Alberta. R.Fedosejevs: 780 492 5330. rfed@ee.ualberta.ca

Jun 16-21 2002 conference on Precision EM Measurements (CPEM 2002). Ottawa. cpem02@nrc.ca <http://www.nrc.ca/confserv/cpem02>

Jun 24-28 IGARSS 2002 - 2002 IEEE International Geoscience and Remote Sensing Symposium. Toronto. (IGARSS business office): 281 251 6067. Grss@clearsail.net

Sep 28-Oct 3 INTELEC 2002 2002 IEEE International Telecommunications Energy Conference. Montreal. M.S. Davis: 450 458 5353. mdavis@odyssee.net

2004

May 1 ICASSP 2004 - 2004 IEEE Internal Conference on Acoustics, Speech and Signal Processing.

Montreal. D. O=Shaughnessy: 514 875 1266x2012. Dougo@inrs-telecomm.quebec.ca

LIBRARY BOOK

The following book is now in the University of Waterloo E.M.S. library:
ASatellite Communications Fundamentals@ by Jules E. Kadish and Thomas W.R. East: Artech House, Boston 2000.

HOW HIGH IS A BUILDING?

The following concerns a question in a physics degree exam at the University of Copenhagen: "Describe how to determine the height of a skyscraper with a barometer." One student replied: "You tie a long piece of string to the neck of the barometer, then lower the barometer from the roof of the skyscraper to the ground. The length of the string plus the length of the barometer will equal the height of the building."

This highly original answer so incensed the examiner that the student was failed immediately. The

student appealed the decision, and the university appointed an independent arbiter to decide the case.

The arbiter judged that the answer was indeed correct, but did not display any noticeable knowledge of physics. To resolve the problem it was decided to call the student in and allow him six minutes in which to provide a verbal answer which showed at least a minimal familiarity with the basic principles of physics.

For five minutes the student sat in silence. The arbiter reminded him that time was running out, to which the student replied that he had several answers, but couldn't make up his mind which to use. Then the student replied as follows:

"Firstly, you could take the barometer up to the roof of the skyscraper, drop it over the edge, and measure the time it takes to reach the ground. The height of the building can then be worked out from the formula $H = 0.5gt^2$. But bad luck on the barometer."

"Or if the sun is shining you could measure the height of the barometer, then set it on end and measure the length of its shadow. Then you measure the length of the skyscraper's shadow, and thereafter it is a simple matter of proportional arithmetic to work out the height of the skyscraper."

"But if you wanted to be highly scientific about it, you could tie a short piece of string to the barometer and swing it like a pendulum, first at ground level and then on the roof of the skyscraper. The height is worked out by the difference in the gravitational restoring force $T = 2\pi \sqrt{l/g}$."

"If you merely wanted to be boring and orthodox about it, of course, you could use the barometer to measure the air pressure on the roof of the skyscraper and on the ground, and convert the difference in millibars into feet to give the height of the building."

"But since we are constantly being exhorted to exercise independence of mind and apply scientific methods, undoubtedly the best way would be to knock on the janitor's door and say to him 'If you would like a nice new barometer, I will give you this one if you tell me the height of this skyscraper'."

The student was Niels Bohr, the only Dane to win the Nobel prize for Physics.

[How long a time would the student have to spend watching the barometer swinging, at the bottom and the top of the building, to measure the height to a standard error of 10 metres? Assume that he could measure times with a standard error of 0.2 seconds, and that he did not lose count. Answer in our next issue. - Ed]

