



IEEE NEWSLETTER

KITCHENER - WATERLOO SECTION



May 1998

CONFERENCE

Mark this date on your calendar:

May 24 - 28th

CCECE'98
Waterloo Inn
475 King Street North
Waterloo, ON (See page 2 for details).

*** PROMOTE YOUR COMPANY AT THE
INDUSTRIAL EXHIBIT AND JOB FAIR ***

- CCECE'98 -

WATERLOO INN

10:00 a.m. to 6:00 p.m.

TUESDAY, MAY 26, 1998

For information about registering contact
ktuer@control.adv.com as soon as possible.

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CCECE'98 - THE CANADIAN CONFERENCE ON ELECTRICAL AND COMPUTER ENGINEERING - MAY 24-28

Everything is shaping up well for this Canadian event to be held at the Waterloo Inn, 475 King Street North, Waterloo, Ontario. If you haven't registered by mail by May 10th, then register at the conference from Sunday, May 24th (5:00 p.m.) onwards. You will receive a copy of the Proceedings (about 280 papers), a program, and tickets to the banquet at the Concordia Club (German club) and lunch. A few extra tickets for the banquet will be available.

There will be industrial exhibits, and tours of local industry have been arranged.

Besides the contributed papers to be held in 8 parallel sessions, there will be these plenary talks:

- Dr. D. Parnas, McMaster University, Software Engineering Education
- Dr. V. Bhargava, University of Victoria, Wireless Communications
- Dr. S. Chamberlain, DALSA Corporation, DALSA as an example of Technology Transfer from University Research
- Dr. B. Francis, University of Toronto, Control and Signal Processing
- Dr. J. Cross, ERDL, University of Waterloo, Compact High-voltage Power Supply

For further information, see the Web site at: <http://pce.uwaterloo.ca/~ccece98>

CONFERENCES IN CANADA

1998

- May 3-8 IEEE/IAS Industrial and Commercial Power Systems Technical Power Conference (I&CPS). Edmonton, Alberta. D.W. Hucul (403) 413-5533, E-mail: huculd@navcanada.ca
- May 17-20 9th IEEE Workshop on Local & Metropolitan Area Networks. Banff, Alberta. David Skellen +61 2 9850 9145, E-mail: daves@mpce.mq.edu.au; todd@mcmaster.ca/~lanman98
- May 18-21 IEEE Vehicular Technology Conference (VTC). Ottawa, Ontario. Tara Hennessy (613) 990-4711, E-mail: hennessy.tara@ic.gc.ca, URL: <http://www.ieee.ca/vtc98/>
- May 24-28 Canadian Conference on Electrical and Computer Engineering (CCECE 1998). Waterloo, Ontario. Gini Ivan-Roth (519) 885-1211 Ext. 3826, E-mail: ccece98@pce.uwaterloo.ca
- Jun 2-5 IEEE 5th International Conference on Software Reuse. Victoria, BC. Ted Biggerstaff (206) 936-5867, E-mail: tedb@microsoft.com
- Jun 21-24 CCBP'98 The 2nd Canadian Conference on Broadband Communications Research. Ottawa, Ontario. A.R. Jarrette (613) 592-8160, E-mail: ariordon@ocri.ca
- July 6-10 Interworking'98. Ottawa, Ontario. Monica Lovas (613) 763-9638, E-mail: mlovas@nortel.ca

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.

- Jul 27-30 ICAPT'98 The 1998 International Conference on Applications of Photonic Technology. Ottawa, Ontario. G.A. Lampropoulos (416) 923-4425, E-mail: aug_sig@netcom.ca <http://www3.sympatico.ca/icapt/icapt.html>
- Aug 3-5 ISPLMR'98 International Symposium on Power Line to Microwave Radiation. Montreal, Quebec. Paper deadline July 5, 1998. ISPLMR Office (514) 620-3717.
- Sep 15-18 IEEE International Professional Communications Conference (IPCC'98). Quebec. C. Reimold (914) 725-1024, E-mail: c.reimold@ieee.org
- Sep 23-25 IEEE International Professional Communications Conference (IPCC'98). Quebec. Cheryl Reimold (914) 725-1024, E-mail: c.reimold@ieee.org
- Nov 8-14 NSS'98 IEEE Nuclear Science Symposium. Toronto, Ontario. C.L. Woody (516) 344-2752, E-mail: woody@bni.gov <http://www.nss98.hml.gov>

1999

- Jul 18-22 1999 IEEE Power Engineering Society Summer Meeting. Edmonton, Alberta. Doug Topping (403) 448-3406.

DR. ERSHOV DESCRIBED NEGATIVE CAPACITANCE

At a KW section meeting on February 2nd (which was unfortunately arranged at too short notice to be announced in this newsletter), Dr. M. Ershov of the University of Aizu (Japan) explained that in semiconductors there is the possibility of negative capacitance. It has been exhibited by a variety of electronic devices, both homostructure and heterostructure, based on crystalline or amorphous semiconductors, including Si, Ge, GaAs, HgCdTe, Se etc. The devices displaying negative capacitance include forward-biased p-n junction, Schottky diode, MSM structures superlattices and so on. The origin of negative capacitance is related to the negatively valued behaviour of the time-derivative of transient current in response to a voltage step.

These considerations have been supported by the results of simulation and experiments in Multiple quantum well structures displaying negative capacitance more than 1000 times the geometric capacitance.

STUDENT PAPERS NIGHT 1998

The annual Student Papers Night was held at the University of Waterloo on March 24th. We will report on it in our next issue.

DR. GERALD LO PROJECTED FUTURE OF SATELLITE COMMUNICATIONS

In a talk delivered to the KW section on March 26th, Dr. Gerald Lo gave his view of satellite communications in the 21st century. Satellites no longer have the "technical monopoly" which they once enjoyed since fibre optic cables now span oceans. Deregulation means "you have to go where the money is", so serving remote areas is no longer attractive. Every venture has to start with a business case. Instead of "Build it and they will come", the question is "What shall we build? and will they come?" High-Tech is not high-tech unless it is cheaper and better.

At present, the telephone network carries data as a by-product: in 5-10 years, data will carry phone calls as a by-product (there is already a standard for carrying toll quality voice at 4 kb/s instead of 64 kb/s).

Dr. Lo pointed out that the internet is exploding, with customers demanding up to 2 Mb/s bandwidth: the bottleneck is the "local loop" from the subscriber's home to the server which is expensive to serve by current methods, and would be a possible market for satellite service: delay would not be a problem. A satellite in GEO (geostationary earth orbit) can have many spot beams and frequency reuse: each one degree beam has a footprint of about 500 km width, and could connect all subscribers in that area to their servers, using FDMA (frequency division multiple access) or CDMA (code division multiple access).

In conclusion, Dr. Lo recommended: select cost effective technology to suit the market; every new satellite program needs a business case; go where the money is, leave remote areas till you are established; exhaust Ku band (11-14 GHz) before using Ka band (20-30 GHz).

NEWS FROM ACADEMIA

From the University of Guelph Student Branch, Rob Bulson reports: Although in our infancy, struggling with meeting the requirements set out for our branch and attracting new members, we have successfully completed our second year. This year, we successfully ran several events for our fellow students and members. In our start of the year membership drive, we acquired 7 new members.

Some of the events that we held included a Linux tutorial, to help all those students adjust to the non-Microsoft operating system that our courses require us to use. We toured W.C. Woods to check out several different types of network platforms and systems. We held a Network seminar and tour of Computer Information Service to let our members and fellow students learn about the school network, how it is run and how it fits into the bigger picture of the Internet. In February, Sybase gave a demonstration of its new product PowerJ to an overwhelming gathering of 130+ students from both Engineering and Computer Science disciplines, with special thanks to Marty Malik for helping to arrange such a successful night. Throughout March, we held grad presentations to inform our fellow students what one does as a grad student and how to become one. The presentation topics were: Signature Verification of Bank Checks by Dale Scott, Automation of Quality Assurance Inspection by Terence Chu, Neural Network Control by Blair Tarr and Grading of Meat using Ultrasound Signals by Jabar Juntu.

This year we also successfully set up a Robotics Group. Known as the AVP Group (for Autonomous Vehicle Projects), it was the vision of our Branch Counselor to provide a medium where students can get experience outside of the classroom. The group has developed into two sections, one tackling a long term project and the other doing several smaller projects, working towards a larger goal.

A University of Waterloo team came third in the world finals of the Association for Computing machinery's International Collegiate Programming contest in February, behind Prague University and St. Petersburg State University (Russia). Derek Kisman, Chris Hendrie and David Kennedy took 1026 minutes to solve six programming problems.

NEWS FROM INDUSTRY

Com Dev Ltd. of Cambridge has renamed its Phase Group to Wireless Group. Sales and profits are increasing, though not as fast as expected because of the slowdown in Asia.

Electrohome Ltd. has split off its holdings in Baton Broadcasting (which owns CTV) into a new company, Electrohome Broadcasting Inc. Electrohome Ltd. will continue to build display equipment in Kitchener.

Finline Technologies of Waterloo will be supplying wireless cable systems to Richardson Electronics of Chicago for installation in Brazil, in a deal worth \$4.3M in the first year. The Multi-channel Multipoint Distribution Systems (MMDS) deliver video and television in place of cable.

Virtek Vision International posted a profit of over \$1M on sales of over \$7M for the year ended January 31. Besides its machine vision systems for roof truss, leather and other manufacturing, Virtek is entering the field of two dimensional laser imaging for parts inspection.

COMPUTERS RECYCLED AT EMJ

A centre for recycling computer equipment has been opened in Guelph at EMJ Data Systems. Rather than taking it to the dump, you can get rid of obsolete equipment at the EMJ offices on 124 Wellington Road between 9:00 a.m. and 5:00 p.m. Monday through Friday. Call ahead to (519) 837-2444 Ext. 336 if you have more than one trunkload of equipment.

HEDY LAMARR - FILM STAR AND INVENTOR

Hedy Lamarr is suing Corel Corporation for the use of her image without permission.

Born Hedwig Kiesler in Austria in 1914, she became famous for her appearance nude in a movie called Ecstasy. Her husband Fritz Mandl, an arms manufacturer, discussed problems in torpedo guidance with her. When the Nazis occupied Austria in 1938, she left her husband and moved to Hollywood, where she starred in many films under the name Hedy Lamarr. She and musical friend George Antheil devised a method for torpedo guidance using frequency hopping radio signals (now known as Spread Spectrum), US Patent 2,292,387, 1942: it was offered to the US Navy but rejected. To help the allied cause, she sold War Bonds.

In 1997 the Electronic Frontier Foundation Award was given "to Hedy Lamarr for her contribution in pioneering electronics".

MARK TWAIN ON FORTUNE

Fortune knocks at every man's door once in a life, but in a good many cases the man is in a neighbouring saloon and does not hear her.

HELP WANTED

Companies looking for electrical, electronics and computer engineers can advertise in this space.
E-mail your requirements to Tom East: 102432.2337@compuserve.com

"Advertisers thank all those who apply, but only those selected for an interview will be contacted".

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As an electronics engineer, you will deliver leading edge design solutions and enhancements for visual communications products. Your key design disciplines will include high speed digital circuits to process video and graphic images, fast A/D conversions, phase lock loop, FPGA/PLD designs to support the above and an understanding of video analogue circuits. With an electrical engineering degree and three to five years design experience, you are poised to succeed on a team developing exciting new products.

To learn more about this and other hi-tech career opportunities in "Canada's Technology Triangle", please visit our website at www.PriorResource.com or contact Nancy Kotecki at nancyk@PriorResource.com