

IEEE NEWSLETTER KITCHENER-WATERLOO SECTION

June 2000

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EDITORIAL

Around April each year, headquarters checks to see who has renewed their membership, and removes delinquents from their records. We receive a fresh listing of paid up members in this section, and use it to make the mailing labels for this newsletter, and for the e-mail addresses of those who prefer to receive it that way. The listing is updated every month.

If a friend or colleague says he or she has not received this issue of the newsletter, ask them whether they have paid up. They can renew on the internet at www.ieee.org/membership/renewal

If you move, change jobs or for any other reason change your mailing address or your e-mail address, please inform IEEE headquarters, not us. Contact www.ieee.org/membership/coa.html

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phone: 1 732 981 0060
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USA

See you in September!

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.

STUDENT PAPERS NIGHT 15 MARCH 2000

Student teams from Conestoga College, and the Universities of Guelph and Waterloo entered in our annual competition. Eight papers were presented altogether.

There were two presentations from the University of Guelph:

1st prize was awarded to Nicole Lauwaert, Zeynin Juma and Shellie Boudreau for their paper on *A Measuring Bruxism: a Force Measuring Device*. Bruxism consists of an involuntary habit such as grinding the teeth. The experimental set-up consisted of two force sensors built in to a kind of thin denture placed over the teeth; an isolation amplifier; and a memory device recording 1 sample per second. Typically 6 episodes with forces of up to 1000 newtons would occur in 120 seconds.

2nd prize went to Kris Nichols, Alex Boulanger, Chris Holliday and Rob Bradaric for their paper on *A Portable MP3 Player*. This would store 5 hours of music in the MP3 audio compression format.

There were three presentations from Conestoga College:

1st prize (the Ken MacKenzie prize) was awarded to Raj Kalia and Mike Loader for their presentation on *AA 20 Band Graphic Equalizer Using DSP*. The signal was sampled at 48 ks/s: each octave, from 31 Hz to 16 kHz, had a filter which was modelled in SCILAB, and realized in 32 bit floating point arithmetic (by paradoxically named Analog Devices). This required 120 megaflops computing rate.

2nd prize went to Jon Brubacher and Paul Cholewa for their presentation on *AA Passive Bistatic Radar*. Using the transmission from CKCO, their receiver detected the reflection from the side of any truck on the 401: the time taken for the signal to enter and leave the beam of their antenna gave an indication of the speed.

3rd prize went to Robert Macintosh, and Stuart McKinnon for their paper on *AA Cordless Phone Repeater System*. Eight transmitters were installed in the Conestoga main campus building, using the 900 MHz band, which will travel down corridors. It is a more economical system than cell phones.

There were also three presentations from the University of Waterloo:

1st prize (the George Dufault prize) was awarded to David Tunnah for his presentation on *A Digital Background Removal for Film Images*. The project involved developing algorithms to assist a special-effects artist in the digital removal of a bluescreen background on digitized film images shot against a bluescreen.

2nd prize went to Ryan Burns for his paper on *A Huffman Decoding*. The code is unambiguous for the decoder to work. A binary tree is used, in ASIC or FPGA. This project was implemented in MP3 (MPEG-1 layer 3), and required 32 Huffman tables.

3rd prize went to Matt Graham for his paper on AProgrammable Digital Effects Processing@. The project was to develop a low cost system, user programmable on a PC, to alter the signal from musical instruments. It was implemented using a USB (Universal Serial Bus) in HDL (High Definition Language).

The judges were Rudy Hofer, Bob Dony, Richard Hornsey, John Mowbray and Tom East.

Besides the prizes mentioned, a grand prize for the best overall paper was awarded to David Tunnah of UW for his paper on Digital Background Removal.

The prizes were: 1st \$150, 2nd \$100, 3rd \$50, and the grand prize \$150, all from the Kitchener-Waterloo Section.

MILLENNIAL MEDAL AWARDED TO SLAWO WESOLKOWSKI

The IEEE asked its Societies, Sections, Regions and Major Boards to nominate members to receive about 3000 Millennial Medals Afor outstanding contributions in their respective areas of activity@. The Kitchener-Waterloo Section nominated Slawo B. Wesolkowski, and at the Student Papers Night on March 15th, Chair John Mowbray presented a Millennial Medal to Slawo.

Slawo Wesolkowski has been a member of the IEEE since 1993 and is now a Senior Member. He has been active in our section as Computer Chapter Chair and Section Treasurer, and is now Section Vice-Chair. He was very active in the CCECE=98 Conference put on by our section. Currently he is a member of the IEEE Nominations and Appointments Committee and is a member of the Regional Activities Board GOLD committee (GOLD stands for Graduate Of the Last Decade which encourages student members to continue membership after graduation). He represents IEEE Canada (Region 7) on the IEEE Computer Society Chapters Activities Board, and the IEEE Signal Processing Society Chapters Committee, and is Chapter Activities Coordinator for the Region.

He has a BAsC. and an MASc. in Systems Engineering from the University of Waterloo. He worked for five years at NCR in Waterloo on image processing algorithms. He is currently pursuing a doctoral degree in image processing at the University of Guelph, and as part of his studies he is presently a visiting research fellow at the Osaka Electro-communication University in Japan.

OBITUARY: HARISH UPRETI

We announce with regret that Harish Upreti passed away on March 10. He was Information Chair of the Kitchener-Waterloo Section in 1990-91.

DIABETIC INTERNET APPLIANCE ENTERED INTO IEEE COMPETITION

The Diabetic Internet Appliance (DIA) allows a diabetic patient to keep a diary of blood glucose values acquired from a blood glucose meter, insulin dosages, and food intake, and to transmit it to their physician via a web browser. The patient=s diet plan can be modified by a medical professional and instantly sent back to the patient. Simple text messaging is also available. DIA is designed for compatibility with today=s wireless technology and maximizing its battery life.

A first prototype has been built, and the team is working on enhancements.

The device has been entered into the IEEE Computer International Design Competition 2000.

The project is carried out by the CSIDC 2000 Design Team - University of Waterloo: Members are: Bamdad Afra, Faisal Karmali, Gordon Li and Wallace Leung. If anyone is interested in getting involved, contact Bamdad Afra at bafra@engmail.uwaterloo.ca.

Type 1 Diabetes is a disorder caused by decreased production of insulin by the body. There is no cure to date: the condition is treated by injecting insulin, and through a carefully controlled diet. Diabetics whose blood sugar level becomes too high or too low are at risk of short-term and long-term disorders. They interact closely with their endocrinologist and dietician to make sure they are keeping their blood sugar level within an acceptable range.

NEWS FROM ACADEMIA

Conestoga College has become a degree-granting institution. It will be able to offer Applied Degrees for selected outstanding programs. (The Kitchener-Waterloo Section of the IEEE wrote a letter of support for this endeavour). The College tied for first place in Ontario government ratings for graduate employment levels and satisfaction of graduates, students and employees. However, the College did not receive any of the Superbuild fund, from which the local universities received support. Instead, it has received \$14.2M from the Ontario government to expand its facilities.

The College is discussing an arrangement in which Corel Corporation would provide about \$380,000 for upgrading software in the College.

Computer students at the **University of Waterloo** did well at the ACM International Collegiate Programming Contest, coming second to St. Petersburg State University (Russia) and beating Albert Einstein University of Ulm (Germany). No US colleges were in the top ten. ACM is the Association of Computing Machinery. The UW team of Donny Cheung, Ondrej Lhotak and Jeff Shute were coached by Prof. Gordon Cormack.

The **University of Waterloo** and **Wilfrid Laurier University** will receive funding from the province=s Superbuild Fund. UW will receive \$31.2M from Queen=s Park and \$12.9M from private sources for projects which include an extra floor on top of the Engineering Lecture Hall which is underground except for the doors.

NEWS FROM INDUSTRY

CME Telemetrix of Waterloo has reached an agreement in which Motorola acquires the rights to market its non-invasive blood monitoring system throughout the world (except Japan): CME will receive royalties on all sales. The infra-red device is intended for diabetes patients and others to do home monitoring of glucose levels in the blood.

Cyberplex of Toronto will move its Waterloo operation to a new building behind Parkdale II, next to Mitra on Phillip Street. Cyberplex provides Web design and Internet services, and has a close relationship with Handspring Inc. of California, which makes the Visor handheld computer.

Descartes Systems Group of Waterloo has spun off its direct store delivery software to a new company, DSD Solutions, and will concentrate on its Global Logistics Network by which thousands of companies buy and sell from each other. Descartes expects to start making profits soon.

DALSA Corp. has acquired MedOptics Corp. of Arizona, which has designed digital X-ray imaging cameras for medical use: these cameras will be manufactured in Waterloo. They will be used in a novel system for mammography which is easier on the patient. DALSA plans to expand its plant in the northeast part of Waterloo.

Eiger Technology of Stratford has applied to be listed on the NASDAQ, in addition to its existing listing on the TSE. Its Korean subsidiary has orders for \$35M worth of MP3 players.

Electrohome of Kitchener has come under the control of BCE Inc., as has CTV, the Canadian TV network. Fakespace of Kitchener, partly owned by Electrohome, has become a value-added reseller of Hewlett-Packard's work stations, known as Visualize.

Inscriber Technology Inc. of Waterloo has won the 2000 AV Outstanding Achievement Award from AV Video Multimedia Producer magazine of White Plains NY. Also, Turner Broadcasting used Inscriber RTX in its broadcasts of the 2000 Goodwill Winter Games to show time to beat and running clocks. Inscriber makes video-graphics software and hardware for major TV networks ABC, BBC and NBC. The company has just moved in to a new building on Pepler Street in Waterloo, between Bridgeport Road and Erb Street.

Mitra Imaging of Waterloo will provide equipment to St. Mary's Hospital of Kitchener for storing and transmitting echocardiograms and X-rays of patients' hearts. The hospital, which is building a new heart centre to serve the Region, will be a test bed for Mitra's new technology.

Open Text Corp. of Waterloo has entered into a partnership with RIM by which the firm will resell RIM Blackberry pagers to its Livelink customers, who use Livelink to share documents and to send and alter them. In return, RIM will sell Livelink to its customers. Open Text is also in partnership with KPNQwest, which has a high speed fibre optic network in Europe. The company has received a \$2M contract to supply Livelink software to the US Navy.

PixStream Inc. of Waterloo has announced that Kingston Vision, of Hull, UK, which was conducting a trial of PixStream digital TV, internet and video-on-demand equipment, has put the system into service with 800 paying subscribers. Other trials being carried out include Bell Canada, QuebecTel Group, St. John and Moncton NB, CBC, and ExOp of Missouri. The company has sales offices in Basingstoke, UK and in Oslo, Norway. PixStream equipment sends signals such as TV over copper telephone circuits, and optimises transmission of digital TV over wideband networks. The company is partnered with NagraVision which provides encryption and key management for secure transmission. PixStream has recently been recruiting in our area..

Research In Motion (RIM) has moved its sales department to Kitchener. PC World magazine, in its World Class Awards, has named the Blackberry 950 handheld the best wireless communications device of 2000. RIM has sold 10,000 Blackberry Internet Edition handheld terminals to Rogers AT&T, and Ontario Oldsmobile dealers are giving a Blackberry to anyone who buys or leases an Alero, Intrigue or Aurora. It has arrangements with AOL and Compaq. The company received a \$33M loan from the Federal Government for

development. Two employees who retired from the company donated the stock they had received as a stock

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option to local charities: it was worth \$13M.

Sybase Inc. of Waterloo (formerly Watcom) has been given the Employee of the Year award by the University of Guelph for employing coop students, many of whom join the company on graduation.

Unitron of Kitchener has acquired Argosy of Minnesota and is now the 5th largest hearing aid supplier in the US. Unitron=s products include digital hearing aids.

Virtek Vision of Waterloo, which was founded to make machines for cutting hides for shoes, is now making DNA ChipReaders for biomedical analysis: they are used at the Robarts Research Institute in London, Ont. A DNA chip is a glass slide containing strands of DNA, from which genetic factors such as those which cause MS and Lou Gehrig=s disease can be identified. The company recently moved from Phillip Street to Bridge Street.

NEWS FROM THE INTERNET

The World Bank is making a bond offer of \$3B US over the internet.

OnStar, a subsidiary of General Motors, provides navigation, cellular and satellite services, and expects to provide wireless internet service to autos soon.

GM, Ford, DaimlerChrysler, Renault and Nissan have set up **Covisint** to handle orders to their suppliers through the internet. Annual purchases by the companies amount to \$300B, and more than that is spent by their suppliers.

BayStreetDirect.com Inc. held their annual meeting online recently. Shareholders could watch the proceedings on their home computers and vote through the internet.

Some businesses have had their **web addresses stolen**, which has cut off their business abruptly. Apparently, one person registered the domain names in the US illegally. In one case in Canada, it took five days to restore the name to its rightful owner.

A rare book dealer in Toronto who sells books on the internet did not receive payment for a shipment to another dealer in Paisley, Ontario. When he demanded his books back, he received cheap used books. The Paisley man has been charged.

If you own a **Bell Mobility PCS** terminal you can use it to contact Amazon.com and purchase games, toys, software and books.

Coles Notes will be posted on the Chapters web site and will be able to be downloaded for free.

In Toronto, shoppers can order **groceries on line** from www.grocerygateway.com or from www.peachtreetwork.com, touring a virtual supermarket on the screen, and have their order delivered to their door.

If you intend to buy a **Toyota** in Manitoba, you can access a web site and pick out the model and all the

options, and find out exactly what it will cost, before going to the local dealer.

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Bell Canada hopes to provide high speed internet access to 70 % of its residential and business customers by the end of this year. Its current system, Sympatico, is limited in speed by using voice channels and copper pairs. The race is on between Bell and the cable companies.

In the USA, it is now possible to go into some bookstores and have an **out-of -print book** printed while you wait. In some cases, the books are transmitted over the internet.

Full Tilt Music Co. in Newfoundland offers piano lessons on line. The teacher=s piano and the pupil=s piano must both be equipped with the MIDI (Music Instrument Digital Interface). Wearing headphones, the teacher can hear the pupil=s piano and the pupil can hear the teacher=s piano: displays also show the keys being depressed.

Cyberteks Design of London, Ontario, provides web sites for companies in Canada and the USA. The company is hiring software designers. **Keith Pereis**, the president and CEO, is 12 years old. He did well in contests at a conference in Austin, Texas and made a presentation to 200 people.

CONFERENCES IN CANADA

2000

Jul 10-12 OAA 2000: Optical Amplifiers and their Applications. Quebec City. Meetings Dept. Optical Society of America. 202 416 1907 e-mail: custserv@osa.org
http://www.osa.org/MTG_CONF/2000/oa/

Jul 13-15 2000 Integrated Photonics Research Topical Meeting. Quebec City. Meetings Dept. Optical Society of America. 202 416 1907 e-mail: custserv@osa.org
http://www.osa.org/MTG_CONF/2000/ipr

Jul 16-20NCSL Workshop and Symposium. Toronto. National Conference of Standards Labs.
E-mail: nesl-staff@nesl-hq.org
www.nesl-hq.org

Jul 16-20 SPECTS 2K 2000 Symposium on Performance Evaluation of Computer and Telecommunication Systems. Vancouver. MS Obaidat 732 571 4482
e-mail: Obaidat@monmouth.edu <http://www.SCS.Org>

Jul 30-Aug 2 ANTEM 2000. Winnipeg.
204 474 6469
e-mail: antem@ee.umanitoba.ca
<http://antem.ee.umanitoba.ca>

Aug 21-24 ICPP 2000 International Workshop on Pervasive Computing, in conjunction with 29th International Conference on Parallel Processing. Toronto. W-C Lee
781 466 3321 e-mail: wlee@gte.com

Aug 27-30 2000 IEEE International Conference on Parallel Computing in Electrical Engineering. Quebec

City. A. Skorek.

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Sep 10-13 ICIP 2000 7th International Conference on Image Processing. Vancouver.

R.K. Ward 604 822 6894

e-mail: rababw@cicsr.ubc.ca

<http://icip2000.ece.ubc.ca>

Oct 1-4 Adaptive Systems for Signal Processing Communications and Control. Lake Louise, Alberta. L.

Brooks 905 525 9140 x 24291 e-mail: brooks@mcmaster.ca

Oct 15-18 CEIDP 2000 IEEE conference on Electrical Insulation and Dielectric Phenomena. Victoria.

V.K.Lakdawala.

757 683 4665 email: lakdawala@ece.odu.edu <http://www.eeel.nist.gov/ceidp/>

Oct 23-25 2000 IEEE International Carnahan Conference on Security Technology. Ottawa. L.D. Sanson.

606 223 9840

e-mail: lsanson@lex.infi.net

Nov 12-15 2000 IEEE Conference on Tools with AI (TAI 2000). Vancouver. C Koutsougeras 504 862 3369

e-mail: ck@eecs.tulane.edu

2001

Jan 24-26 2001 IEEE/IAS PCIC Electrical Safety Workshop. Toronto. K Eastwood.

512 396 5801

e-mail: kimeastwood@ieee.org

<http://www.ieee-pcic.org/safety/esw.htm>

Apr 28-May 2 IEEE 43rd Cement Industry Technical Conference. Vancouver. A. Moore

604 946 0411

e-mail: amoore@tilbury.lehighcement.com

May 12-19 IEEE 23rd International Conference on Software Engineering. Toronto.

H.A. Muller 250 721 7630

e-mail: hausl@csr.uvic.ca <http://www.csr.uvic.ca/icse2001/>

May 13-17 2001 URSI International Symposium on Electromagnetic Theory. Victoria.

Deadline for summaries 23 Sep 2000 URSI-B2001@nrc.ca

+46 8 790 8195 e-mail: staffan@tet.kth.se

<http://www.nrc.ca/confserv/URSI-B2001>

Jul 7-13 ICCV: IEEE 8th International Conference on Computer Vision. Vancouver.

IEEE Computer Society. 202 371 1013

Jul 15-19 2001 IEEE Power Engineering Society Summer Meeting. Vancouver.

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<http://www.ieee-spm2001.org>

Jul 16-20 NSREC 2001: IEEE Nuclear and Space Radiation Effects Conference. Vancouver. M.Shaneyfelt
505 844 6137

e-mail: shaneymr@sandia.gov <http://www.nsrec.com/npsnews.htm>

Jul 25-28 IFSA/NAFIPS 2001: Joint 9th IFSA World Conference & 20th NAFIPS International Conference. Vancouver.
M.H.Smith 403 225 1024

e-mail: mhs@mining.ubc.ca <http://morden.csee.usf.edu/ifsanafips2001.html/>

Aug 13-17 EMC 2001: IEEE International Symposium on Electromagnetic Compatibility. Montreal.

IEEE EMC 2001 Secretariat 514 287 1070 e-mail: emc2001@jpd.com

Sep 24-26 PCIC 2001 IEEE Petroleum and Chemical Industry Technical Conference. Toronto. F.A.DeWinter 519 740
4736

e-mail: Fadewinter@ra.rockwell.com

Oct 14-17 2001 Conference on Electric Insulation and Dielectric Phenomena. Kitchener, Ontario. SH Jayaram 519 888
4567x533

e-mail: jayaram@sunee.uwaterloo.ca

2002

Jun 24-28 IGARSS 2002: IEEE International Geoscience and Remote Sensing Symposium. Toronto.

IGARSS Business Office 281 251 6067

e-mail: grss@clearsail.net <http://www.igarss.org>

Sep 28-Oct 3 INTELEC 2002 IEEE International Telecommunications Energy Conference. Montreal. MS Davis 450
458 5353

e-mail: mdavis@odyssee.net

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

CELLPHONES - GOOD NEWS AND BAD

Bell Mobility awards Cellular Samaritan Awards to people who have saved lives by using their cellphone in an emergency.

However, in Great Britain, a high ranking committee has warned against the use of cellphones by children, because the radiation penetrates the head easily, and because developing brains may be more sensitive to radiation. Although the impact of microwaves on biological tissue is usually considered to be a heating effect only, very recent experiments on laboratory rats found appreciable effects even when the heating was negligible.

20 ENGINEERING ACHIEVEMENTS OF THE 20TH CENTURY

A panel of engineers nominated by 29 professional engineering societies selected the 20 Great Engineering Achievements of the 20th century. They were, in order of importance:

Electrification

Automobile

Airplane

Safe and abundant water

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Electronics
Radio and television
Agricultural mechanization
Computers
Telephone
Air conditioning and refrigeration
Interstate highways
Space exploration
Internet
Imaging technologies
Household appliances
Health technologies
Petroleum and gas technologies
Laser and fiber optics
Nuclear technologies
High performance materials

It is interesting to note that at least seven of the list are in the field of interest of the Institute of Electrical and Electronics Engineers.

TUTORIALS ON HUMAN RELIABILITY, HIGH VOLTAGE, SUB-100nm CMOS AND SYSTEM-ON-A-CHIP

The IEEE Customer Service Department offers the following video tutorials. Prices are member prices in US\$.

Designing Systems for Reliable Human Performance includes: The human in systems analysis and performance, factors affecting reliable human performance, models of human performance, sources of human performance data, methods for designing systems that include humans, predicting the reliability of human performance, testing methods for systems that include humans.

2 videotapes and notes - order number HV6979-QVE \$299

Principles of High Voltage Engineering includes: Electric and magnetic fields, principles of switching, transient voltages in windings, insulation materials and dielectric design.

4 videotapes - order number HV7045 \$650

CD ROM EC126 \$625

Video-on-demand Web site EW129 \$179.99

Sub-100 nm CMOS includes: Challenges and options, new device structures, new materials, new ways of doing circuit design.

4 videotapes - order number EV5538QVE \$275

System-on-a-chip discusses functional integration with the potential for improvements in performance, cost and power; requirements and methods to meld them together.

4 videotapes - order number EV5540QVE \$275

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e-mail: customer-service@ieee.org

phone: 1 800 678 4333

<http://shop.ieee.org/store/>

For further information on Educational Activities: www.ieee.org/eab

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