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EDITORIAL

We wish our readers (and also members who do not bother to read this newsletter) a happy and prosperous New Year.

We also wish more of you would volunteer to help run this section. We need a secretary, a membership and transfers chair, and a student councillor for Stream B at the University of Waterloo.

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.

MAPLE SOFTWARE OFFERS FREE ENGINEERING SEMINARS

Date: January 12th 2000

Times: 9.00 - 11.30 am
Repeated at 1.00 - 3.30 pm

Place: Waterloo Maple Inc., 57 Erb Street West
(former Seagram Museum, by the pyramid of barrels)

Registration is required: phone 1-800-267-6583 ext 256
or visit www.maplesoft.com/services/freeseminars.html

Speaker: Darren Redfern, Services Consultant
Subject: Maple's symbolic and numeric modelling, visualization tools and application programming make a problem-solving environment.

ANNUAL GENERAL MEETING ELECTED NEW OFFICERS

On December 1st, an annual general meeting of members was held at the University of Waterloo. Since no nominations had been received, the slate of officers, chapter chairs and committee chairs were elected unopposed: they are listed in the left column of page 2. For two years from January 1st, John Mowbray of NCR is our new Chair, Slawo Wesolkowski of the University of Guelph is Vicechair, and the Treasurer is Mauro Rossi of Allied Signal. The position of Secretary has not yet been filled.

Outgoing Chair Wai-Cheung Tang gave an account of the operations of the Section in the past year. Finances are sound, and a good number of meetings have been held. He also announced that Chandria Kudsia, a member of this section, has been elected to Fellow Grade (see below). He called on members to consider coming forward to fill vacant positions- not only for Secretary, but for Membership chair and student councillor for UW Stream B.

Darren Redfern is the author of the Maple Handbook, The MATLAB Handbook, and The Practical Approach Utilities for Maple.

PROF. KARANASSIOS DESCRIBED LONG DISTANCE CLASSROOMS AT THE AGM

At the Annual General Meeting of the Kitchener-Waterloo Section we were pleased to have as guest speaker, **Professor Vassily Karanassios**, Department of Chemistry at UW, who gave a very interesting talk on **Just In Time Education, Training and Re-training for the New Economy**. He indicated that the half-life of high technology training is estimated to be about 3 2 years, making it imperative that new and efficient methods of instruction be available.

Professor Karanassios described in some detail the initiatives of the Universities of Waterloo and Guelph whereby two classrooms 25 km apart are effectively made one by means of a private line of sight

microwave link between the two campuses. With three cameras in each classroom the instructor on a podium is followed by infrared sensors. Moreover, as in videoconferencing, each student is able to ask questions and be seen by both the instructor and by fellow students. A third classroom at McMaster University is connected by means of an optical fibre link between Hamilton and Guelph.

Speaking later about the necessity of re-training individuals because of the rapidly changing technology, Professor Karanassios suggested that to a certain extent we will move from broadcasting to narrowcasting with highly specialized instruction to a relatively small number of individuals in their homes making every kitchen table and every living room an extension of the university.

Laboratories of the virtual kind are also being developed and we learned about how the spectral analysis of plasmas is now being done at UW.

In conclusion, Professor Karanassios asserted that, so far, these new methods of instruction have been underutilized, but will have a profound impact in the future. In his words "What is past is prologue as you ain't seen nothing yet!"

A lively discussion followed his presentation.

Robert H. MacPhie.

CHANDRA KUDSIA ELECTED IEEE FELLOW

The IEEE has elected Chandra Kudsia of Cambridge to the Grade of Fellow. Kudsia was Chair of this Section from 1992 to 1994. He has been with Com Dev of Cambridge since its early days. Congratulations, Chandra!

IEEE HISTORY CENTER SEEKS HISTORY OF SPEECH SYNTHESIS AND RECOGNITION, AND DIGITAL AUDIO RECORDING

Notice from the Signal Processing Chapter to members of the Signal Processing Society:

The IEEE History Center will be involved in a two-year project to document history utilizing the Web. This endeavor has been entitled "GOING DIGITAL". If you have worked on the development of one of these technologies,

(a) Speech Synthesis & Recognition and

(b) Digital Audio Recording,

or know of someone who has, please contact the Center at history@ieee.org

The Center needs help from individuals to document the development of these technologies on the web! Thank you.

PROF KONTOGIANNIS GAVE HIS VIEWS ON SOFTWARE ENGINEERING

At a Computer Chapter meeting on November 9, Prof. Kostas Kontogiannis described the effort and organization to successfully launch and maintain a large program, such as Nortel's DMS-100 which allows 100,000 telephones to interact. This is a 16 year old program with over 25 million lines of code, and is being

maintained by about 3000 people. In the classical waterfall model of the life of software, the requirements, specification, plan and design have to be verified, and the implementation and integration have to be tested: testing may take 16% of the overall effort. At every stage, feedback corrects errors or adapts the program to changed requirements, or perfects it.

Software engineering is a creative activity, which relies on intuition, but contradicts neither rigor nor formality according to the professor. For instance, it must be possible to read and understand the code 10 years after it is first written. It is essential to divide the program into manageable modules, but this also requires a lot of interfacing: it may be necessary to have two or three tiers of modularity.

**IEEE PUBLISHES MULTIMEDIA CAREER RESOURCES,
A NEW BOOK ON RADAR
AND A COMPENDIUM ON ADJUSTABLE SPEED DRIVES**

Student Career Guides have been prepared under the Alfred P. Sloan project. They are:
CD-ROM: Careers for Electrical Engineers and Computer Scientists. Product number ES-100-QVE, member price \$19.95 US.

Video: What's Out There. Product number EV5526 member price \$19.95 US

Video: Getting Ready. Product number EV5522-QVE member price \$19.95 US.

Radar Essentials edited by J.M. Kawecki contains papers on the history of radar, recent advances in technology, simulation and modelling, and components.
Product number SR109-QVE, member price \$49.95 US.

Techniques for Proper Selection and Applications of Adjustable Speed Drive edited by Wayne Stebbins contains over 70 articles.
Product number SR113-QVE, member price \$49.95 US.

The above products can be ordered from IEEE Customer Service Department, 445 Hoes Lane, PO Box 1331 Piscataway NJ 08855-1331, USA. E-mail: customer-service@ieee.org Phone: 1-800-678-4333 Web: <http://www.ieee.org/eab>. Quote the product number.

CONFERENCES IN CANADA

2000

Apr 9-12 INTERMAG 2000. Toronto. Ms Dopkin (202) 973-8668 e-mail magnetism@courtesyassoc.com
<http://intermagconference.com/>

Apr 27-28 2000 IEEE-IAS Advanced Process Control Applications for Industry Workshop. Vancouver.
Stephen Cheung
(604)214-9248 e-mail: scheung@udl.com <http://www.ieee-ias.org/apc2000>

Apr 30-May 4 2000 IEEE VLSI Test Symposium. Montreal. IEEE Computer Soc. (202) 371-1013

<http://www.griao.iro.umontreal.ca/conferences/VTS/VTS00/>

May 7-10 2000 Canadian Conference on Electrical and Computer Engineering. Halifax. CCECE Secretariat. (902) 494-6198 e-mail: ccece2000@ieee.org <http://is.dal.ca/~ccece00/>

May 14-17 31st International Conference on Robotics Montreal. Contact ISR2000 (613)241-9333 e-mail: isr2000@goldenplanners.com

May 15-17 2000 Optical Data Storage Topical Meeting. Whistler, BC. Elsie V. Cabrera (908)562-3897 e.cabrera@ieee.org <http://www.ieee.org/leos>

May 23-25 2000 IEEE 7th International Conference on Parallel Interconnects. Quebec City. IEEE Computer Society (202) 371-1013

Jun 10-14 2000 27th International Conference on Computer Architecture. Vancouver. A. Berenbaum (908) 582-3655 e-mail: adb@bell-labs.com <http://www.cs.rochester.edu/~ISCA2k>

Jul 30-Aug 2 ANTEM 2000. Winnipeg. (204) 474-6469 **Deadline** for one page abstracts Feb 14: e-mail to antem@ee.umanitoba.ca <http://antem.ee.umanitoba.ca>

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 23-25 2000 IEEE International Conference on Security Technology. Ottawa. L.D. Sanson (606)233-9840 e-mail: lsanson@lex.infi.net

2001

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: hausi@csr.uvic.ca <http://www.csr.uvic.ca/icse2001>

May 13-17 2001 URSI International Symposium on Electromagnetic Theory. Victoria. C.M. Butler e-mail: ebutler@eng.clemson.edu or: staffan@tet.kth.se

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. Y. Mansour (604) 473-2730 e-mail: yakout.mansour@bchydro.bc.ca

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>

Aug 13-17 EMC 2001: IEEE International Symposium on Electromagnetic Compatibility. Montreal.
B. Nadeau (514) 822-6000
e-mail: bnadeau@ieee.org

2002

Jun 24-28 IGARSS 2002: IEEE International Geoscience and Remote Sensing Symposium. Toronto.
IGARSS Business Office (281) 251-6067
e-mail: tstein@phoenix.net <http://www.igarss.org>

NEWS FROM ACADEMIA

The **University of Waterloo** plans to open a Microwave Research Group under the direction of Dr. Raafat Mansour. The group will be funded by Com Dev and by the federal and provincial governments. Dr. Mansour will hold the post of Full Professor: after graduating from the University, he worked at Com Dev for fifteen years. He is the chair of the Antennas and Propagation/Microwave Theory and Techniques Chapter of this Section.

UW will also receive \$2.5M from the Bank of Nova Scotia to set up an undergraduate software program. The money will be used to hire two professors, and to pay for a Scotiabank Software Engineering Laboratory.

The University's Centre for Applied Cryptographic Research is being funded by the Government of Ontario and university funds, as well as donations from Certicom Corporation and Master Card International. The Centre's research aims to protect financial data on the internet such as credit card numbers.

The University of Western Ontario and **UW** will house the Ontario Research Centre for Computer Algebra, funded by the province and by Waterloo Maple.

The **University of Guelph** will receive over \$3M, the **University of Waterloo** \$3M and **Wilfrid Laurier University** almost \$42,000 from the government's Ontario Innovation Trust. The money will be used for research infrastructure.

NEWS FROM INDUSTRY

Alexa Ventures of Stratford has changed its name to **Eiger Technology Inc.** The company purchased Eiger Labs Inc., a modem supplier, in 1999. The company has recently purchased a portion of Top Electronics of South Korea. Top Electronics provides advanced audio compression technology (MP3) which reduces the memory needed to store music. Eiger Technology is traded on the TSE and has subsidiaries in California, New Jersey and South Korea.

Com Dev International of Cambridge has acquired Lober and Walsh Engineering of California, which will become the centre for digital hardware and software in Com Dev's wireless group. Also, Com Dev is providing funding for a microwave group at UW (see News from Academia)

Dalsa Corporation of Waterloo is acquiring MedOptics, an Arizona company which makes digital cameras for medical X-ray applications.

FibreTech of Waterloo Region has signed up customers for its 135 km network, which uses the fibre links owned by the three partners - Cambridge and North Dumfries, Kitchener Wilmot and Waterloo North Hydros. A local business can have a three year contract for a 10 Mb/s channel for around \$500 per month.

Focus Automation of Waterloo has acquired AOI International of Boston. Focus makes optical inspection systems for manufacturers of film and paper, and for the printing industry, and for flexible PCBs. AOI's main business consists of devices for inspecting rigid printed circuit boards.

Peer Group of Kitchener, a software company, is moving into a refurbished building at 72 Victoria Street S.

PixStream Inc. of Waterloo exhibited its video networking system at Telecon West 99 in Anaheim, California in November. The interactive video conferencing system aggregates high quality video and audio signals, provides MPEG-2 video encoding and decoding, adapts the signals to an ATM network and transmits them to a Starvision DMF-4800 multipoint conferencing unit. PixStream received the New Business Award at the Waterloo Region Business Achievement Awards dinner in November.

Research In Motion of Waterloo has reached an agreement with Dell Computer Corp. under which Dell will sell RIM's two-way pager, called Blackberry. The handheld pager lets the user send and receive email messages. Dell is claimed to be the United States largest supplier of PCs. RIM received the Excellence in Technology Award at the Waterloo Region Business Achievement Awards dinner in November. It is also in the top 10 blue-chip Internet stocks listed by the Wall Street Digest.

Virtek Vision of Waterloo has bought LaserTechniek of Belgium, which makes equipment for projecting laser templates. Virtek recently sold off its leather cutting business, one of its original product lines.

LOOK, MA, NO HANDS!

FootRat is the name of an alternative to the mouse. One unit fits under the right foot on a Rat Mat and moves the cursor, the other lets the left foot do the clicking. It makes it much easier for some disabled people to access the internet, even if they have no hands: they click on a picture of the keyboard on the screen. Even able-bodied people who have used it, praise it because the hands stay on the keyboard, speeding up the work. Organists have been doing this for centuries. It is sold at www.touchtime.com.

INTERNET NEWS

Alta Vista Company of California offers free internet access in Kitchener and many other places. The access provider for Alta Vista's Free Access in Canada is PSINet Inc. of Toronto: its technical support is in Montreal.

Canada's Technology Triangle (CTT) has been given a grant of \$12,000 by Bell Canada Economic

Endowment Fund to profile the cities of the Triangle- Cambridge, Guelph, Kitchener and Waterloo- on the web site, www.techtriangle.com. The Fund was started in 1998 by Bell Canada: the Economic Developers Council of Ontario has also contributed to the Fund.

Carsumer of Kitchener sells used cars over the internet. If you are in the market for a good used car, access www.carsumer.com, specify some details, and select one that looks as if it would meet your needs. You will be invited to go one of their four sites to test drive the vehicle.

Cisco Systems Inc. of San Jose, California and **Motorola Inc.** of Schaumburg, Illinois and eight other companies plan to create a wireless internet system which would provide high speed access, using a radio channel called MMDS. A merger of MCI Worldcom and Sprint is also planning a similar system, and there is a possibility that Low Earth Orbit satellites could provide a similar service.

Encyclopedia Britannica, founded 231 years ago, is to appear on the internet for free: it will receive revenue by advertising on its site. Of course, you can always buy the CDROM version, or the 32 volume hard-cover version for \$1250.

General Motors Corp. will be installing internet equipment in a few of its luxury cars in 2000. The driver or passenger will be able to receive email messages and other data read out by a female voice.

Nunanet Communications of Iqaluit is the internet service provider (ISP) for the new territory of Nunavut, and at last report had 1400 subscribers for a population of 5000. Its president, Adamee Itorcheak also enjoys hunting with traditional harpoon.

Pinetree Instruments of Waterloo (www.indigo.com) sells kits for making models of molecules, also simple scientific instruments such as tuning forks and magnets over the net..

Platinum Entertainment of Chicago intends to put 15,000 songs on the internet to be downloaded for free. Advertisements will bring in the revenue needed to pay the musicians and other costs.

Sothebys Holdings, Inc., the world famous auction house, has gone into partnership with **Amazon.com Inc.** to set up a web site www.sothebys.amazon.com. Anyone can put in a bid for an item in the 100 or more categories illustrated on the site.

Protest groups at the **World Trade Organization** meeting in Seattle in late November were alerted and encouraged over the internet by **Public Citizens World Trade Watch**, whose web site Seattle99.org provided coordination and information, such as places to stay during the week. Ten years ago fax networks provided information from the outside world to the protesters at Tien An Mien Square in Beijing, China.

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