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CONTACT

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

Control Systems

Multivariable Networked Stabilization with Channel Resource Allocation

Professor Li Qiu
Hong Kong University

Distinguished Lecture

Monday 20 July 1400-1500
Electrical & Computer Engineering
2332 Main Mall - Kaiser 2020, UBC

In this talk, we will survey the history of an instability measure of an LTI system and its connections with various feedback control problem. Then we will present its connections to networked control problems of multivariable systems. In such problems, communication resource allocation among various signal transmission channels becomes a design issue in addition to the usual controller design. We will see that some optimal and robust control problems arising in networked control are nontraditional and highly nonconvex but can be nicely and analytically solved, and the solutions are given in terms of the instability measure.

Speaker: Li Qiu received the B.Eng degree from Hunan University, Changsha, Hunan, China, in 1981, and the M.A.Sc. and Ph.D. degrees from the University of Toronto, Toronto, Ont., Canada, in 1987 and 1990, respectively, all in electrical engineering. He joined Hong Kong University of Science and Technology, Hong Kong SAR, China, in 1993, where he is now a professor of Electronic and Computer Engineering. Prof. Qiu's research interests include system, control, information theory, and mathematics for information technology. He served as an associate editor of the IEEE Transactions on Automatic Control and an associate editor of Automatica. He is now a Distinguished Lecturer of IEEE Control Systems Society and the general chair of the 7th Asian Control Conference, which is to be held in Hong Kong in August 2009. He is a fellow of IEEE.

Info: Control Systems Chair, Ryozo Nagamune
nagamune@mech.ubc.ca

Joint Communications

Tour: NRC Institute for Fuel Cell Innovation (NRC-IFCI)

Friday 17 July 300pm - onward
4250 Wesbrook Mall, UBC area

The National Research Council of Canada's Institute for Fuel Cell Innovation (NRC-IFCI) is Canada's premier applied research organization dedicated to supporting Canada's fuel cell and hydrogen industry. The NRC-IFCI invests $12 million/a in advancing fuel cell technologies in support of Canada's clean and sustainable energy priorities. As a BC and Canadian industry catalyst, NRC-IFCI addresses technology development, commercialization and sustainable energy priorities with its world-class research, demonstration and commercialization programs.

The tour of NRC-IFCI will highlight: • LEED Gold certified state-of-the-art green building design; • The H2FC Gateway, a technology demonstration and exhibit centre showcasing Canada's world-leading hydrogen and fuel cell industry; • The Pacific Spirit Fuelling Station and the Vancouver Fuel Cell Vehicle Program, part of BC's Hydrogen Highway™; • The Solar H2 project, which includes a photovoltaic (PV) array capable of 7 kW peak power production and a PEM Electrolyser that can produce 2 kg of H2 per day, and an SOFC generator that provides electricity and heat for NRC-IFCI. • The Advanced Testing and Validation Centre (ATVC), which features Fuel Cell Testing Stations a Vibration Table, and the unique Hydrogen Environmental Chamber; • Industrial Partnership Facility (IPF) tennant offices and labs.

Registration is required. Please, RSVP to Sergio Bertani: spbertani@yahoo.com

Joint Communications

Replacement of RTUs by IED, LAN and WAN and More

Mahmud Wasfi
IEEE SM
Monday 06 July 700 - 900pm
Room 1750, BCIT SW3

Up to the nineteen's, substation protection was based on copper wires from the relays and transformers to the substation control room with remote terminal unit (RTU) in the control room connected to substation equipments through copper wires and to control centers by power line carrier (PLC) with data speed of about 2-3 Kb/s. In the nineteen's microprocessor relays were introduced for many functions such as metering, protection, automation, control, digital fault recording and reporting, but still using RTUs though with much advanced technology and connected to the control centers through radio, coaxial and optical fiber channels with a speed of up to 38.4 Kb/s.

Since the introduction of IEC61850 in 2004, things has dramatically changed. Relays are connected to intelligent electronic devices (IEDs) and these IEDs are connected to each other and to the control room by means of an optical fiber Ethernet local area network (LAN) and to control centers and other substations by means of optical fiber Ethernet wide area network (WAN) with a speed of up to 100 Mb/s. Copper cables are no longer used. The control system is distributed, protection is much faster and more reliable with saving both in material and manpower.

Speaker: Mahmud Wasfi was born in Baghdad. He received the B.Sc in electrical and electronic engineering from Manchester University in England in 1957, and M.Sc from Birmingham University in England in 1970. In 1960, he joined Iraqi Airforce; was a teacher in Radar and Radio Institute from 1960 to 1963, and was commander of Radar and Radio Maintenance Unit 1964 to 1967, Chief Signal Officer from 1970 to 1973, during this time he was also Project Manager of Western Coaxial Cable Project 1970-1972.
He was then loaned to The Ministry of Communication as Coaxial Cable Projects Manager 1973-1978. In 1978 he was transferred to State Organization of Electricity as head of Control and Communication Department until 1988. He worked as manager in Prestige Engineering Co. which is specialized in consultation, acceptance tests, design and import of test equipments and other specialized electrical parts 1992-2007.
He holds twelve patents all in optical fiber as sensor, and participated in more than fifty conferences.

Info: Joint Communications Chair,
Alon Newton anewton.ieee@gmail.com

Message from the Chair

Community

The term "community" comes from the Latin *communitatem* (nom. *communitas*) " from *communis* "common, public, general, shared by all or many." While the concept of community and the value of contributing to and being part of a community have been appreciated for thousands of years, only recently have sociologists pried deeply into their underpinnings. In 1974, Sarason defined community as, "the perception of similarity to others, an acknowledged interdependence with others, a willingness to maintain this interdependence by giving to or doing for others what one expects from them, and the feeling that one is part of a larger dependable and stable structure."

In 1986, McMillan and Chavis proposed that four elements constitute the experience or sense of community: 1) membership, 2) influence, 3) fulfillment of needs, and 4) shared history and participation. This led to their development of a Sense of Community Index that allows the community experience to be empirically assessed.

Since its predecessor organization was formed 125 years ago, IEEE has evolved into a remarkable and effective community of technology professionals that ranks highly on McMillan and Chavis's scale. Whether you attend IEEE seminars, participate in IEEE events or help to organize IEEE activities, you're part of the IEEE community.
Take full advantage of it!

Dave Michelson dmichelson@ieee.org

Joint Communications

The Creo All optical Cross-connect Switch

Thomas Steiner PhD
Etalim Inc.
Monday 10 August 700 - 900pm
BCIT SW3 - 1750

During the height of the tech bubble in 2000 there was much talk about the need for a large all optical cross-connect switch for use with the fiber optic network being built. Small companies were getting billion dollar valuations for reported progress on this front.

A small local team at what was then Creo built an optical cross-connect switch that used fiber bending rather than MEMS tilting mirrors to achieve much better performance. Our switch achieved less than 1dB loss at both 1.3 and 1.55 um while the competition never achieved better than about 6dB. Sadly for the project the perceived need for such a switch evaporated almost overnight but the details of how it was achieved remain interesting.

Speaker: After graduating with a PhD in experimental physics from Simon Fraser University in 1986 Dr. Steiner spent a year and a half at IBM's T.J. Watson research lab before returning to British Columbia and eventually working at Creo (later to become a division of Kodak).
At Creo he provided technical leadership and many of the core ideas in the development of several world beating products including Creo's first thermal laser exposure head, an optical cross-connect switch and a continuous inkjet printing head.
Dr. Steiner held the position of principal physicist at Kodak before founding Etalim to pursue his interest in energy related topics.

Info: Joint Communications Chair,
Alon Newton anewton.ieee@gmail.com

Power and Energy

Smart Grid: A New Paradigm for Power Delivery

Dr. Mohammad Shahidehpour
Illinois Institute of Technology

Distinguished Lecture

Friday 24 July 1200-100pm
BC Hydro Dunsmuir Auditorium
2nd Floor - 333 Dunsmuir St Vancouver

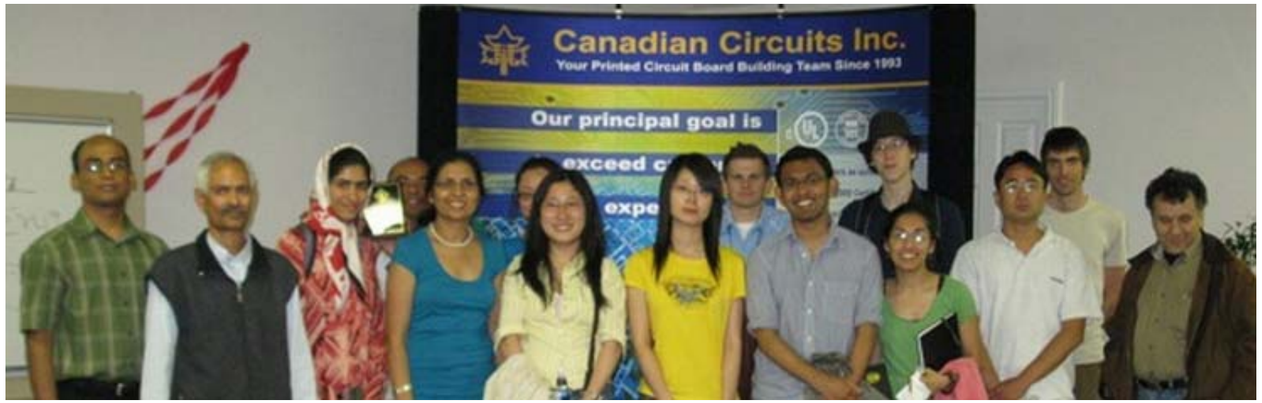
This presentation will highlight some of the key issues in the smart grid design and applications. Smart grid represents a vision for a digital upgrade of electric power transmission and distribution.
It optimizes the grid operations, enhances the grid security, and opens up new markets for the utilization of sustainable energy production. Smart grid is an aggregate term for a set of related technologies for electric power systems rather than a name for a specific technology with a generally agreed on specification. The key to a smart grid is using the Internet protocol on home devices to shuttle information back and forth between the electric utility and customers. A smart meter installed at consumer premise measures, monitors, and helps manage how much energy is used. With a smart two-way communications mechanism between a power consumer and its provider, both parties can get far more control over electric power consumption, cost, outages, and security.

The development of a prototype model of smart grid which is funded by the U.S. Department of Energy and being implemented at the Illinois Institute of Technology will be discussed. The global IEEE activities for promoting smart grid technologies will also be discussed.

At the end of the presentation, a short video on smart grid, which is produced by the IEEE Power and Energy Society, will be exhibited.

Speaker: Dr. Mohammad Shahidehpour is Carl Bodine Distinguished Professor and Chairman in the Electrical and Computer Engineering Department at Illinois Institute of Technology. He is the author of 350 technical papers and five books on electric power systems planning, operation, and control.

Dr. Shahidehpour is the VP for Publications of the IEEE Power and Energy Society and the Editor-in-Chief of the IEEE Transactions on Smart Grid. He is the recipient of 2009 Honorary Doctorate form the Polytechnic University of Bucharest, 2007 IEEE Burke Faculty Recognition Award, and 2005 IEEE/PES Best Transactions Paper Award. As an IEEE Distinguished Lecturer, Dr. Shahidehpour has lectured across the globe on electricity restructuring issues. He is an Honorary Professor at the North China Electric Power University in Beijing and Sharif University of Technology in Tehran.
Info: For more on upcoming events for the IEEE PES Vancouver Chapter, visit our website: http://vancouver.ieee.ca/powereng or contact the Chapter Chair, Glen Tang glen.tang@ieee.org



Part of the crowd during the Industry Application Society's industry tour at Canadian Circuits Inc. on 22 May. Around 30 participants took part in this event and gained valuable knowledge on printed circuit board (PCB) design & fabrication.

IEEE Vancouver Power and Energy chapter top performer - yet again!

The IEEE Vancouver Section Power & Energy Society chapter has ranked on top as the 2008 PES High Performance chapter among 190 PES chapters worldwide and is being awarded with $1000.

This is the third year in row that the Vancouver section PES chapter has scored as the top chapter in the world. Our chapter is also the winner of the PES Membership Contest (second year in row) in the Large Chapters category with 23% membership increase in 2008, and therefore is being awarded with an additional $1000.

Congratulations to our PES chapter chair Glen Tang and his team for this great achievement that brings IEEE Vancouver section on the world pedestal in the year when IEEE and PES are celebrating 125 years of tradition.

This is the sixth time since 2002 that one of Vancouver Section's technical chapters has been named "Best Chapter" by its Society!

If your company is hiring then giving a presentation at an IEEE technical meeting and/or running a paid advertisement in Contact is a great way to attract resumes from the right people.

For more information contact
Pieter Botman
p.botman@ieee.org
Gruja Blagojevic
grujab@ieee.org
or Dave Michelson
dmichelson@ieee.org

Calling Aerospace, Geoscience and Remote Sensing engineers

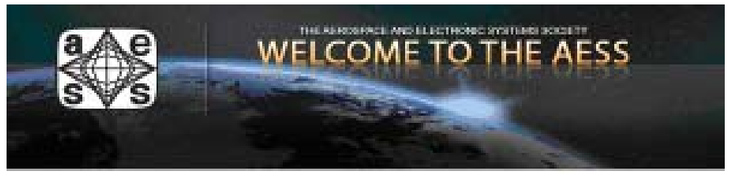
For the past decade the Vancouver Section has had an active technical chapter covering technologies in the above domains. It was in fact a "joint" chapter, representing two IEEE technical societies: The Aerospace and Electronics Systems Society and the Geoscience and Remote Sensing Society. The Vancouver joint chapter has been well led by Jerry Lim and Rob Leitch.

Now it is time to re-energize this joint chapter!

Looking at the technical profiles of our members, we believe that there is sufficient interest in these domains to sustain a joint chapter. The first step is finding volunteers to help organize this chapter. Do you or your colleagues have an interest in these technical areas? Do you have ideas for speakers and topics in these fields? Would you like to be part of the team moving this joint chapter forward? The Vancouver Section executive wants to hear from you! Please contact Vancouver Section Chair Dave Michelson davem@ece.ubc.ca for more information about volunteering.

IEEE Aerospace and Electronics Systems Society

The AESS is the only professional society dealing with total integrated electronic systems and the enabling technologies. Our society serves the engineering community that supports the aerospace, space and defense sectors. AESS pioneered large-scale integrated interoperable systems.



We interact with all technical societies and organizations.

Technology areas include: Command, control and communication systems; energy conversion; intelligent systems; navigation and tracking systems; radar; robotics; simulations and instrumentation; sonar and undersea systems; space systems; automatic test systems; vehicular systems; and modular integrated electronics.
For additional information about the AESS, please visit: http://ieee-aess.org/

IEEE Geoscience and Remote Sensing Society

The Geoscience and Remote Sensing Society seeks to advance science and technology in geoscience, remote sensing and related fields through scientific, technical and educational activities. With the Earth Observing System (EOS) satellites in orbit, the upcoming National Polar Orbiting Operational Environmental Satellite System (NPOESS) etc., remote sensing will play increasingly important roles in solutions to environmental problems, the study of global climate change and the monitoring of natural disasters.

Geoscience and Remote Sensing Society IEEE

We are a transnational society.

Our society is a member of the international Group on Earth Observation (GEO). In 2005, we held two IEEE GEOSS Workshops, in Seoul and in South Africa. In view of 9/11 and the on-going war in Iraq, subsurface sensing and foliage penetration problems have emerged as important tools for de-mining and target detection. We see great strides in remote sensing instrumentation, data processing, and applications.

The IEEE-GRS Society is one of the IEEE's fastest growing societies. The Society strives to address remote sensing policies and research directions. By being a member, you can be part of this important voice.
For more information, please visit: http://www.grss-ieee.org/

IEEE Member-Get-A-Member (MGM) Program

The Membership Benefit that Pays

Most members know how beneficial IEEE membership is to their technical and career development. No one knows the value of IEEE membership better than you, our members.

Consider sharing your experience with IEEE membership and get rewarded. Through the IEEE Member-Get-a-Member program, IEEE rewards your efforts in recruiting new members. Your local Section and IEEE region can also benefit.

Recruiter Awards

For each new member you recruit, you earn an incentive which can be used toward IEEE dues, IEEE Society fees or the purchase of IEEE products and services. During the 2009 membership year (1 September 2008 through 15 August 2009), IEEE's MGM Program offers the following incentive schedule to members who recruit other individuals into IEEE membership.

Professional Members:

- US$15 for each Professional member recruited (Maximum Individual Earnings - US$90.00)

Student Members:

- US$2 for each Student or Graduate Student member recruited (Maximum Individual Earnings - US$90.00)
- US$15 for each Professional member recruited (Maximum Individual Earnings - US$90.00)

Section Awards

Your local Section can also benefit by your participation in the MGM program.

Regional Awards: The top five recruiters in Canada will earn membership development rewards for their Section, to help underwrite the Sections' local programs and activities.

- First Place - $500.00
- Second Place - $400.00
- Third Place - $300.00
- Fourth Place - $200.00
- Fifth Place - $100.00

Overall IEEE Award: The top recruiter in IEEE earns an additional $500 reward for his/her Section.

Tips on Recruiting New Members

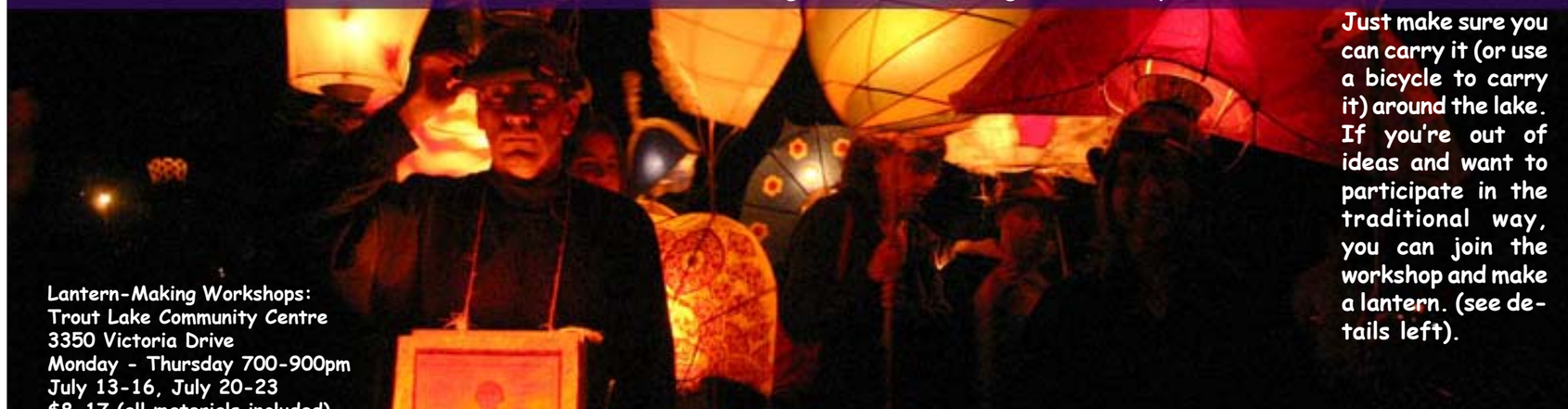
- Invite a prospective colleague/student to attend an IEEE Section/Chapter/ Branch meeting to experience first-hand the professional benefits of IEEE membership.
- Start a discussion about IEEE membership, emphasizing the benefits and value – be sure to provide a brochure and/or application information.
- Keep issues of IEEE Spectrum, IEEE Potentials and IEEE Society publications on display to attract the eyes of potential new members.

A special social event..

Saturday 25 July
Trout Lake in East Vancouver

We want to try something new this time and try to involve more people from our community in a creative manner. Since we don't know if we'd have enough participants we will 'piggy back' on a known successful event organized by the Vancouver based Public Dreams Society - *the Illuminares Lantern Festival*

The idea is to create some light emitting device that you can carry with you and walk around the lake when it gets dark. You will be amazed by the variety of devices and light sources! It would be even more fun if you come up with a human generated or alternative energy generated power source. It can be a hand held generator, a rechargeable battery with a solar cell or even a windmill!



Just make sure you can carry it (or use a bicycle to carry it) around the lake. If you're out of ideas and want to participate in the traditional way, you can join the workshop and make a lantern. (see details left).

Lantern-Making Workshops:
Trout Lake Community Centre
3350 Victoria Drive
Monday - Thursday 700-900pm
July 13-16, July 20-23
$8-17 (all materials included)
Public Dreams Society Team
604-879-8611

Please come around 430pm to the beach area for light refreshment and snacks, to socialize and show off your creation. Admission is by donation so please give something in return. Kindly register by email to anewton.ieee@gmail.com by July 22

Public Dreams Society - http://www.publicdreams.org/section_details.html?trunk_id=1&branch_id=9 Also wikipedia: http://en.wikipedia.org/wiki/Illuminares

Two Vancouver section members among winners of the IEEE 125th anniversary drawing

The IEEE Member Benefits Bulletin is delighted to announce Roger K Nelson and Jerry K Korczynski as winners of the 125th Anniversary drawing. Each will receive one US$100 Visa Gift Card. Both are former Vancouver Section executives. Roger filled many roles including section chair while Jerry as advertising chair drummed up much needed sponsorship revenue from local businesses.

- Publish an article in your company or university publications explaining how IEEE helped you.
- Post announcements of IEEE meetings/conferences.
- Welcome your company/university's newly hired or enrolled individuals - use the opportunity to discuss IEEE.
- When discussing membership with a prospect, listen for clues as to what they look for in a professional society. Stress those member benefits that meet their needs.
- Coordinate an event at your place of employment.

IEEE
Celebrating 125 Years
of Engineering the Future