



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, Ryoza Nagamune nagamune@mech.ubc.ca

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.

Message from the Chair

In January 1849, the French journalist, novelist and critic, Jean-Baptiste Alphonse Karr published his famous epigram "plus ça change, plus c'est la même chose" in his journal Les Guêpes ("The Wasps"). His brother, Eugène, was a noted engineer.

Some thirty-five years later, some other noted engineers, including Thomas A. Edison and Alexander Graham Bell, came together to form an organization that would later become known as IEEE.



Twenty-seven years after that, another group of engineers came together to form the Vancouver Section of that organization.

This month, IEEE Vancouver Section and the BC EMC Association have come together to launch a Vancouver Chapter of the IEEE Electromagnetic Compatibility Society.

British Columbia's EMC community has experienced remarkable growth in recent years. From companies that perform EMC work in-house to EMC consultants to EMC test labs, BC's stake in EMC engineering is greater than ever before. A local chapter of the IEEE EMC Society will make an important contribution to our local community.

This year, as we celebrate the quasiquintennial - the 125th anniversary - of IEEE, we still come together to advance technology, promote the common good, convene technical meetings and share technical results. "The more things change, the more they stay the same."

- Dave Michelson, dmichelson@ieee.org

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

IEEE Industry Workshop on UWB Wireless Technology Wednesday 09 September 2009

Georgia Room, 2nd floor, Hyatt Regency Vancouver, 655 Burrard Street Vancouver

IEEE ICUWB 2009 is pleased to invite both conference attendees and members of the Engineering community in Western Canada and the Pacific Northwest to attend this four-hour industry workshop on UWB wireless technology.

Thanks to the generosity of our sponsors, admission to this four-hour industry workshop is free of charge. To register, please send a message with your contact information and affiliation to IEEE.UWB@gmail.com.

14:00 - 14:50 Deployment of UWB Wireless Technology in Industrial Environments

Prof. Dave Michelson
University of British Columbia, Vancouver, BC



14:50 - 15:40 Advances in UWB Measurement Technology

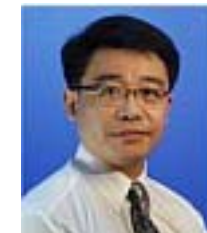
Mark Lombardi
Agilent Technologies, Colorado Springs



15:40 - 16:10 Break, Technical Exhibits, Technical Book Sales

16:10 - 17:00 Miniaturization of Ultra-Wideband Antennas

Prof. Zhi-Ning Chen
Institute for Infocomm Research, Singapore



17:00 - 17:50 Introduction to Ground Penetrating Radar

Dr. Csaba Ekes
Terraprobe Geoscience Corp, Burnaby, BC



Vancouver Section to Launch IEEE EMC Society Chapter

IEEE Vancouver Section is partnering with the BC EMC Association to launch a Vancouver chapter of the IEEE Electromagnetic Compatibility Society. Volunteers are urgently needed:

- to help prepare for the launch event this fall,
- to spread the word to local members of the EMC community and
- to identify local experts who we can invite to give presentations at chapter meetings.

According to Vancouver Section Chair Dave Michelson,

BC's EMC community has experienced remarkable growth in recent years. From companies that perform EMC work in-house to EMC consultants to EMC test labs, BC's stake in EMC is greater than ever before. A local chapter of the IEEE EMC Society will make an important contribution to our local community.

The new chapter will begin operation at the same time as UBC's Department of Electrical and Computer Engineering opens its new Electromagnetic Compatibility Lab. The lab, which will include a shielded room, an anechoic chamber, a benchtop environmental chamber, a tabletop isolation chamber, and various RF and microwave test equipment, is being set up with major equipment donations from Nokia and Sierra Wireless and financial support from Western Economic Diversification Canada, Nokia, and the Department of Electrical and Computer Engineering. The lab will be used for both academic research and undergraduate and graduate student training, and will be managed by Prof. Dave Michelson.

The IEEE Electromagnetic Compatibility Society is the world's largest organization dedicated to the development and distribution of information, tools and techniques for reducing electromagnetic interference. The society's field of interest includes standards, measurement techniques and test procedures, instrumentation, equipment and systems characteristics, interference control techniques and components, education, computational analysis, and spectrum management, along with scientific, technical, industrial, professional or other activities that contribute to this field.

For more information about the new IEEE EMC Society chapter, please contact
Dave Michelson, dmichelson@ieee.org or
Steven McClain, StevenMcClain@ieee.org

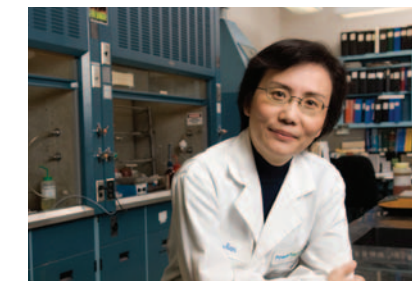
For more information about the IEEE EMC Society, please visit
<http://www.emcs.org/>
To join the IEEE EMC Society, please visit
<http://www.ieee.org/addservices>



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A09-141

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.

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/>

Geoscience and Remote Sensing Society





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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>

2009 IEEE International Conference on Ultra-Wideband

09 - 11 September 2009

Vancouver Canada

Welcome and Call For Participation

<http://www.icuwb2009.org/>

ICUWB is the leading annual conference dedicated to the general topic of UWB communication in microwave and millimeter wave bands and over cable and power lines. It focuses on the latest advances in UWB technology, current and future applications ranging from UWB communication for personal area and sensor networks to UWB-based localization and positioning systems to UWB vehicular radar and imaging systems, and standardization and regulation for UWB transmission.

The main conference venue is the 34th floor of the Hyatt Regency Vancouver
655 Burrard Street
with a stunning 360 degree panorama view of the city and the nature surrounding it.

For ways to participate in 2009 IEEE ICUWB please consult the website topics of Information for Sponsors & Exhibitors and Registration

Inquiries on any matters related to 2009 IEEE ICUWB should be directed to

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"The wireless music box
has no imaginable commercial value.
Who would pay for a message
sent to nobody in particular?"

David Sarnoff, American radio pioneer (1921)