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- Thermal plants - maximizing efficiency and reliability
- Dynamic routing algorithms for optical networks
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- IEEE Vancouver AGM 2015
- Evolving embedded systems and vehicle applications

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Thermal plants - maximizing efficiency and reliability

Mark Tardif
BBA Engineering

Thursday 05 March
6:00 PM to 8:00 PM

BCIT Rm: SW5-1840
3700 Willingdon Bby

Register here

Sponsored by
• Joint Industrial Applications and Electronics
• Joint Chapter CS-23/RA-24/SMC-28
• Young Professionals

Information
Young Professionals chair
Sean Garrity
sean.garrity.ca@ieee.org

This presentation will discuss how to achieve maximum efficiency and reliability in thermal plants. After reviewing the fundamentals of combustion, we will describe the impact that control strategies and controller performance have on efficiency. This presentation will propose a series of actions that you can execute to improve performance and efficiency – which will be backed by case studies. Finally, we will illustrate how using a real time economics model, can lead to significant improvement in efficiency by keeping the cost of produced energy under control. **Speaker:** Marc Tardif – Technologist – has more than 17 years of experience working as a consultant. Mr. Tardif is the department head for Optimization and Advanced Control at BBA Inc. He has worked across many industrial facilities as an expert in process control and optimization. Mr. Tardif has extensive experience in start-up, process optimization, development of control standards, training in power and steam plants, mining, paper mills, manufacturing facilities, pharmaceutical and consumer products.

Over the years, Mr. Tardif developed specific expertise in combustion, steam and power plant optimization. He conducted several optimization projects across Canada, the United States and Africa. Mr. Tardif brings a wealth of knowledge on this topic.

Systems, Man, & Cybernetics Society

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Robotics & Automation Society

IEEE youngprofessionals

Dynamic routing algorithms for content-oriented elastic optical networks

Michal Aibin
Wroclaw University

Thursday 26 March
3:30 pm to 4:30 pm
IRMACS Centre
ASB 10901 (Board Rm)
Simon Fraser University

Light refreshments
Open to public

Please register so we may more accurately estimate room size & refreshments

Sponsored by IEEE Circuits and Systems Society joint Chapter of the Vancouver/Victoria Sections

Information
Circuits and Systems Chair Ljiljana Trajkovic
ljilja@cs.sfu.ca

Elastic Optical Network (EON) is a new optical technology proposed to overcome limitations of the currently used Wavelength Division Multiplexing (WDM) technology. The key advantages of EONs are efficient use of spectrum resources compared to classical fixed-grid in WDM networks, and support of flexible modulation format conversion.

Noteworthy trends observed in the last few years in communication networks are cloud computing and content-oriented services, provided by geographically dispersed data centers. Anycast transmission - defined as one-to-one-of-many - is attracting a lot of interest, since the network providers require cost-effective and scalable data delivery techniques in inter-data center networks.

In this talk, the Routing, Modulation and Spectrum Allocation (RMSA) problem in the context of dynamic routing for anycast and unicast traffic in EONs will be addressed. The focus will be on new adaptive and regenerator-aware algorithms for dynamic RMSA with the possibility of modulation change along the lightpath. The key goal of the algorithms is to improve the network performance under dynamic traffic scenarios in terms of blocking probability and usage of regenerators.

Speaker: Michal Aibin is a second year Ph. D. student at Wroclaw University of Technology. He received his master degree in Teleinformatics in 2012. His main research interests are optimization and modeling of networks, adaptive algorithms and software defined networks. His papers have been published in the most recognizable optical networks conferences in Europe: IEEE International Conference on Communication and International Conference on Transparent Optical Networks. Last year, he attended IEEE HPSR conference, held in Vancouver. He is the supervisor of the students group working on Java Enterprise Applications. Personally, he enjoys horseback riding and playing music.

CAS
IEEE CIRCUITS AND SYSTEMS SOCIETY
IEEE VANCOUVER/VICTORIA JOINT CHAPTER

New IEEE Vancouver Senior Members

Deepak Gautam
Mehdi Moradi
Alla Sheffer

Tour of Powerex

Powerex was established in 1988 as the wholly-owned electricity marketing subsidiary of BC Hydro, responsible for marketing BC Hydro's surplus electricity in the west. Today, Powerex is a key participant in energy markets across North America, buying and supplying physical wholesale power, natural gas, ancillary services, and environmental products with an ever-expanding list of trade partners. This Trade Floor tour will provide participants a chance to learn about Powerex, its history and various trade activities, as well as how Powerex works with BC Hydro PSOSE staff (Generation Resource Management's Planning, Scheduling & Operations Shift Engineers) to optimize the operation of the BC system.

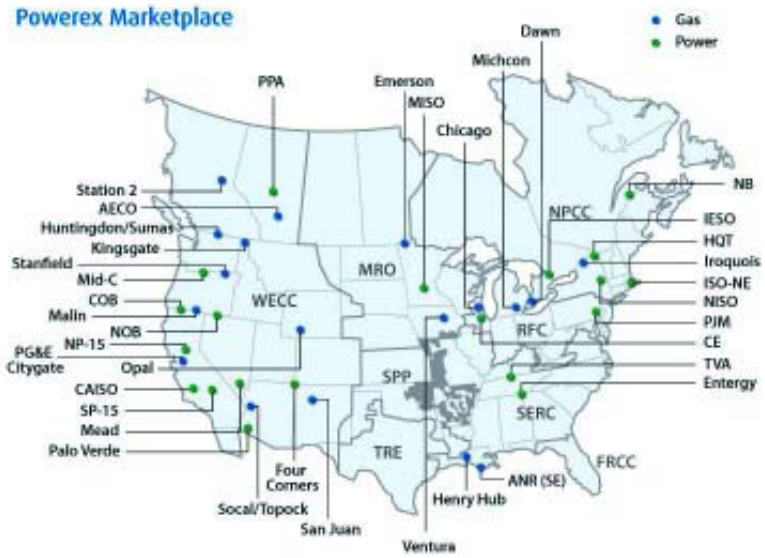
Agenda

- 3:50 - 4:00 - Arrive and Sign-in at Powerex Reception (13th Floor)
- 4:00 - 4:30 - Introductions & Presentation on Powerex
- 4:30 - 5:30 - Tour of Powerex Trade Floor and PSOSE in two groups

Thursday 05 March

3:50 PM to 5:30 PM

Powerex Trade Floor
1300 - 666 Burrard Street
Vancouver



Registration
https://meetings.vtools.ieee.org/meeting_registration/register/32035

Registration is required for this event
as seats are limited to 24.
Deadline for the registration closes on
Monday 02 March 5:00 PM PST

Please provide your Name, Company and your Position/Role in the "Special Request Field" when filling out the registration form. This is a requirement to confirm your registration.
Registrants will be notified by email to confirm their spot for the tour. As seats are limited, we may not be able to accommodate all registrants. In the event that some registrants are unable to participate because of the limited number of seats, they will be placed on a waiting list and another tour may be scheduled for these registrants at a later date. Thank you for your understanding.

On the day of the Tour, once inside the building (entrance on Burrard & Dunsmuir) please take the elevators to the 13th Floor and look for the Powerex Reception desk.

Information
Joint Power & Energy Chair
Dipendra Rai
Dipendra.Rai@bchydro.com

Transient model and its application in model-based control and calibration of automotive powertrains

Tielong Shen
Sophia University, Tokyo

Friday 27 February
10:30-11:30am

Kaiser 2020/2030
2332 Main Mall
UBC

Sponsored by the joint chapters of IEEE Control Systems, Robotics and Automation, and Systems, Man and Cybernetics and joint chapters of Industry Applications and Electronics

Information
CS/RA/SMC
Joint chapter Chair
Ryozo Nagamune
nagamune@mech.ubc.ca

For internal combustion engines, modeling and control of transient behavior are important issues to improve the efficiency and the emission performance. Recently, the attention in automotive industry has been focused on model-based development technology. Meanwhile, in the community of control theory, mathematical model has been essential tools for control strategy design and simulation validation of dynamical systems.

This talk addresses the topic of model-based real-time optimization problems for control and identification of advanced powertrains. Three case studies will be introduced. First, model predictive control approach is presented to the torque tracking problem of gasoline engines. Second, model-based experiment design problem is addressed to achieve the transient model. Finally, an engine-in-the-loop simulation system is demonstrated with testing results of a receding horizon optimal energy management strategy of HEVs.

Speaker: Tielong Shen received the Ph.D. degree in Mechanical Engineering from Sophia University, Japan. From April 1992, he has been a faculty member of the Chair of Control Engineering in Department of Mechanical Engineering, Sophia University, where he currently serves as full Professor. Since 2005, he is also served concurrently “Luojia Xuezhe” Chair Professor of Wuhan University, and Visiting Professor for several universities including University of Science and Technology of China, Yanshan University, etc. He also joined Newcastle University, Australia, as Visiting Fellow in 2003, and University of Rome “Tar Vergata”, Italy, as Visiting Professor, in 2009.

His research interests include control theory and applications in automotive systems, power systems, and mechanical systems. From 1997, he has been serving as Chief Editor, Regional Editor, Associate Editors, and Guest Editors for several international journals including Transaction of SICE, Japan, International Journal of Modeling, Identification and Control, International Journal on Robust and Nonlinear Control, Asian Journal of Control, Control Theory and Technology, and The IEEE Control System Society Conference Editorial Board. Dr. Shen was also serving as Chairs/co-chairs for many international conferences. He is now serving as General Chair of CCC&SICE2015, and Publicity Chair of ECC2015.

He is currently a member of the IEEE Technical Committee on Automotive Control and IFAC Technical Committee on Automotive System Control. Dr. Shen has author/co-authored eleven text books in Japanese, English and Chinese, respectively, and has published more than 140 research papers in peer-reviewed major journals.

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Mary Lou Soffa
University of Virginia

UBC ECE Distinguished Visitor & Colloquium Talk

Monday 09 March
4pm

KAIS 2020/2030
UBC

Warehouse-scale computers: opportunities and challenges

Web-service companies such as Google, Microsoft, Amazon, Yahoo, and Apple spend hundreds of millions of dollars to construct and operate Warehouse-scale Computers (WSC) which provide popular web-services such as search, social networking, webmail, video streaming, enterprise management tools, online maps, automatic translation, and online courses. The primary advantages of WSC are the scalability and cost benefits for both the end-users and web-service companies. These WSCs house hundreds to thousands of machines to provide the computing resources needed to serve millions of users. To limit the cost of ownership of WSCs, these machines are composed of commodity components which are cheap and easily replaceable, often multi-cores. When multiple applications are running simultaneously on a multi-core machine, resources sharing and contention among cores can result in a significant amount of performance interference. This interference leads to a significant problem in meeting the requirements of user facing web-service applications.

To avoid the constant unpredictable threat that shared resource contention poses to an application's QoS, datacenter operators typically disallow co-locations of latency-sensitive jobs with other jobs. This unnecessary over-provisioning of computer resources reduces the overall utilization of WSCs and results in an unnecessarily high cost and a large environmental footprint for a given set of web-service workloads. In this talk, I discuss these issues and present our research using scheduling and compiling to improve the capability and cost effectiveness by improving resource efficiency. Specifically, we reconcile the apparent conflict between the need to maintain high QoS for latency-critical, high-priority services and the desire to increase hardware utilization by scheduling multiple workloads per server.

Speaker Mary Lou Soffa is the Owen R. Cheatham Professor in the Computer Science Department at the University of Virginia, where she was also Department Chair from 2004 to 2012. From 1977 to 2004, she was a Professor of Computer Science at the University of Pittsburgh and also served as the Dean of Graduate Studies in the College of Arts and Sciences from 1991 to 1996. Soffa received the Nico Habermann Award in 2006 for outstanding contributions toward increasing the numbers and successes of underrepresented members in the computing research community. In 1999, she received the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring.

She was elected an ACM Fellow in 1999 and selected as a Girl Scout Woman of Distinction in 2003. She served for ten years on the Board of the Computing Research Association (CRA) and continues as a member of CRA-W, the committee on the status of women in computer science and engineering of the CRA. She has served on the Executive Committees of both ACM SIGSOFT and SIGPLAN. She has been a distinguished speaker and keynote speaker at a number of conferences and universities. Her papers have received a number of best paper awards as well as designation of one of the 40 most influential papers in 20 years to appear in the Programming Language Design and Implementation Conference, the premier conference in her area. She had directed 25 Ph.D. students to completion, half of whom are women, and over 50 M.S. students. She currently serves on the ACM Publication Board and was elected in 2008 to serve on the ACM Executive Committee.

Alfred Hero
University of Michigan

UBC ECE Distinguished Visitor & Colloquium Talk

Monday 16 March
4pm

KAIS 2020/2030
UBC

Correlation mining for imaging and multidimensional signal processing

Correlation mining is a class of methods for extracting complex patterns from massive multivariate datasets, such as spatio-temporal data and images. Many operations on such datasets depend on computing a large number of correlations, including linear prediction, texture analysis, region growing segmentation, and Gauss Markov random field modeling. This talk will include a presentation of emerging methods of correlation mining for massive datasets, a discussion of the underlying mathematical theory, and illustrations of their application to several imaging and multidimensional signal processing applications.

Speaker: Alfred O. Hero III is the R. Jamison and Betty Williams Professor of Engineering at the University of Michigan. His primary appointment is in the Department of Electrical Engineering and Computer Science and he also has appointments, by courtesy, in the Department of Biomedical Engineering and the Department of Statistics. From 2008-2013 he was held the Digiteo Chaire d'Excellence at the Ecole Superieure d'Electricite, Gif-sur-Yvette, France. He is a Fellow of the Institute of Electrical and Electronics Engineers (IEEE). Alfred Hero was awarded the University of Michigan Distinguished Faculty Achievement Award (2011). He received the IEEE Signal Processing Society Meritorious Service Award (1998), the IEEE Third Millenium Medal (2000), and the IEEE Signal Processing Society Technical Achievement Award (2014). Alfred Hero was President of the IEEE Signal Processing Society (2006-2008).

His recent research interests are in statistical signal processing, machine learning and the analysis of high dimensional spatio-temporal data. Of particular interest are applications to networks, including social networks, multi-modal sensing and tracking, database indexing and retrieval, imaging, and genomic signal processing.

IEEE VANCOUVER AGM 2015

Date
Saturday 07 March

Time
18:00 to 21:00

Location
Hilton Metrotown
Burnaby, BC

Sponsors
Simon Fraser University
University of BC
BCIT
APEGBC

Space is limited
Register online before noon on March 03

Queries: Lee Vishloff
IEEE Vancouver Vice-chair
Lee.vishloff@ieee.org

For details and to register please visit:

www.vancouver.ieee.ca/agm2015

Please Join Us!

Please join us for this year's Gala and Annual General Meeting! We have an exciting evening planned for our members and friends – a great venue, delicious food, an outstanding keynote speaker and the opportunity to network with your friends and colleagues!

Keynote Speaker:

Dr. George Tyc, CTO Urthecast

Urthecast's ultra HD video platform on the international space station

Dr. George Tyc will speak about the technology and business behind Vancouver-based Urthecast's space-based ultra-high-definition video system. This system is now on board the International Space Station and will shortly be available to 3rd party developers to create new applications in real-time Earth monitoring.

Members and Non-members are welcome

18:00 – Student poster presentations and networking
18:45 – AGM business and awards
19:30 – Dinner
20:30 – Keynote speaker

registration online:
http://vancouver.ieee.ca/AGM2015

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www.apeg.bc.ca

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SFU

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a place of mind
THE UNIVERSITY OF BRITISH COLUMBIA

Evolving embedded systems and their vehicle applications

Dimitar Filev
Ford Motor Company

Distinguished Lecturer

Friday 20 March
11am - noon

McLeod 418
UBC

Sponsored by the joint chapters of IEEE Control Systems, Robotics and Automation, and Systems, Man and Cybernetics socities and IEEE Joint Industry Applications and Electronics

Information
CS/RA/SMC
Joint chapter Chair
Ryozo Nagamune
nagamune@mech.ubc.ca
or
Jeff Bloemink
Joint IAS Chair
j.m.bloemink@ieee.org

The emerging trend of increasing flexibility, adaptation, and autonomy of embedded control and information systems is the driving force behind the evolving systems paradigm. Evolving systems are systems with flexible model structure that adjust to changes which cannot be solely handled by parameter adaptation. Evolving intelligent systems develop their structure and knowledge representation through continuous learning from data and interaction with the environment. They exploit synergies between two powerful concepts – real time data granulation and machine learning - with model structure that may include regression models, neural networks, fuzzy, and/or stochastic models.

Practical applications encompass a wide range of systems with variable parameters and structure, and multiple operating modes. This presentation provides an overview of the multiple facets of evolving systems theory and describes some of their automotive applications to adaptive process control, automated calibration, anomaly detection, driver state estimation, and fuel economy optimization.

Speaker: Dr. Dimitar P. Filev is the Executive Technical Leader - Intelligent Control & Information Systems, Ford Research & Advanced Engineering. He is conducting research in modeling and control of complex systems, intelligent control, fuzzy and neural systems, and their applications to automotive engineering.

He is the recipient of the 2008 Norbert Wiener Award of the IEEE SMC Society, the 2007 IFSA Outstanding Industrial Applications Award, and the highest Ford Motor Company corporate awards – he was awarded 6 times with the Henry Ford Technology Award and with the 2010 Inaugural Dr. Haren Gandhi Research & Innovation Award for development and implementation of advanced automotive technologies, and for his long term research contributions.

He has published 4 books and over 200 papers, and holds over 60 US and foreign patents. Dr. Filev is a Fellow of IEEE. He received his PhD. degree in Electrical Engineering from the Czech Technical University in Prague in 1979.

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