



A Practical Approach to Electric Power System Protection

A Continuing Education course **reminder!**
More details in August 2007 Contact

https://www.storm.ca/~glyfyx/ieecontact/aug07_03.pdf

This 36 hour course will be presented over 12 weeks on Wednesday evenings from September to December. It is intended to give practicing electrical engineers an understanding of the fundamentals of protective relaying applied to electric power systems.

Topics to be covered include:

- Role of protection in power systems, transducers and protection accessories
- short circuit calculations
- protection measuring elements (including the principles of digital filtering)
- protection of transmission and distribution systems
- protection of generators and interconnections to power systems
- protection of substation equipment
- special protection systems
- analysis of real life disturbances
- power system components.

The course is planned to be offered from 5:00-8:00 pm on Wednesday evenings starting 05 September 2007.

Course location will be the BC Hydro Office, 6911 Southpoint Drive, Burnaby, BC (Near the Edmonds skytrain station).

The cost of the course will be \$700 for IEEE members, and \$800 for non members. For registration please contact Jose Marti, jrms@ece.ubc.ca

For course content information, please contact Charlie Henville chenville@dccnet.com

Aerospace, Geoscience & Remote Sensing

Designing and Building the Atacama Cosmology Telescope

Ye Zhou - Dynamic Structures Ltd

Wednesday 19 September 600pm
MDA – 13800 Commerce Parkway, Richmond



The Atacama Cosmology Telescope under construction in the Chilean Andes

The Atacama Cosmology Telescope (ACT) is a six-meter diameter, off-axis, millimeter-wave telescope that will be used to study cosmic microwave background radiation, aiming to deepen our understanding of the universe. AMEC Dynamic Structures of Port Coquitlam was contracted by Princeton University and the University of Pennsylvania to provide full turnkey development of the telescope from design through site commissioning.

Unlike other radio telescopes whose primary function is to track faint radio-wave sources, ACT will scan selected patches of sky millions of times. By overlaying information from multiple scans, the telescope will produce extremely high sensitivity images. The reflectors of the ACT must be aligned to within tens of microns and the motion profile needs to be smoothly controlled to within arcseconds. ACT is sited on Cerro Toco in the Chilean Andes in the Atacama Desert region of Chile at an altitude of 5,200 meters, considered to be one of the driest places in the world.

This talk will focus primarily on the engineering aspects of the ACT project, identifying

the challenges and sharing the experiences of the concept development, detailed design, fabrication, assembly and site commissioning of the telescope.

Speaker: Ye Zhou, P.Eng., Ph.D, is a Research Engineer at Dynamic Structures Ltd. Ye has 10 years of experience in engineering, building and commissioning large complex structural/mechanical systems. These include industrial structures and machinery, astronomical telescopes and entertainment ride systems. He is the lead engineer of the Atacama Cosmology Telescope project, covering engineering activities from concept development to site commissioning. Ye is a member of APEGBC. He graduated from the University of British Columbia with undergraduate and graduate degrees in structural engineering.

Registration: Pre-registration is not required for this event. Members and non-members are welcome to attend.

Info: Chapter Chair Rob Leitch at rleitch@ieee.org.



<http://www.ieee.org/alias>

Oliver Heaviside and the Telecom Revolution of 1865

Dan Gelbart

Monday 10 September 700-900pm
BCIT Town Square C SE2 - Room 213
BCIT, 3700 Willingdon Avenue, Burnaby



Heaviside, the person who developed most of the science of long distance communication over wires never achieved the recognition he deserves. The talk will include live demonstrations of some of the

original equipment and explanation of Heaviside's contribution.

Speaker: Dan Gelbart's current activity is the development of technology for Cardiology. He is the co-founder (1984), and served as President and Chief Technology Officer of Creo, a company based in British Columbia, Canada, developing laser-based products for the printing industry. In July 2005, Creo was sold to Kodak for 1 billion US\$. At the time of the sale Creo had 4000 employees and was the largest player in its field. Since its acquisition, sales of the former Creo part within Kodak continued to grow. A significant portion of Creo's award-winning technology was developed by Gelbart.

In previous ventures Gelbart also developed patented technology that served as the basis for two local companies: Cymbolic Sciences, in imaging, and MDI, in telecom. Both companies experienced rapid growth and were acquired by large corporations (Schlumberger and Motorola).

Dan Gelbart has over 100 US patents to his name. Cumulative revenues of the products based on these patents are in the billions of dollars to date.

Awards received by Gelbart include British Columbia Science Council Gold Medal (twice), Institute of Printing Gold Medal, Honorary Doctorate (from Simon Fraser University), multiple GATF awards, multiple IR100 awards and the RIT award.

Dan Gelbart holds a B.Sc. and M.Sc. in Electrical Engineering from the Technion, Israel Institute of Technology.

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

Process Systems: Fitting Models to Data

Dr. Bhushan Gopaluni, Chemical and Biological Engineering, UBC

Friday 28 September 1400-1500
Electrical & Computer Engineering
2332 Main Mall - Kaiser 2020, UBC



Models are needed in the process industry for a variety of tasks such as control, fault detection and diagnosis, performance monitoring and assessment. While phenomenological models, built from mass and energy balance equations, are accurate and physically insightful, they are often high-dimensional and intractable. Empirical models, built from process data, even though approximate, offer an attractive alternative.

This talk will begin by introducing various aspects of data-based modeling for process systems, including experiment design, data collection, and identification algorithms. It will be shown that each of these aspects comes with a variety of problems, the solutions to which shape the final identification algorithm. In particular, problems arising due to the nature of data will be explored. Novel solutions to deal with irregularly sampled and non-linear time series data will be presented. These solutions ensure asymptotically consistent stochastic models. The efficacy of these solutions will be illustrated through examples.

Speaker: Bhushan Gopaluni is currently an Assistant Professor in the Department of Chemical & Biological Engineering at University of British Columbia. He graduated from Indian Institute of Technology, Madras with a Bachelor's degree in Chemical Engineering and then went on to do a Ph.D. in process control from the University of Alberta. Upon graduation, he worked as an engineering consultant with Matrikon Inc., and then as a research associate at the Pulp & Paper Center of UBC.

He specializes in process modeling and control. In particular, he is interested in developing algorithms and studying the properties of data-based models for a variety of chemical and biological systems. These systems are typically nonlinear, hybrid and time varying, and their

Real-Time Java Predictable Performance for Java Applications

Mike Fulton
IBM Canada

Thursday 06 September 500-700pm
Electrical and Computer Engineering
2332 Main Mall, Kaiser 2020, UBC



Java is maturing and is no longer just about applets and servlets. Java can now be used for running applications that require consistent, predictable, deterministic performance. This talk will discuss the enhancements that have made to the J9 Java Virtual Machine (JVM) and TR Just-in-Time (JIT) Compiler to support real-time applications. It will introduce our new Garbage Collector called Metronome and then discuss the class libraries written to conform to the Real-Time Specification for Java, which is also referred to as JSR#1.

Speaker: Mike Fulton graduated from Simon Fraser University, British Columbia, Canada in 1989 with a degree in computer science, specializing in compiler technology. He has worked in the compiler area in the IBM Toronto Lab for the past 18 years doing testing, code development, documentation, service, architecture, and performance analysis. He's worked on products ranging across C, C++, Java programming, parser technology, debuggers, profilers, and for the last several years, compiler optimization for JIT Java compilation. In 2005, Mike turned his focus to developing a real-time Java solution, although he continues to be involved in the IBM zSeries technology he has worked on since joining the lab. Since 1999 Mike has telecommuted from Maple Ridge, a small city near Vancouver.

Info: Philippe Kruchten, kruchten@ieee.org

measurements are often noisy and irregular. The thrust of his research is on developing high quality models for such processes and adapting them to reflect process changes. His research interests also span a wide range of other areas including identification for control, model predictive controllers, adaptive control, and performance monitoring and assessment.

Info: Registration is not required, but recommended, so that we may keep you informed in the unlikely event of any changes. You can register by via email to Bryan Bell bbell@ieee.org

A Celebration of Power Engineering in Vancouver

IEEE Power Engineering Society Vancouver Chapter invites you to our annual Power Engineering Society Banquet. Join us to celebrate our Chapter's success as 2006 PES Outstanding Large Chapter and to recognize notable contributors to the IEEE and the Power Engineering Society. Enjoy fine dining, a beautiful North Shore view, and a presentation by our distinguished guest speaker, PES President Mr. John D. McDonald, on "Recent Trends in Substation Automation and Enterprise Data Management"



6:30pm Registration and Bar

7:00pm Buffet dinner

8:00pm Recognitions

8:20pm Desserts

8:35pm Presentation

Buffet Dinner

- Selection of Fresh Breads and Rolls
 - Mixed Greens with Italian and Balsamic Vinaigrette
- Layered Tomato & Mozzarella Salad
- Smoked Salmon with Pumpnickel, Dill Sauce, Red Onion & Capers
 - Roasted Cauliflower Salad
- Cedar Plank Salmon
- Grilled Chicken with Forest Mushrooms
 - Triple Cheese & Spring Pea Risotto
- Assorted Mini Tarts
- Mini Liege Waffles with Berry Coulis
- Freshly Brewed Coffee, Tazo Specialty Tea and Decaffeinated Coffee

This event is sponsored by local companies, so that all attendees can enjoy this great memorable evening at a reasonable price. \$25 for IEEE PES and Student members, \$30 for IEEE members, \$40 for non-members. Since space is limited, registration is confirmed on first come basis upon receipt of payment. Please do not send cash. Make cheques payable to "IEEE Vancouver Section" and mail to Mahta Boozari, BCHydro, 6911 Southpoint Drive (A03), Burnaby, BC, V3N 4X8.

Info: For registration check with Vancouver PES Chapter Chair Meliha B. Selak, P.Eng, at meliha.selak@bchydro.com

"Recent Trends in Substation Automation and Enterprise Data Management"

The purpose of this talk is to familiarize participants with all aspects of substation automation. The term Intelligent Electronic Device (IED) is defined. The different levels of substation integration and automation are discussed. The reasons a utility would need substation automation are presented. The components of the integration and automation architecture are discussed with respect to their technical issues. This discussion flushes out the sensitive, controversial issues that need to be addressed by a utility when implementing substation automation. The characteristics and interface issues associated with Intelligent Electronic Devices (IEDs) is addressed, since the integration architecture is only as good as the integration capabilities of the IEDs themselves. Communication protocol fundamentals and considerations are discussed. Relevant industry standards and their impact on substation automation are described. The characteristics of extracting the valuable data from substation Intelligent Electronic Devices (IEDs) and effectively managing this data in the electric utility enterprise is illustrated.

Mr. John D. McDonald, P.E. is Vice President, Automation, Power System Automation for KEMA Inc. and a leading engineer in the development of substation automation, feeder automation, SCADA/DMS/EMS systems, and communications protocols. He received his B.S.E.E. and M.S.E.E. (Power Engineering) degrees from Purdue University, and an M.B.A. (Finance) degree from the University of California-Berkeley. He is a Fellow of the IEEE, President of the IEEE Power Engineering Society, and Past Chair of the IEEE PES Substations Committee. He is the IEEE Division VII Director-Elect in 2007, and the IEEE Division VII Director in 2008-2009. He was awarded the IEEE Millennium Medal in 2000, the IEEE PES Excellence in Power Distribution Engineering Award in 2002, and the IEEE PES Substations Committee Distinguished Service Award in 2003. He has published 31 papers and co-authored three books, including being Editor-in-Chief, and Substation Integration and Automation Chapter author, for the book *Electric Power Substations Engineering*, Second Edition, published by Taylor & Francis/CRC Press in 2007.

Power Electronics

Tour of Canadian Circuits Inc

14 September 14 - 300pm

Canadian Circuits Inc
#12 - 13140 88 Avenue Surrey, B.C.



www.canadiancircuits.com

Canadian Circuits Inc. is a leader in the Printed Circuit Board industry and excels in Quick Turn Prototypes and multi-layer circuit board.

Complete tour details were unavailable at press time. Please check back for updates or visit the Section website at <http://www.ieee.ca/vancouver/>

Info: Chapter chair Rasvan Mihai rmihai@cellexpower.com



PES President John MacDonald presents plaque in commemoration of "2006 PES Outstanding Large Chapter" to Vancouver PES Chapter Chair Meliha Selak at the PES General Meeting in Tampa June 2007.

**Electromagnetic Brain Stimulation:
A Biomedical Engineering Challenge**

Dr. Hubert du Bruin
McMaster University

Tuesday 18 September 400-500pm
CHBE Room 101
2360 East Mall, UBC

The therapeutic application of electromagnetic fields to nervous tissue in the human brain has become a very active area of research during the last two decades. Great strides have been made in the areas of sensory augmentation such as the development of the artificial cochlea which directly stimulates auditory nerve fibres. Similarly we can expect further significant development of a visual prosthesis during the next few years. These technological advances have resulted from detailed knowledge and research of the relevant sensory pathways.



Although a very important emerging use of electromagnetic stimulation of the brain is in the area of psychiatry, the precise neurophysiological mechanisms and even the anatomy being stimulated are not as well understood. Electroconvulsive Therapy (ECT), which has been used for many decades to treat severe neuropsychiatric disorders such as pharmacologically resistant depression, is a prime example. Recently invasive electrical vagal and repetitive transcranial magnetic stimulation (rTMS), which are certainly less draconian, have been proposed and clinically tested as alternatives to ECT. However, results have been mixed, especially for rTMS. The patient selection criteria and the clinical protocols employed are rudimentary at best.

This seminar describes interdisciplinary research efforts in rTMS to develop new technologies to gain greater knowledge and insight into the mechanisms of rTMS, change the protocols to make them more patient specific and use EEG signal processing and pattern classification to guide patient selection.

Speaker: Dr. Hubert du Bruin Associate Professor and Coordinator (BEng/MEng), Electrical & Biomedical Engineering, McMaster University

LIGHT REFRESHMENTS SERVED

Info: Ezra Kwok - ezra@CHML.UBC.CA