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ICICS-ECE-IEEE Workshop:

SMART CONNECTIVITY

ICICS CONNECTING KNOWLEDGE

ece Electrical and Computer Engineering

FRIDAY 01 APRIL 2016 — 830 AM - 430 PM
Room 2020 Kaiser Building - 2332 Main Mall - UBC Vancouver Campus

For free registration, technical program and other details, please visit:

www.icics.ubc.ca/workshops/comm2016

An IEEE Canada Industry Forum

Do you have entrepreneurial aspirations?
Does your company need R&D assistance?
Is your product (nearly) market ready?

Learn what the BC technology ecosystem can do for you

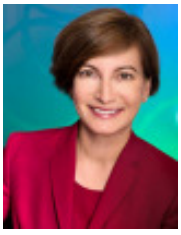
Background
In the last decade BC's technology ecosystem has grown its support capability substantially. There are many government support programs to assist you with R&D, marketing and export development. In addition, the accelerators provide entrepreneurs with wisdom and experience gained by industry veterans who have built companies As part of the 2016 Canadian Conference on Electrical and Computer Engineering (CCECE) IEEE Vancouver and IEEE Canada have organized this forum to introduce you to the key players that can support your business as it moves from start to success.

Wednesday 18 May - 100pm
Marriott Pinnacle Vancouver

Program
- Accelerator Panel
- Representatives from business accelerators discuss their support programs for young technology companies
- Government Panel with representatives discussing their research, technology development & business support programs
- Industry Veteran Panel
- Experienced entrepreneurs describe how they used the various programs to grow their businesses
- Networking

Registration Forum is free, but non-conference attendees must register. http://ccece2016.ieee.ca/events.html#industry
Download **www.ieeecontact.org/extras/Industry.pdf** - a slick PDF poster featuring all forum speakers and affiliations

An IEEE Canada Women in Engineering Forum



Catherine Roome,BCSC

Lesley Shannon, SFU

Zahra Ahmadian, Boeing

Program
13:00 — 13:30 Registration
13:30 — 13:35 Opening remarks
13:35 — 14:15 Catherine Roome • Business case for diversity
14:15 — 14:30 Break
14:30 — 15:15 Lesley Shannon • Understanding implicit bias and stereotype threat
15:15 — 16:00 Zahra Ahmadian • The confidence gap, is presence the right filling?
15:45 — 16:25 WIE panel
16:25 — 16:30 Closing remarks followed by networking

Wednesday 18 May - 100pm - Marriott Pinnacle Vancouver

Registration: Contact: bgill@ieee.org
- Forum is free for all CCECE 2016 conference registered attendees.
- Forum is also free for general public but you must register ahead of time.

Carlo Cecati
University of L'Aquila, Italy

Power Electronics: a key enabling technology for a sustainable world

Power Electronics is a key enabling technology in the development of new applications and technologies in most important areas: energy, transportation, industry, and consumer electronics, as well as in many other, less well-known areas. Whatever the power level, present and upcoming power electronics converters are often complex systems that combine many distinct hardware and software subsystems. There are many demanding tasks to be fulfilled in a power electronics converter, but all of them share three basic requirements: that they optimize the energy conversion process (the main function), and that they contribute to flexibility and keep costs low.

The first requirement can be met by choosing a suitable topology, or conversion scheme. In this respect, using DC seems to be the most effective way to deal with electric energy. Examples of DC systems will be given for different power levels and application fields. AC systems seem to be devoted primarily to electromechanical energy conversion. Traditional single-phase power systems seem to be potentially replaceable with DC systems in most practical cases. In fact, dedicated inverters now commonly supply AC actuators, resulting in higher efficiency systems. DC is also being considered in electricity distribution: both renewable energy and storage systems are basically DC sources; moreover, the use of DC ensures reduced losses in lines. But the main reason for the anticipated change is the penetration of electric transportation, which obliges a profound rethink of electric production, distribution and transmission systems. This seminar addresses these topics in some detail, and discusses some recent trends in the design of power converters.

Speaker: IEEE Fellow Carlo Cecati is a Full Professor of Converters, Electrical Machines and Drives with the University of L'Aquila, Italy and, since 2015, a Distinguished Professor (1000 Talents Program, High Level Foreign Expert) with Harbin Institute of Technology, Harbin, China. His research activity deals with the application of power electronics to renewable energy systems, distributed generation, smart grids, electrical drives, electric vehicles and other applications, with an emphasis on modeling, control, modulation techniques, fault diagnosis.

Carlo Cecati received the 2012 and 2013 IEEE Transactions on Industrial Informatics Best Paper Award, and the 2012 IEEE Industrial Electronics Magazine Best Paper Award. From 2013 to 2015 he has been the Editor in Chief of IEEE Transactions on Industrial Electronics. The ECE Colloquium brings distinguished international research specialists to our campus to speak about their work. Each year our faculty members invite speakers who are leaders in fields that are of particular importance to the work currenty taking place at ECE.

Monday 04 April

15:30 - 17:00

Room 2020 / 2030

Fred Kaiser Building

2332 Main Mall, UBC

Refreshments 3:15

Presentation 3:30

Information
Colleen Brown
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Robust wide-area monitoring of power grids

Ali Abur
Northeastern University

Distinguished Lecturer

Monday 11 April

15:30 - 17:00

Room 2020 / 2030

Fred Kaiser Building

2332 Main Mall, UBC

Refreshments 3:15

Presentation 3:30

Information
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Operation of power transmission systems has been rapidly changing due to the penetration of renewable energy sources and responsive loads. Uncertainties associated with the available generation and loads will motivate new and possibly distributed controls associated with the transmission systems in order to ensure secure, timely and economical delivery of generated power to the customers. Implementation of such control actions requires a reliable and accurate real time model of the power grid. This will include the network model as well as the current operating state of the system.

In this talk, we will present an overview of a wide-area monitoring framework for both the network model as well as the system states, taking advantage of both existing SCADA as well as synchronized phasor measurements. Synchronized voltage and current measurements provided by phasor measurement units (PMU) facilitate development of new and improved monitoring capabilities for the power grids. Despite the fact that there has been a drastic increase in the number of PMUs deployed in power transmission systems, numbers still remain insufficient for most systems to make them completely observable solely by synchronized measurements. Hence, we will present two possible frameworks, one which reflects current situation with a hybrid (SCADA and PMU) measurement model and the other looking ahead to a system monitored solely based on PMU measurements. In addition, the talk will also present a computationally efficient method of identifying parameter errors in the large scale power networks. Finally, we will remark on the possible future extensions to incorporate generator and load dynamics via dynamic estimators.

Speaker: Ali Abur received his B.S. degree at Orta Dogu Teknik Universitesi, Ankara, Turkey and M.S. and Ph.D. degrees from The Ohio State University. He joined the Department of Electrical Engineering at Texas A&M University where he worked as a Professor between 1985 and 2005. In 2005, he moved to the Department of Electrical and Computer Engineering at Northeastern University in Boston where he is currently a professor. He co-authored the book “Power System State Estimation” and published technical papers and reports on the same topic.
He served as an Editor for IEEE Transactions on Power Systems between 1999 and 2011. He is a Fellow of the IEEE and Distinguished Lecturer for PES.

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Exploring power network signatures for information forensics

Min Wu
University of Maryland

Distinguished Lecturer

Wednesday 20 April

15:30 - 17:00

Room 2020 / 2030

Fred Kaiser Building

2332 Main Mall, UBC

Refreshments 3:15

Presentation 3:30

Osama bin Laden's video propaganda prompted numerous information forensic questions: given a video under question, when and where was it shot? Was the sound track captured together at the same time/location as the visual, or superimposed later? Similar questions about the time, location, and integrity of multimedia and other sensor recordings are important to provide evidence and trust in crime solving, journalism, infrastructure monitoring, smart grid management, and other informational operations.

An emerging line of research toward addressing these questions exploits novel signatures induced by the power network. An example is the small random-like fluctuations of the electricity frequency known as the Electric Network Frequency (ENF), owing to the dynamic control process to match the electricity supplies with the demands in the grid. These environmental signatures reflect the attributes and conditions of the power grid and become naturally "embedded" into various types of sensing signals. They carry time and location information and may facilitate integrity verification of the primary sensing data.
This talk will provide an overview of recent information forensics research on ENF carried out by our Media and Security Team (MAST) at University of Maryland, and discuss some on-going and open research issues in and beyond security applications.

Speaker: Min Wu is a Professor of Electrical and Computer Engineering and a Distinguished Scholar-Teacher at the University of Maryland, College Park. She received her Ph.D. degree in electrical engineering from Princeton University in 2001. At UMD, she leads the Media and Security Team (MAST), with main research interests on information security and forensics and multimedia signal processing. Her research and education have been recognized by a NSF CAREER award, a TR100 Young Innovator Award from the MIT Technology Review Magazine, an ONR Young Investigator Award, a Computer World "40 Under 40" IT Innovator Award, a University of Maryland Invention of the Year Award, an IEEE Mac Van Valkenburg Early Career Early Career Teaching Award, and several paper awards from IEEE SPS, ACM, and EURASIP.

She was elected IEEE Fellow for contributions to multimedia security and forensics. Dr. Wu chaired the IEEE Technical Committee on Information Forensics and Security (2012-2013), and has served as Vice President - Finance of the IEEE Signal Processing Society (2010-2012) and Founding Chief Editor of the IEEE SigPort initiative (2013-2014). Currently, she is serving as Editor-in-Chief (2015-2017) of the IEEE Signal Processing Magazine and an IEEE Distinguished Lecturer.

Information
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CCECE 2016 Tutorials Program

Tutorials will be held at Vancouver Marriott Pinnacle Downtown Hotel
1128 West Hastings Street Vancouver
Tutorial classrooms unavailable at press time

Sunday 15 May

Details — http://ccece2016.ieee.ca/tutorials.html#1

Refer to the details link for comprehensive abstracts of each tutorial and presenter biographies

One tutorial costs $50 — Two tutorials cost $75

9:30 am – 12:30 pm
30-minute break, health break at 11:00 am
Time slot 1 (four parallel sessions)

GROUND FAULT PROTECTION, SYMMETRICAL COMPONENTS AND OTHER PRACTICAL PROTECTION CONCERNS
Rasheek Rifaat (Jacobs Canada)

RADIATION EFFECTS IN AEROSPACE: ENVIRONMENT, EFFECTS, MODELING, DESIGN AND TEST
David Hiemstra (MDA), Li Chen (U. Saskachewan), Ewart Blackmore (TRIUMF) and Manoj Sachdev (U. Waterloo)

MACHINE LEARNING APPLICATIONS IN COMPUTATIONAL CANCER BIOLOGY AND GENOMICS
Ali Bashashati and Hossein Faeahani (BC Cancer Agency)

WIRELESS COMMUNICATIONS WITH ENERGY HARVESTING NODES
Md. Jahangir Hossain (UBC - Okanagan), Imtiaz Ahmed (McGill U.)

1:30 pm – 4:30 pm
30-minute break, health break at 3:00 pm
Time slot 2 (three parallel sessions)

DESIGN METHODOLOGY AND CIRCUIT TECHNIQUES FOR ANY-LOAD STABLE LDO REGULATORS WITH INSTANT LOAD CONTROL
Igor M. Filanovsky (U. Aalberta) and Vadim Ivanov (Texas Instruments)

SOCIAL LEARNING AND CONTROLLED SENSING
Vikram Krishnamurthy (UBC)

SECURE ROUTING
J. William Atwood (Concordia U.)