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- IEEE Young Professionals 2016 in review
- IEEE Young Professionals first 2017 networking social
- Modern approaches to spectrum management
- Wireless Frontiers 2017
- Think Engineering 2017
- Year-end message from the Chair
- UBC Okanagan McNaughton centre wins ICF grant
- Optimal power flow: online algorithm

## IEEE Young Professionals of Vancouver *2016 in Review*

With a total of twenty six events and meetings, IEEE Young Professionals of Vancouver experienced *enormous* success and growth during 2016. The joint effort of Chair Sean Garrity and a team of 16 active volunteers, resulted in the organization and completion of eight education events; six networking events; and twelve volunteer meetings and community development events. The combined attendance for these events was 450 people with the largest single event having 45 attendees (IoT & Big Data Conference @ Microsoft).

The networking and community building events resulted in the formation of partnerships with like-minded organizations that will continue to grow and develop throughout 2017. Some of these organizations include the IEEE Student Branches of UBC, BCIT, and SFU; the IEEE Young Professionals of Seattle, Portland and East Bay; and the ACEC-BC Young Professionals.

These achievements were possible thanks to all volunteers who collaboratively supported and assisted to organize, promote and execute these events. A big thank you to our volunteers:

• Kazu Arai • Ananda Narayanan Arunachalam • Sean Garrity  
• Grahame Hamilton • Shreya Iyer • Ilia Kalmanson • Maryam Kashi • Usman Maqsood • Sam McWhannel • Jackie Nichols  
• Nick Pizzacalla • Vaishali Rampurkar • Ana Laura Gonzalez-Rios • Scott Tully • Shaimaa Yehia • Ron Zohar

If you would like to get involved or stay up to date with our plans for 2017 you can connect with the Vancouver IEEE Young Professionals in three ways: Email the Chair: [sean.garrity.ca@ieee.org](mailto:sean.garrity.ca@ieee.org). Connect with us on LinkedIn: <https://www.linkedin.com/groups/4198201> Find us on Facebook: <https://www.facebook.com/groups/ieeevancouvergold/>

***Thank you for your continued support. We look forward to connecting with you in 2017.***



**IEEE**

youngprofessionals

**IEEE BCIT  
Student Branch and  
IEEE Vancouver  
Young Professionals**

**Friday  
20 January  
5:45 pm**

**BCIT Burnaby  
Habitat Pub  
3700 Willingdon**



**Welcome** to the first networking social of 2017! This is an excellent opportunity for students and industry professionals to connect in a casual environment. This event is free and will likely fill-up so get your tickets early.

**Registration** : <https://www.eventbrite.ca/e/ieee-bcit-and-ieee-yp-social-mixer-2017-tickets-30590785864>

**Information**  
Sean Garrity, Chair  
IEEE youngprofessionals  
[sean.garrity.ca@ieee.org](mailto:sean.garrity.ca@ieee.org)



### Modern approaches to spectrum management

Mina Dashti  
Islamic Azad University

During most of the twentieth century, regulators adopted a command and control approach to spectrum management. During the past twenty years, advances in wireless technology and ever increasing demand for wireless spectrum have forced regulators to seek new approaches to spectrum management that are more efficient and more flexible than previous methods. While engineers remain the core contributors to this vital field, innovations in spectrum management have come from many disciplines, including economics, business, policy and law. Provided with a broad set of choices, regulators face difficult decisions ahead.

or losses for incumbent spectrum users. The implications of new spectrum policy for future wireless technology and vice versa are profound.

**Speaker:** Prof. Mina Dashti is with Islamic Azad University, Eastern Tehran Branch in Iran. From 2005-2014, she served as a project manager and later head of the ITU and APT Research Group of the Communication Regulatory Authority in Tehran, Iran where she provided technical and regulatory criteria for minimizing spillover and eliminate harmful interference, analyzed the results of GSM spectrum measurements in the boundary areas to find a method of resolving harmful interference and accelerating cross border coordination, collaborated in drafting of various bilateral cross border frequency coordination agreements, attended international and regional conferences such as ITU-R study group meetings, WTSA, and APG15-3.

She is currently a visiting professor in the Radio Science Lab at UBC.

Friday 13 January  
400 - 500 pm

In this presentation, we examine the motivation and implications of various approaches, including unlicensed spectrum; commons, market-based, and unrestricted usage; spectrum sharing; liberalization; technology neutrality, and service neutrality with particular consideration for the interference and harmonization implications, and the potential gains and/

MCLD418  
UBC ECE

**Information**  
Joint Aerospace and  
Electromagnetics Chairs  
Dave Michelson  
[davem@ece.ubc.ca](mailto:davem@ece.ubc.ca)



**IEEE Joint Aerospace and  
Electromagnetics Chapter**

# Wireless Frontiers 2017

A Student-Professional Night  
hosted by  
UBC Student Chapter IEEE Communications Society  
IEEE Joint Aerospace and Electromagnetics Chapter

## Agenda

### 4:00-4:05pm - Welcome and Introduction Candice Loo, UBC ECE

The IEEE Communication Society's student chapter at UBC is providing important opportunities for students with an interest in wireless communications.

### 4:05-4:50pm - Vancouver's Digital Strategy Peter Leathley, City of Vancouver

Since it was formulated in 2012, the City of Vancouver's Digital Strategy has sought to enhance multidirectional digital connections amongst citizens, employees, business, and government and thereby enhance service delivery and achieve key economic, social and environmental outcomes. In this presentation, we describe recent wireless initiatives that the Digital Strategy team is pursuing.

### 4:50-5:00pm - The UBC Wireless Ventures Competition Prof Dave Michelson, UBC ECE

Since its inception ten years ago, the UBC Wireless Ventures Competition has challenged students to propose a wireless application or service that benefits a particular community at UBC and present it to a panel of judges. In this presentation, we present the rules and schedule for the 2017 edition.

### 5:00-5:20pm - The UBC Orbit Team Sebastian Cline, UBC ECE

The Orbit Team represents UBC in the Canadian Satellite Design Challenge, a competition to design and build a cubesat satellite. This presentation summarizes the recent accomplishments and future plans of the UBC Orbit team.

### 5:20-5:30 pm - Wireless Certification Prof Dave Michelson, UBC ECE

Wireless certification can be a valuable first step toward a career in wireless communications. This presentation summarizes the wireless certifications available to students and junior engineers, including AGI's STK, IEEE ComSoc's WCET, iNarte EMC and Amateur Radio.

**Pizza will be served  
after the fourth presentation at 5:30 pm**

### 5:45-6:15 pm - The AURORA Connected Vehicle/Smart Transportation Testbed at UBC Prof Dave Michelson, UBC ECE

The AURORA Connected Vehicle/Smart Transportation Testbed that is being deployed at UBC (and its sister testbed at the University of Alberta) are Canada's first entries into the field of Connected Cars. This presentation explains how UBC students can contribute to and benefit from the AURORA testbed project.

### 6:15-7:00 pm - LoRa Wireless Technology Robert Barton, Cisco Systems

LoRa is a new low power wireless sensor network standard that allows establishment of much longer links than are possible using previous technologies. This allows replacement of conventional mesh topologies with far more efficient star of stars topologies. This presentation summarizes both: 1) the essential features of LoRa networks and 2) efforts to develop a LoRa testbed at UBC.

## About the presenters

**Candice Loo** (ELEC 2) is chair of the UBC student chapter of the IEEE Communications Society.

**Peter Leathley** is Senior Program Manager - Digital Infrastructure & Assets with the City of Vancouver and originator of the LoRaVAN proposal. He has previously served in various roles at Rogers Communications, the Vancouver Economic Development Commission and Pulse Energy.

**Prof. Dave Michelson**, P.Eng., leads the Radio Science Lab at the University of British Columbia and is co-Director of the AURORA

Connected Vehicle/Smart Transportation Testbed. He is a member of the LoRaVAN proposal team, and an elected member of the IEEE Communications Society's Board of Governors.

**Sebastian Cline** (IGEN 3) leads Orbit, the team that represents UBC in the Canadian Satellite Design Challenge.

**Rob Barton**, P.Eng., is a Principal Systems Engineer at Cisco Systems and a Cisco IoT Fellow. He is CCIE and CDIE certified. He is a co-author of End-to-End QoS, 2nd Edition, the definitive guide to network QoS: WAN, campus, branch, data centre, service provider, and wireless networks.

**Wednesday 11 January**  
**4:00 - 7:00 pm**  
**Room 418 MCLD, UBC**

**Space  
is  
limited**

**Preregistration is required Please  
RSVP to Candice Loo  
c.loo.1997@ieee.org**

### Information

Joint Aerospace and  
Electromagnetics Chair  
Dave Michelson  
davem@ece.ubc.ca



IEEE Think Engineering  
is an annual networking  
event hosted by  
UBC  
SFU  
BCIT

We expect over  
250 guests  
with industry  
representatives  
from a variety  
of companies  
such as

**Intel**

**Teradici**

**MDA**

**Telus**

Our aim is to  
connect  
engineering  
students  
with industry  
representatives

# IEEE Think Engineering 2017

It features multiple networking  
sessions for students to chat with company  
representatives, a three course sit down  
dinner, and a panel discussion of  
representatives from our top sponsors to  
share their experience and knowledge



*Please contact [nicole.cheang@ieee.org](mailto:nicole.cheang@ieee.org)  
if you are interested in purchasing tickets  
or sponsoring this event*

**Sheraton Wall Centre  
Pavilion ballroom**

(1088 Burrard St Vancouver)

**Friday 03 February  
5:00pm**

## Year-end message from the Chair

2016 has been a busy and fun year as the Chair of the Vancouver IEEE Section. The backbone of IEEE Vancouver remains the many active technical chapter and affinity group chairs. As usual these hard working people have organized a wide range of activities during the year with interesting site tours, coding events, distinguished lecturer talks and many technical talks. I hope you were able to attend some of these. Besides being interesting these are good events to help you stay abreast of advances in your technical area.

Last year the executive made a decision to beef up our student scholarship fund. Our strategy to do this is via IEEE conference financial participation. A major effort this year was the hosting of CCECE, the Canadian Conference on Electrical and Computer Engineering. Many of your executive, other local academics, and other volunteers made this a successful event. The statistics are:

- 241 paid attendees + 40 volunteers
- Papers accepted: 278
- Acceptance rate 69.5%

The section will use its approximately \$25K portion of the surplus to beef up our scholarship fund managed by the IEEE Canada Foundation. IEEE Vancouver has also received many other contributions from locally held conferences exceeding \$15,000.

While we are on conferences, I would like to remind everyone that Vancouver is a popular hosting city for IEEE conferences with Vancouver hosting the following in 2016:

1. 2016 IEEE World Congress on Computational Intelligence (WCCI2016)
2. IEEE International Symposium on Power Electronics for Distributed Generation Systems (PEDG)
3. 2016 14th IEEE International New Circuits and Systems Conference (NEWCAS)
4. 2016 IEEE International Conference on Cybercrime and Computer Forensic (ICCCF)
5. 2016 IEEE Canadian Conference on Electrical and Computer Engineering (CCECE)
6. 2016 IEEE International Symposium on Ethics in Engineering, Science and Technology (ETHICS)
7. 2016 Information Technology, Electronics and Mobile Communication Conference (IEMCON).

I note that we have an agreement to help host IEMCON in Vancouver for multiple years, which will help us grow our

scholarship fund on a regular basis. You may wish to talk to your employer about paying for you to attend one of our locally held conferences.

The other major area we are working on in the section is to revitalize our Industry linkages. This initiative has started, but requires ongoing effort. I plan to work on this with the executive in my year as your Past Chair. Two things that did happen this year on this file are:

1. The Industry Forum held when CCECE was in town and
2. Our involvement with Telus on the IEEE/TELUS Student Innovation Challenge. The Industry Forum theme was "Grow Your High-Tech Business". 105 registered for this event. The forum began with opening remarks by Daphne Meredith, Deputy Minister of Western Diversification. Following these opening remarks the forum was divided into three panels:
  - Accelerator Panel
  - Government Funding Panel
  - Industry Veteran Panel

Each panel covered an area that was important to understand if one is looking for support for a technology start up. We thank NSERC for supporting this event.

IEEE/TELUS Student Innovation Challenge was held with the support of Telus, IBM and the City of Surrey. The student teams were tasked with using IBM's big data platform to find uses for Surrey to improve its operations using its existing databases. We are grateful for the continued support of Telus to the students and the IEEE Vancouver section.

IEEE Vancouver holds somewhere between 85 and 100 events year after year. This is as many events as some of the local government-backed technology support organizations, who use full time staff to do so. I would like to thank each of our many volunteers who make these events happen. It does take a lot of work. Please consider becoming active in your technical area to assist our busy Chapter Chairs.

Good luck to our incoming executive, under Rama's leadership I am sure they will continue the fine (105 year long) tradition of providing many excellent technology and professional events to help you stay current in your career.

Best regards  
Lee Vishloff outgoing Chair



Dec. 15, 2016

Colin Warkentin  
IEEE Student Branch Chair  
UBC Okanagan

I am pleased to advise that the IEEE Canadian Foundation Board of Directors has decided to award the UBC Okanagan McNaughton Learning Resource Centre a grant of up to \$2,000 in support of your 2016 proposal.

We find ourselves with many applications and limited resources and therefore are not able to fully accommodate all requests.

Please be reminded that your Grant Report is required within one month of project completion. Reporting guidelines are available at:

[http://www.ieeecanadianfoundation.org/EN/forms/report\\_e.htm](http://www.ieeecanadianfoundation.org/EN/forms/report_e.htm)

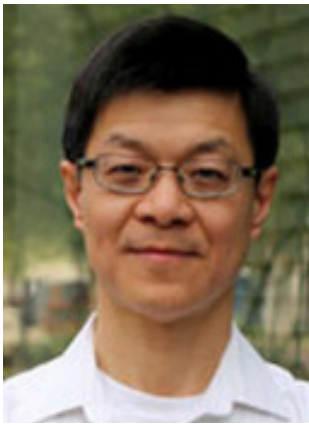
Your receipts for reimbursement at 75% of the purchase amount up to the grant award should be assembled into a single package and submitted as soon as possible to our Treasurer Luc Matteau ([l.matteau@ieee.org](mailto:l.matteau@ieee.org)), ideally by the end of this current term, at the latest December 31, 2017. Mail address for the receipts is above. When you do, please indicate the "Pay to" information for the cheque as well as the detailed postal mailing address. Please note that some items are considered infrastructure which we do not fund. Refer to the web site for details.

We respectfully request recognition of this grant in support of your initiative. We believe that promotion of the ICF and its contribution to initiatives such as yours helps us grow our donations so that we may continue to increase our support of worthy projects. For example, you might arrange for our logo to appear on the Centre's web page and literature as a sponsor, and mention the ICF during events and afterwards. This award is made possible by our generous donors; as students move into established careers they are encouraged to also "pay it forward".

Best Regards

Dave J. Kemp  
ICF Vice President Grants

CC  
Luc Matteau, ICF Treasurer  
Lee Vishoff, Vancouver Section Chair  
Dave Michelson, ICF Member - Vancouver Section  
Jonathan Holzman, Student Branch Counselor  
BoD Mtg # 83



Steven Low  
Caltech

## Optimal power flow: online algorithm and fast dynamics

The optimal power flow (OPF) problem underlies numerous system operation and planning applications. Traditional OPF algorithms are offline in that they solve power flow equations explicitly or implicitly, and iteratively until the computation converges before applying the final solutions. This is computationally challenging because power flow equations are nonlinear. The grid however implicitly solves power flow equations in real-time at scale for free. We propose to explicitly exploit the network as a power flow solver to carry out part of our optimization algorithm. This approach naturally adapts to evolving network conditions. Specifically, we present an algorithm that adapts controllable devices and interacts continuously with the grid which computes a power flow solution given a control action. Collectively these devices and the grid implement a gradient projection algorithm in real time. We characterize optimality and tracking properties of the algorithm. We apply this idea to a unified frequency controller at a fast timescale that integrates primary frequency regulation, secondary frequency regulation, and congestion management. We prove sufficient conditions under which the algorithm converges to a global optimum.

**Speaker:** Steven Low is a Professor of the Department of Computing & Mathematical Sciences and the Department of Electrical Engineering at Caltech. Before that, he was with AT&T Bell Laboratories, Murray Hill, NJ, and the University of Melbourne, Australia. He was a co-recipient of IEEE best paper awards and is an IEEE Fellow. His research on communication networks is accelerating more than 1TB of Internet traffic every second. He was a member of the Networking and Information Technology Technical Advisory Group for the US President's Council of Advisors on Science and Technology (PCAST) in 2006. He received his B.S. from Cornell and PhD from Berkeley, both in EE.

Monday 16 January  
3:30 pm

Room 2020/2030  
Kaiser Building  
2332 Main Mall, UBC

### Information

Colleen Brown  
colleenb@ece.ubc.ca



10jan17