



**THE CHINESE UNIVERSITY OF HONG KONG**  
Department of Information Engineering

*Seminar*

**Optimization of Aggregate Capacity of EVs  
for Frequency Regulation Service in Day-ahead Market**

by

**Professor Vincent Wong**

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**University of British Columbia (UBC)**

**Canada**

**Date : 8 March, 2016 (Tuesday)**

**Time : 11:00am – 12:00noon**

**Venue : Room 1009, William M.W. Mong Engineering Building  
The Chinese University of Hong Kong**

*Abstract*

In this seminar, we describe how an aggregator coordinates a fleet of electric vehicles (EVs) to participate in the electricity markets and provide frequency regulation service to an independent system operator. Since the aggregate capacity comes from many EVs instead of a single source, the challenge is how to efficiently aggregate the small and uncertain capacity from the EVs and determine the bid of the aggregator. We formulate the problem as a stochastic program. As EVs have uncertain arrival and departure times, our problem formulation incorporates risk management using the conditional value at risk. Efficient algorithms are proposed to tackle the formulated problem.

Joint work with Enxin Yao and Robert Schober.

*Biography*

Vincent Wong is a Professor in the Department of Electrical and Computer Engineering at the University of British Columbia (UBC), Canada. His research areas include protocol design, optimization, and resource management, with applications to wireless networks, smart grid, and the Internet. Dr. Wong is an Editor of the IEEE Transactions on Communications. He has served as a Technical Program Co-chair of IEEE SmartGridComm'14. He received the 2014 UBC Killam Faculty Research Fellowship. He is the Chair of the IEEE Communications Society Emerging Technical Sub-Committee on Smart Grid Communications and IEEE Vancouver Joint Communications Chapter. He is a Fellow of IEEE.

**\*\* ALL ARE WELCOME \*\***