



The University of New South Wales
Faculty of Engineering
School of Electrical Engineering & Telecommunications

Invited Talk

**Energy Harvesting: Communication System Design and
Smart Meter Privacy**

Deniz Gunduz

Assistant Professor

Imperial College London



Date: 13 June 2014, Friday

Time: 11:30 a.m. – 12:20 p.m.

Venue: G3, Electrical Engineering Building

Abstract

This talk consists of two parts, which share the common theme of energy harvesting. In the first part, I will talk about design principles for energy harvesting communication systems. Harvesting available ambient energy is a promising technology for sensor as well as cellular networks to achieve environmentally sustainable operation, to reduce energy costs, to increase the lifetime of the network, and to provide the nodes with the much-needed autonomy from the power grid. However, in most cases harvested energy is limited in quantity and sporadic in availability, necessitating novel communication schemes to fully exploit the intermittent energy. I will overview different frameworks for the design of energy harvesting communication systems.

The second part of the talk will focus on privacy in smart meter systems. I will propose energy harvesting as an opportunity to hide energy consumption behavior against the utility provider. Using an information theoretic privacy measure, I will characterize the optimal trade-off between privacy and average harvested power.

Speaker Biography

Deniz Gunduz received his M.S. and Ph.D. degrees in electrical engineering from Polytechnic Institute of New York University in 2004 and 2007, respectively. After his PhD he served as a postdoctoral Research Associate at Princeton University, and a consulting assistant professor at Stanford University. Since September 2012 he is a Lecturer at Imperial College London. Previously he was a research associate at CTTC in Barcelona, Spain. He also held a visiting researcher position at Princeton University from November 2009 until November 2011.

Currently, he is the coordinator of the European research project E-CROPS on energy harvesting communication networks. He is the recipient of a Marie Curie Fellowship, and a recipient of the Best Student Paper Award at the 2007 IEEE International Symposium on Information Theory (ISIT).

He is an Associate Editor of the IEEE Transactions on Communications. He is serving as a co-chair of the IEEE Information Theory Society Student Committee. He is a co-chair of the Network Theory Symposium at the 2014 IEEE Global Conference on Signal and Information Processing (GlobalSIP), and a tutorials co-chair of the 2014 IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC). His research interests lie in the areas of communication theory and information theory with special emphasis on joint source-channel coding, multi-user networks, energy efficient communications and privacy.

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ALL ARE WELCOME

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For ENQUIRIES: Wei Zhang (Ph: 9385 4033)