The IEEE Ottawa Communications Society, Broadcast Technology Society, and Consumer Electronics Society (ComSoc / BTS / CES) Joint Chapter, The IEEE Ottawa Electrical Power and Energy Society Chapter (PES), The IEEE Ottawa Reliability Society Chapter (RS), The IEEE Ottawa Educational Activities (EA), and The IEEE University of Ottawa Student Branch (uOttawaSB) are inviting all interested IEEE members and other engineers, technologists, and students to a technical seminar on

Wireless Sensor Networks (WSN) in the Power Grid

by

Dr. Melike Erol-Kantarci, School of Information Technology and Engineering, University of Ottawa

DATE: Monday November 22, 2010.
TIME: Refreshments, Registration and Networking: 06:30 p.m.; Seminar: 07:00 p.m. – 08:00 p.m.
PLACE: University of Ottawa, SITE, room 5084, 800 King Edward Avenue, Ottawa, Ontario, Canada
Admission: Free. Registration required. To ensure a seat, please register by e-mail contacting:
Branislav Djokic at branislav@ieee.org , or Wahab Almuhtadi almuhtadi@ieee.org .

Abstract

In the last decades, electrical power grids in the developed countries have been under pressure by the imbalance between growing demand and diminishing fossil fuels, coupled with aging equipments and aging workforce. Furthermore, the resilience of the power grid has become questionable especially after the major blackouts in North America in 2001 and 2003, which have been mostly due to the lack of pervasive and effective communications, automation, monitoring and diagnostic tools. Considering these problems together with the opportunities that become available with the advances in Information and Communications Technology (ICT), it has become necessary to renovate the existing power grid. The future grid, which is also called as the smart grid, will meet the power quality and power availability demands of the 21th century. Briefly, smart grid aims to integrate the capabilities of the ICT field to the power engineering field. In this context, use of Wireless Sensor Networks (WSN) in the power grid appears as a promising issue, and it is gaining wide attention from the industry and the academia. WSNs can be used at several segments of the power grid, such as generation facilities, transmission and distribution lines and the consumer premises. In this talk, we will give an overview of the possible fields that WSNs can be employed. We will also introduce our in-home energy management scheme as an application of WSNs in the consumer premises to implement smart grid applications. We show that consumer expenses, peak load and electricity usage-related emissions can be significantly reduced by our scheme providing benefits to the consumers, the utilities and the governments.

Speaker's Bio

Dr. Melike Erol-Kantarci is a postdoctoral fellow at the School of Information Technology and Engineering, University of Ottawa since October 2009. She received her Ph.D. (2009) and M.Sc. (2004) degrees from the Computer Engineering Department, Istanbul Technical University, Turkey, and her B.S. (2001) from the Control and Computer Engineering Department of the same university. From 2001 to 2009, Dr. Erol-Kantarci served as a lecturer at the Information Technologies Program, Istanbul Technical University. During the same period, she was a teaching and research assistant at the Computer Engineering Department, Istanbul Technical University. She has worked in several national and international research projects on IP traffic modeling and underwater communications. She is currently working in the Wireless Heterogeneous Sensor Networks in the e-Society (WISENSE) project at the University of Ottawa under the supervision of Professor Hussein T. Mouftah. From September 2006 to August 2007, she was a Fulbright visiting researcher at the Computer Science Department, University of California Los Angeles (UCLA). Her main research interests are heterogeneous wireless sensor networks, smart grids, underwater sensor networks, mobility modeling and internet traffic modelling.