

Spring 2015 Seminar Series

Presented by the CS Division

DESIGN AND DEVELOPMENT OF WIRELESS SENSOR NETWORKS WITH ITS EMERGING APPLICATIONS

WEDNESDAY APRIL 29, 2015

1:30 PM – HEC 438

In recent years, wireless sensor network (WSN) has been proven to be an excellent solution to create scalable and flexible home automation networks. In a home automation network, consumer devices typically collect data from a home monitoring environment and then transmit the data to an end user through multi-hop communication without the need for any human intervention. However, due to the presence of typical obstacles in a home environment, error-free reception may not be possible, particularly for power constrained devices. A mobile sink based data transmission scheme can be one solution but obstacles create significant complexities for the sink movement path determination process. Therefore, an obstacle avoidance data routing scheme is of vital importance to the design of an efficient home automation system.

This presentation presents a mobile sink based obstacle avoidance routing scheme for a home monitoring system. The mobile sink collects data by traversing through the obstacle avoidance path. Through ZigBee based hardware implementation and verification, the proposed scheme successfully transmits data through the obstacle avoidance path to improve network performance in terms of life span, energy consumption and reliability. The application of this work can be applied to a wide range of intelligent pervasive consumer products and services including robotic vacuum cleaners and personal security robots.

In the second part of this presentation will discuss about an application of WSN for cattle management in India. For high milk production the Estrous cycle monitoring of dairy cows is very important for proper insemination. The objective is to design and develop a collar device for dairy cows for proper monitoring their health and estrous cycle.

DR. INDRAJIT BANERJEE

Indian Institute of Engineering Science and Technology, Shibpur

Indrajit Banerjee received the Bachelors degree in Mechanical Engineering from Institute of Engineers, India, Masters and Ph.D. in Information Technology from Bengal Engineering and Science University, Shibpur, India.

He is currently an Assistant Professor in the department of Information Technology at the Indian Institute of Engineering Science and Technology (IIST), India. His research interests include cellular automata, wireless ad hoc and sensor network, embedded systems and pervasive computing. He is a member of the IEEE, and the ACM.

Hosted by: Dr. Mainak Chatterjee

