

ANNOUNCEMENT CNW MS THESIS DEFENSE

Mr. Muhammad Musaddiq, Full-Time CNW MS Student, will defend his MS Thesis **on Sunday, November 15, 2015 at 10:30 a.m. in 19-405**. His MS thesis title is “DATA COMPRESSION TECHNIQUES IN WIRELESS SENSOR NETWORKS”. His thesis advisor is “**Dr. Tarek Sheltami, Asso. Professor, COE Department**”. **You are cordially invited to attend.**

Abstract:

The advancement in the wireless technologies and digital integrated circuits led to the development of wireless sensor networks (WSNs). WSN consists of various sensor nodes and relays capable of computing, sensing, and communicating wirelessly. However, nodes in WSNs have very limited resources i.e., memory, energy and processing capabilities. In WSN, many image compression techniques have been proposed to address these limitations but most of them are not applicable on sensor nodes due to memory limitation, energy consumption and processing speed.

To overcome this problem, we have selected discrete cosine transform (DCT) and discrete wavelet transform (DWT) image compression techniques as they can be implemented on sensor nodes. Both DCT and DWT allow an efficient trade-off between compression ratio and energy consumption. In this thesis, we have analyzed and implemented DCT and DWT using TinyOS on TelosB hardware platform. The metrics used for performance evaluation are peak signal-to-noise ratio (PSNR), compression ratio, throughput, end-to-end delay (ETE), and battery lifetime. Moreover, we evaluated DCT and DWT both in single-hop and multi-hop networks. Experimental results show that DWT outperforms DCT in terms of PSNR, throughput, ETE delay and battery lifetime. However, DCT provides better compression ratio than DWT. We have also calculated average MAC delay for both compression techniques.

Refreshment will be served