CSE408 Sustainable Engineering Design

Lab 3 Interfacing TinyOS with Matlab

Due on May 3rd

Previous labs on embedded system design are all done within TinyOS. This lab is to further extend previous designs. In this lab, we will learn how to interface TinyOS with external peripherals. Based on the knowledge on interfacing TinyOS with Matlab covered in the lecture, try to enable Matlab to read the serial port of MIB520 board and to display the sensory data in Matlab.

In this lab, you have two sensor motes to detect the their movement information and the light intensity. Then the sensor mote should be able to transmit the acceleration information and light intensity to a base station. Matlab can access the serial port of the base station and display the data on a PC. When either sensor mote is moved or the light intensity drops down, we assume it is being stolen.

Requirements:

1. Implement interfacing between Matlab and TinyOS
2. Display all the data bytes for a message structure in Matlab
3. Extract light intensity and acceleration, draw a figure to show these information
4. If a mote is stolen, generate a warning message in Matlab to alarm the user#