Assignment: The Light Intensity Threshold

E96A, Spring 2017

Due 11:59pm, Apr. 28, 2017

Introduction

You will start developing your project in 2 weeks, where you will design a system that reads the light intensity from a light sensor, converts the value to 1/0, saves a sequence of bits into a file, and sends it to a server to open an imaginary door.

To begin with, you first need to determine a light intensity threshold such that a "1" is returned if the received light intensity is above the threshold, and a "0" is returned otherwise.

Tasks

1. Finish Tutorial 4, except for the I2C part.
2. In the "Analog Input" part of Tutorial 4, replace the rotary sensor with the light sensor in your grove kit, and run the experiment again.
3. Modify the code inside the while loop on page 14 so that your program can sample the light intensity in 50 Hz (50 times a second) and print out an average value of the sample light intensity. Hint: write a for loop, call usleep(20000) for each loop.
4. Examine the average values of the light intensity when you [1] cover the light sensor (dark), [2] uncover the light sensor (light)
5. Determine a threshold of light intensity based on what you find in task 4

Submission

1. Your source code. The skeleton code is on page 14, Tutorial 4
2. The screenshots of the output value when you (1) cover and (2) uncover the light sensor
3. The threshold you find in task 5

Send an email to zhengyipiz@gmail.com including your name and student ID.