



Tilt Indicator

Abstract

In this assignment, you will create a simple tilt indicator with the MPU9250, the 595 shift register, and the 8 LEDs.

Description

Functions to achieve:

Use 8 LEDs to indicate the tilting angle of your breadboard within the range of ± 90 degrees. When you tilt the breadboard in both directions, the LEDs should be able to light up selectively. The specific visual effect is up to you. For example, you can light up the LED one-by-one and keep the previous on so that when you tilt the board to, say ± 90 degree the LED are all on or off. Alternatively, you can decide to only keep one LED on at a time. The key is to use the LED visual effect to indicate the tilting angle. The tilting range to test is ± 90 ish.

* remember to calibrate the gyro data first.

Requirement:

1. The LEDs only need to respond to the tilting along one axis (e.g. X-axis).
2. Make sure that the MPU's VCC is connected to the 3.3V of your Arduino, as it is not 5V tolerant.
3. Your 595 should connect to the 5V, as you will need to power all 8 LEDs.
4. In your code, you should only use the Wire library. No external lib should be used.
5. Feel free to use Arduino's built-in functions such as `shiftOut()`, `bitClear()`, `bitSet()`, etc.

Delivery

There are two deliverables.

- First, your code. You can put them in a zip file if needed.
- Second, a quick video demo of your experiment.

Due Date

Wed Nov 23th, 11:59 PM EST