ECGR4161/5196, MEGR4127 – Introduction to Robotics
Lab Assignment #3– Version 1.0 – Spring 2021

See Canvas for the due date/time

In this lab assignment has one part and will be done individually. Note that, even though two students work together, they must submit their own video and report together. The main objective is to run a simple program that reads five values of an ultrasound sensor and finds the best number that represents a measured distance.

Submission type: Video and lab report (Must include your name and all video requirements mentioned below)

Part 1: Programming the MSP432 board

Attach the Ultrasonic sensor as shown in the Feb 23 notes.

Also in the notes were a demonstration of how to measure several numbers and take the best value. In this assignment you are to take the median value of readings. Take five readings, one a second. During one of the readings put your hand very close to the sensor to get a very small (and erroneous) reading. Then print out the median, wait 5 seconds, and do it again. You only need to show the setup once at the beginning, then the screen while running two cycles.

The video you record should be no more than 30 seconds, and should capture the screen showing five measurements and the outputted best value. An example on the screen would be (in the Serial Monitor window):

```
Distance = 20 centimeter
Distance = 20 centimeter
Distance = 20 centimeter
Distance = 10 centimeter
Distance = 20 centimeter
Median distance = 20 centimeter
Distance = 21 centimeter
Distance = 5 centimeter
Distance = 21 centimeter
Distance = 22 centimeter
Distance = 20 centimeter
Median distance = 21 centimeter
```

Lab Report - Submission Instructions:

1. Upload a Video to your YouTube account (or other location with a URL).
2. Prepare a file, output to PDF that includes:
    a. Your name
    b. Your "partner's" name (if applicable)
    c. What the general objective the robot / apparatus is expected to perform, and

    d. URL of the video
    e. (in report or video) Commentary on the lab (lessons learned, problems encountered).
    f. Full code listing
3. Upload the PDF to Canvas, Lab 3 submission