

## **Class Project Overview**

For the class project, we want you to use the material you have learned over the term to design and implement a sensor-based project of your choice. It can be related to your research or can just be for personal interest. What is important is that you demonstrate that you have acquired a deeper understanding of sensors and their associated circuitry than you had at the start of the term.

The following is a suggested outline:

- Goals
- Theoretical background
- Design (including circuitry)
- Justification of design choices
- Results (including graphs)
- Analysis
- Suggestions for improvement and/or future work

While it is not necessary to follow this outline exactly, you should make sure that your write-up covers the material listed in some fashion. There is no required length for the paper or fixed amount of time that you should spend on it. However, most previous papers have been approximately 5-10 pages long and were based on 20-40 hours of work.

## **Project Proposal**

A written project proposal is a requirement of the course. This is to allow us to consider your ideas before you run headlong into implementing them and to force you to start working before the final weeks. The online should be no more than one page and no less than half a page. We simply want a clear explanation of your goals, a rough outline of your design ideas, and some justification as to why you choose this direction. Please feel free to make an appointment to speak with Joe and I about your ideas. We can provide valuable background and perspective.

## **Survey of Previous Projects**

Please do not take the following list as anything other than a summary of what previous students have done. This should not limit your choices in any way – it is merely to provide a sense of what other have done. The right project for you is one that reflects your interests and your abilities.

- Acoustic
  - Sonar-based trigger for strobe photography
  - Ranging sonar for mobile robots
  - Microphone input to vibrotactile output converter
- Inertial
  - Rotation measurement for cylindrical robot
  - Comparison of tilt sensors
  - Low-cost wireless motion sensor
- Capacitive
  - Analysis for foam based capacitive pressure sensors
  - Capacitive table height sensor
- Magnetic
  - Shoe-mounted metal detector
- Optical
  - IR rangefinding for drumhead
- Misc
  - Sensor designs for kinetic sculpture.