

Lab Assignment #5: Sensor Feedbacks

Due date: Thursday, 3/5/09

Objectives:

- Get familiar to switches/sensors;
- Get exposure to close loop control;
- Constructing a linear motion system with all components.

Instructions:

- You will need to spend about <\$2~3 to buy two micro-switches or make your own limit switches by using thin metal plate.
- Add two limit switches to the two ends of your linear motion system that you developed in the Assignment 4.
- Note: you can use any other mechanisms such as wii controller/IR LED to accomplish the given tasks.

Tasks:

1. Try different fun experiments that you can devise to test your linear motion system.
2. From a random starting position, make the indicator go all the way to the right/left so that a limit switch is hit by the indicator. Your controller now knows this location as the origin and every other location will be reached with reference to the origin. Ideally you can use a small micro-switch that you can buy from many sources (Google “Microswitch” for some shopping results) as the limit switch. The advantage of using a micro-switch is that you will not need to pass current through your mechanical components.
3. Find and record the motion range of you system.
4. Move the indicator to the middle of the motion range and pause there for 4 seconds. During the time period, flash a LEDs by turning it on/off at 0.5 seconds interval.
5. Move the indicator right for one inch, pause for one second and then move it left for two inches.
6. Consult with the TA in case you need help. This could be part of a CNC turning machine.

Submission:

- (1) Write a brief documentation describing what you did for the homework. In the document write your name, department and email. All document should be turned in by Thursday (3/5/2009) 1:00pm.
- (2) Bring your setup and show it during the beginning of the lecture.

Grading:

Scale from 0 (failed) ~10 (excellent). No works will be accepted after the deadline (3/5/2009 9:00pm).