

2012 EECS192 Mechatronics Design Laboratory Oral Presentations

Thu. Apr. 26, 11-1230 pm / Fri. Apr. 27, 230-330 pm

The purpose of the oral presentation is to provide you with an opportunity to inform your peers about what made your car successful. Due to the size of the class, each group's presentation will need to be no more than 11 minutes with two minutes left for answering questions. Be sure to practice and time your presentation. Assume that your audience is very familiar with the project. Hence, you do not need to explain how the magnetic sensors work or how the program is compiled.

Decent example on class web page: Resources -> Design Notes -> Oral presentation from 2004 winners

An overhead projector or Power Point can be used to clearly convey your ideas to the class. Typically, going through six transparencies in ten minutes is a fairly fast rate. Hand in a paper copy of your overheads at beginning of class on Thu. Apr. 26. The following items should be addressed during your presentation:

1. Hardware (10%)

What is different about your hardware (basic electronics/wiring)? What are the advantages and disadvantages your method has over traditional methods. Some items that you might want to consider are cost, complexity, reliability, and accuracy.

1.5. Sensors (20%)

Show estimated lateral position vs actual position for car over +/- 8 cm range with 1 cm steps (17 points).

2. Software (15%)

Provide an overview block diagram of your software. What is unique about your software? For example, do you use auto calibration of sensors, course memorization, automatic determination of gain constants for the controls, etc.?

3. Controls (20%)

What kind of stability problems did you have and how did you overcome them? It is not sufficient to simply state that you used a proportional-integral-derivative controller. State how you implemented the controller and how you chose the gain constants. What gains were used (radians per meter, radians/(m/sec))? Did simulation provide any help?

4. How well did it work? (30%)

The step response of your car is an easy way to verify how well your car performs. Run your car at constant speed over a 5 to 7.5 cm step (not 15 cm step) in the track and record your sensor error (in cm) versus time (in seconds). Have a plot of your step response to show the class during your presentation. Be sure to note your velocity (m/s).

5. Roles and Contributions (5%)

Briefly describe the role of each team member.