

ECE-218 EMBEDDED MICROCONTROLLER PROJECTS:
PROJECT 2: CONTROL [AND DISPLAY] OF SERVO MOTORS

PROJECT OBJECTIVE

Create an open-loop control system with a potentiometer that controls two servo motors, one positional, and one continuous motion. A slider switch will be used to switch between positional control and speed/direction control. The servo motors should operate in their full range in response to the potentiometer when selected¹. When not selected, the positional motor should hold at its last position, and the continuous motion servo should stop.

Optional: An LCD display should read “Positional” when the positional servo motor is selected, and “Continuous” when the continuous servo is selected.

SUGGESTED PROJECT MILESTONES

Milestone 1: Use the potentiometer to control one servo motor [1A: optionally display the correct string on LCD].

Milestone 2: Add the slider switch. In one switch position the servo is controlled with the potentiometer. In the other position the potentiometer does not affect the servo and the servo remains at the position (or speed/direction) that it had when the switch was moved. [2A: The LCD display shows the correct string.]

Milestone 3: Add the second servo and complete the project objective.

PROJECT DOCUMENTATION

You will document your project in a video demonstration, commented code, and a project report. All will be uploaded to Nexus.

DEMONSTRATION (DUE 11:00PM SUNDAY, FEBRUARY 3)

Your video should have the following three parts:

1. A segment that shows the team and your system, explaining the project goals.
2. A segment that zooms in on the system, and shows the potentiometer input and the two motors, while you explain their purpose and how they are connected.
3. A segment where you demonstrate how well the project goals are met. Try to avoid using a potentiometer with nothing connected to the shaft – it will be very difficult to show the position and speed in your video.

REPORT AND CODE (DUE 11:00PM MONDAY, FEBRUARY 4)

The project report is where you document the details of how you solved the problem. Follow the design report format guidelines posted on Nexus, and heed the feedback from the previous report.

¹ For the positional servo, the range should be close to 180. You may need to adjust the min and max pulses to get a full range. It should not “chatter” since that means it is asked to go beyond its stop.