

CSCE 439/839: Robotics: Algorithms and Applications, Spring 2020

In-Class Lab 1

Monday, Jan 27

Instructions: Make sure to read the whole lab before starting. The checkoffs can be done step-by-step or all at the end.

Follow the Balboa assembly guide instructions linked to on the course website. Note, not all of the steps need to be performed in the order listed.

Name of All Group Members:

Robot Number:

Problem 1. *Approximately how much time did the total assignment take? Which sub-problem took longest and how much time did it take? Are there any questions that need clarification?*

Problem 2. *Follow the instructions to solder your robot. If soldering irons are not available, you can work on getting the programming environment setup.*

Problem 3. *Follow the instructions to solder the reflectance sensor array. This can be done before or after soldering all the rest of the parts. It is somewhat easier to do before soldering on the battery pack.*

Problem 4. *Follow the instructions to fully assemble the robot, including the arms that help protect it against falls. Pay attention to the gears you use. You might want to look at the `balancer.ino` code before selecting gears.*

Checkoff: For 2, 3, and 4. Which gears did you use?

Problem 5. *Download the Balboa Arduino library and program the standard balancer code onto the robot. Review this code and make sure you understand it. When first running this code, you should do so on the floor so that it doesn't drive off the desk.*

Problem 6. *Look at the `loop()` code and figure out how to make it drive around.*

Problem 7. *Modify the driving code to make it "write" CS once whenever one of the buttons of your choosing is pressed.*

Checkoff: For 5, 6, and 7. Is this controlled in a closed-loop or open-loop manner? Verbally describe your approach when you are getting your checkoff.