

CS 491/691X – Topics: Introduction to Robotics

Instructor: Monica Nicolescu

Assignment #4

1) Write a lab report for Lab #5 (one report per team): Your report should describe the following issues:

- Your software design
- The problems that you encountered during the implementation (hardware, software)
- Your solution to the above problems
- Any unsolved problems and reasons for why you were not able to solve them

Reports should be typed and should be formatted as follows:

- a title page with the names of all the students in the team, the team number and the lab report number
- each report page should be numbered and labeled with the team number
- the pages should be stapled together

Add to the report any additional information that you think could improve your robot evaluation. Submit your report at the beginning of Lab 6 (on Feb 26).

2) Submit the programs you developed for Braitenberg Vehicles by the beginning of Lab 6 (on Feb 26).

3) Answer the following quiz questions. The answers to these questions should be submitted **individually** by each student. Submit your answers in printed version at the beginning of Lab 6 (on Feb 26).

- a) What is the stall torque? What variables define the amount of power supplied by the motor?
- b) What does the sleep function do in Interactive C?
- c) What are the drawbacks of using more gears provided that you can get the same speed/torque with fewer gears?
- d) What is the gear ratio for the original HandyBug (the one that you built in the first lab)?
- e) How can you prevent the Handyboard from automatically running your code which has a main function in it?
- f) In the Corner Escape contest, which criteria do you think is more suitable in order to sense the problem you faced in the dead-end: the time interval between consecutive bumps or having several consecutive left and right bumps? Which one do you think is less case sensitive (i.e. less dependant to the type of the contest route or size of the corners, etc)? Explain why.
- g) What are your suggestions about Labs 1, 2, 3 and 4?