CS 491/691X – Topics: Introduction to Robotics

Instructor: Monica Nicolescu

Assignment #5

1) Write a combined lab report for Labs #6-7 (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 8 (on March 11).

2) Submit the two programs you developed for the line following problem by midnight on Friday March 5.

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 8 (on March 11).

a) Explain what Meta Sensing is.

b) In the light seeking program presented in the book (pages 83-84), the power of each motor is dependent on the amount of light caught by each sensor. In this case, when the area is too dark, your robot will not have enough power to move. What changes have you made to your programs in order to solve this problem?

c) In the line following contest, you used optosensors to find and follow the line. What would be the reason for using two thresholds instead of one fixed threshold?

d) What do you think is the reason to use a history-based program (a program that uses a history of sensor readings to determine the thresholds you use for line sensing or light seeking) for line following or light seeking problems?

e) On what parameters does your reading from the optosensor (the value that you get from the optosensor in different situations) depend?

f) What are your suggestions about Labs 5, 6 and 7?