Problem Set 2: More on Probability

Out: Thursday, 14 September 2017
Due: Thursday, 21 September 2017 at start of class

Reading: Complete reading Chapter 2.

Problem 1

COMP.4510: Part a, b, c, and f of Exercise 2 on p. 36-37.
COMP.5490: All of Exercise 2 on p. 36-37.

You can use any programming language you’d like for part b, but I’d recommend C++ or Python, as those are the two languages that you’ll be able to use with ROS. (We start ROS next week.) Turn in a printout of your program with the answers each of the parts of the problem.

Problem 2

Both classes: Exercise 3 on p. 37.

Problem 3

COMP.5490 only:

Based on the algorithm in section 2.4.2 for the belief update calculations, write a program that can perform the act-predict-measure update-loop iteratively.

Program the robot to alternately take do_nothing and push actions.

How many time steps will it take for the robot to believe with 0.9999 (or higher) probability that the door is open? Turn in your code and explain how you got your answer.