CAP 6671: Robotics Assignment: Due Apr 21st

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This assignment is to give you a chance to implement some of the robotic algorithms we discussed in class. You are allowed to work in teams of 2-3 people. The assignment is worth 10 pts.

Simulator Platforms

There are three options that you can use for implementing the project:

- Teambots A very simple Java-based simulator designed for Robocup. `http://www.teambots.org/`
- Microsoft Robotics Studio and Visual Simulation Environment: `http://msdn.microsoft.com/en-us/robotics/aa731520.aspx` A sample project for this is available in webcourses. Programming for this option can be done in C# or the VPL.
- simulator/game of your own choice

For this assignment you will have to create a robotic agent that can do the following things: 1) plan toward the goal using A* search in an environment where not all the obstacles are known; 2) use sensor data to create the current map of the obstacles in an occupancy grid format; 3) replan upon discovering new obstacles that interfere with its path. You must demonstrate your robotic agent on two different map layouts with that trigger at least one replanning episode per map.

For one approach to handling the replanning, see the handout on fast trajectory replanning.

Deliverables

To get credit for the assignment, you will have to turn in the following things:

- video of your robot (or schedule to demo to me in person)
- a short writeup (1 page) with pseudocode and a description of how your replanning algorithm works