CSC466: Artificial Intelligence Two

Project Framework and Timeline

Ace DeSiena - Feb 2015

Phase One – Motion – Feb 26

Goal: Create instances of robot, world, and wall class. Change the state using robot's motion methods.

Work: Create robot, world, and wall classes. Create Movement methods for the robot so that the world is affected correctly.

Phase Two – Perception – Mar 10

Goal: Create instance of robot with input sensor array. Update array as robot moves around the world.

Work: Create sense method for robot class which creates a simulated sensor input based on robot pose and walls. This input will mimic a variable number of beam range finders.

Phase Three – Localization – Mar 19

Goal: Create instance of robot with a map representation that corresponds to the walls and the world. Use robots localize method to create belief space about the robots location using Extended Kalman Filter Localization Demonstrate the changing location estimation as the robot moves through the world. Repeat using Grid Localization. Repeat using Monte Carlo localization.

Work: Create localize methods for robot class each using a different algorithm. Create map class which will be contained in the robot class. Create location belief space class which may need to be specific to each type of localization.

Phase Four – Mapping – Mar 31

Goal: Create instance of robot with uninformed map. Demonstrate the recursive estimation of the map as the robot moves through the world.

Work: Recursively update the map using the occupancy grid mapping algorithm.

Phase Five – Extended Kalman Filter SLAM – Apr 14

Goal: Create instance of robot with uninformed map and location. Recursively estimate map and location using Extended Kalman Filter Slam.

Work: Learn about and implement EKF SLAM algorithm.

Phase Six – Sparse Extended Information Filter SLAM – Apr 23

Goal: Create instance of robot with uninformed map and location. Recursively estimate map and location using Sparse Extended Information Filter Slam.

Work: Learn about and implement SEIF SLAM algorithm.

Phase Seven – Fast SLAM – May 7

Goal: Create instance of robot with uninformed map and location. Recursively estimate map and location using Fast Slam.

Work: Learn about and implement Fast SLAM algorithm.