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EECS 476

Github: <https://github.com/TAdragon1/mobile_robotics_assignments/tree/master/ps2_twa16/ps2>

My lidar alarm algorithm assumes the robot will only move in the +x direction. The algorithm uses two arcs to check for obstacles. The main arc checks in front of the robot from -Pi/6 to Pi/6 to see if there is an obstacle within 0.5m of the robot. The secondary arc checks right of the robot from -Pi/2 to -Pi/6 and left of the robot from Pi/6 to Pi/2 to see if there is an obstacle within 0.25m of the robot. The distance it checks is halved because sin(Pi/6) is 0.5 and so at Pi/6, the corresponding point to the right of the robot is at a distance half the point at Pi/6. This limits the secondary arc so it doesn’t flag the alarm if there’s an obstacle past the distance of the main arc as the robot moves past it. I don’t need to check the pings behind the robot because my algorithm assumes the robot is only interested in moving in the +x direction. A more complete algorithm would use different flags for the position of the obstacle relative to the robot. The algorithm could keep a uniform distance with one arc, but provide useful information so the robot knows where the alarm was flagged.