Project 4 Report

Description:

In grouping points from the laser scans and creating objects, we identify obstacles to avoid. In addition to this, we find “infinity objects” – i.e. groups of points from the laser scan whose range is infinity (maximum range). Once we have these objects, we calculate the center of the objects by summing up the range and angle of each point in the object and finding a point with average range and angle. The center of the “infinity object” is our target point. In choosing this as our target point, the robot successfully determines gaps between obstacles every time it sees one. Once it finds the target point, the robot rotates till it aligns itself to the target and moves linearly towards it.

Evaluation:

It finds the center of the hallway early but instead of driving to the center and then driving down the hallway, it drives down the hallway in a straight line while moving towards the center of the hallway. All safety checks are in place, it stops when bumps are detected; it stops when the Wi-Fi signal is low and it stops when the wheels are off the ground. It likes to charge into people/obstacles occasionally – probably needs a testosterone check function. Under “normal” conditions it works fine.

Allocation of Effort:

We met together on 3 separate days, exchanged ideas, tested different scenarios, wrote and then re-wrote some code, tweaked how fast it must go, how slow it needs to turn, got rid of the “twitching” and we spent most of our time figuring out how to get the robot to the “imaginary line through the center of hallway” and then head down. We were not able to get it to the center as fast as we would have liked.