**TEAM 2 - WEEK 5 REPORT - FEB 28th - 408i SPRING 2022**

**Michael Delatte**

This week Michael had a breakthrough in terms of his Machine Learning knowledge. Although it is obvious in retrospect, this is not a standard reinforcement learning problem. In normal maze solving algorithms people put the maze in for the training data and the computer can see the whole image. In our world, the decision matrix is made up of simply the decision at each point in time for the robot to move to a valid location. Because this gives the computer so little information, a predictive mapping may need to occur. This would mean our algorithm would guess the maze in advance, and adjust its view, as it moved further into the maze. This is all rather confusing currently and may require more research. I am tempted, however, to just see if a reinforcement learning trial can work solely based on the available decisions to each robot. Hopefully, Michael will be able to test this within the next two weeks.

**Wesley Catbagan**

This week Wesley was unable to attend lab because he was exposed to covid. He tested negative and will be in the lab this coming week. He spent time at home working on his task of correcting the mistakes in the map. He was able to accurately track the robot when it is running, but there are still some inaccuracies. He will spend his time this week finishing up the last bit of corrections and work with Michael and Erik to combine everyone's code once that is completed. Now that Erik has found success with the controller, we should be able to try to combine the map and the controller for testing.

**Erik Bryson**

Success! With the help of Levi, we were able to achieve consistent radial wheel velocity independent of external influence to the wheel, aka resistance to its wanting to rotate forward. A simple demonstration of this was having the robot move forward, place a role of electrical tape in front of it, have it push it, and then quickly remove the electrical tape. What happened was spectacular, the robot moved at the same speed, consistently, regardless of having to push the tape, or the sudden relief of not having to push the tape. And speaking of relife, I know I feel relief. For me the goal of smooth motor control is the lowest bedrock in this entire mission. Also, it is worth noting that tuning the robot’s PID loops was made easy by having the robot accept commands from the serial monitor, which allowed tuning of the PID loop a live and engaging process. Moving forward I am glad to now build upon it in creating a mechanism of following the line, now that the mechanism for instructing the motors is tried, proven, and robust. After that will be all of the special cases, turn detection and performing the turn, dead-end detection and performing the turn-around, etc. and then also, signaling the discover of the discovery of the special cases to the other modules. (Pictures below show the robot moving constantly forward at the same speed.)

