June 17, 2023

I’m still focusing on teaching myself the fundamentals of reinforcement learning. So far I’ve gone over Stanford CS234 Reinforcement Learning Winter 2019 first two classes. The primary lesson I learned was the discussion of the Markov Decision Process. The process of having an already model of the world (more useful for Model Based learning. Additionally I was luckily able to find a youtube video to teach me Q-learning, but the function involved Model-free Learning. I was even able to understand the purpose of numpy and pylab. Both tools enable the user to run math in matrices in a plot in a diagram, much easier than manually setting it up in an array. There was a state-action table so the data so the Q-value or the reward can be placed in matrices. I believe from the Micromouse competition if you were to set up the states as locations in which the robot does not move in the straight line, then use dijkstra's algorithm to record the distance between each state, I could theoretically use Q Learning to teach the robot to move at the fastest option. Overall, I believe I understand best if I go over main topics from the table contexts of the textbook you recommend and then I do research and find examples. Additionally I’m hoping to do some practice problems, or at least Chance mentioned there would be some problems in the book. In terms of setting up the environment in Webots, I have the base robot, with the differential drive setup, but I have yet to set up the Camera. I was hoping to contact Chance about this issue. My plan is to continue research on different points of Reinforcement learning and hopefully at least have a plan on how to set up Webots. Assuming my only sensor is the camera, I would most likely use Model Free Learning, and try to detect success through the distance of the ball detected from the camera. I think I will have a better idea when looking over the research papers again.