

1. WorldWithoutThief

- a. The robot has trouble learning at a zero or very low ϵ levels. Sometimes it will learn almost nothing and get stuck in loops but usually it will get to package one and then take many many steps to deliver the second package. Generally a bad setup.
- b. Increasing to 0.1 makes the situation a little better. No more loops but it still has trouble getting to the second package delivery spot.
- c. Near 0.5 the robot becomes very effective. Its almost emergent. It almost perfectly takes the exact right path every time. Every single episode I watched was perfect. This seems to be the optimal setting.

2. WorldWithThief

- a. The performance of the agent is significantly worse without knowing where the thief is. It runs into the thief quite a bit and sometimes gets stuck in the top left corner.
- b. The performance goes back up significantly with knowledge of the thief. In fact it seems as good as in part 1c
- c. I knew from 1c that 0.5 seemed to do the trick so I tried that and as expected, it worked. I experimented with a few other numbers near 0.3 and 0.6 but it was either the same or a little worse.

3. It moves up and down greatly in the first few iterations but then stabilizes to some value.