Robotics - CSCI 545 - Lab 3

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1 Question 5 Observations

After changing the parameters, the new trajectory behaved noticeably better than the original one. In the first set of videos I took, the end-effector still landed with a pretty large margin of error, and the final pose didn't look fully aligned with the intended goal. The motion itself also looked slightly jittery, especially near the end when the arm was settling into position.

In contrast, the updated trajectory in the second videos was much smoother overall. The end-effector pose was significantly closer to the target each time, and the final placement visually matched the intended goal instead of being offset. The path also looked more stable, without the small shaky adjustments I saw earlier. Overall, the motion felt more controlled and consistent.

2 Question 6

If we only ever sample near the goal with probability = 1.0, the RRT stops exploring the rest of the configuration space. RRT works because it randomly grows the tree in lots of different directions, and eventually one of those branches finds a way around obstacles. But if every single sample is right next to the goal, the tree keeps trying to extend in almost the same direction over and over. All extensions will fail if anything blocks the straight path to the goal, and the tree will never grow outward enough to find an alternate route.