CS685 Homework 3

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1. Initial pose $[x, y, \theta] = [15, 10, 0]$ is an obstacle, so we use $[50, 30, 0]$ as the initial pose in our experiment.

2. In our experiment, the RRT graph is able to reach the region that the initial pose $[50, 30, 0]$ is visible after about 5000 sampling. RRT graph using 5000 points, steering angle limits 1.2 and path integration time 0.5 is shown in Fig. 1.

3. Plot shown the velocity and steering angle profiles is in Fig 2. Code is in RRT.path_control().

4. Code for using Gaussian distribution steering angle is in bestpath().
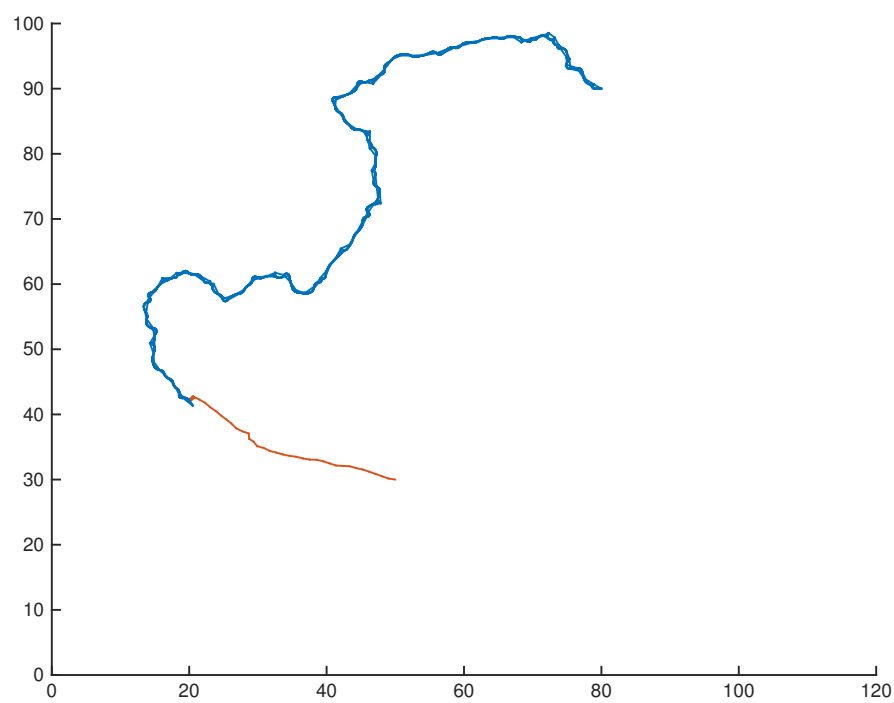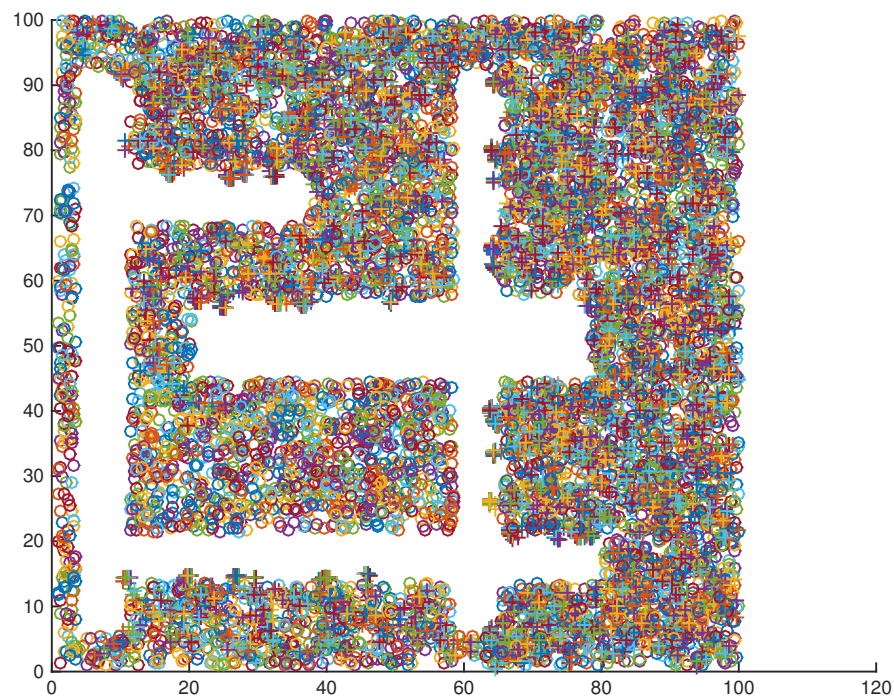
5. Code for the local planner is in RRT.local_planner();

Figure 1: Above: RRT graph using 5000 points, steering angle limits 1.2 and path integration time 0.5. Below: path starting [50,30,0] to [80,90,0]. Line in blue is the RRT path from around [20,40,0] to [80,90,0], and red is the local planner from [50,30,0] to [20,40,0].
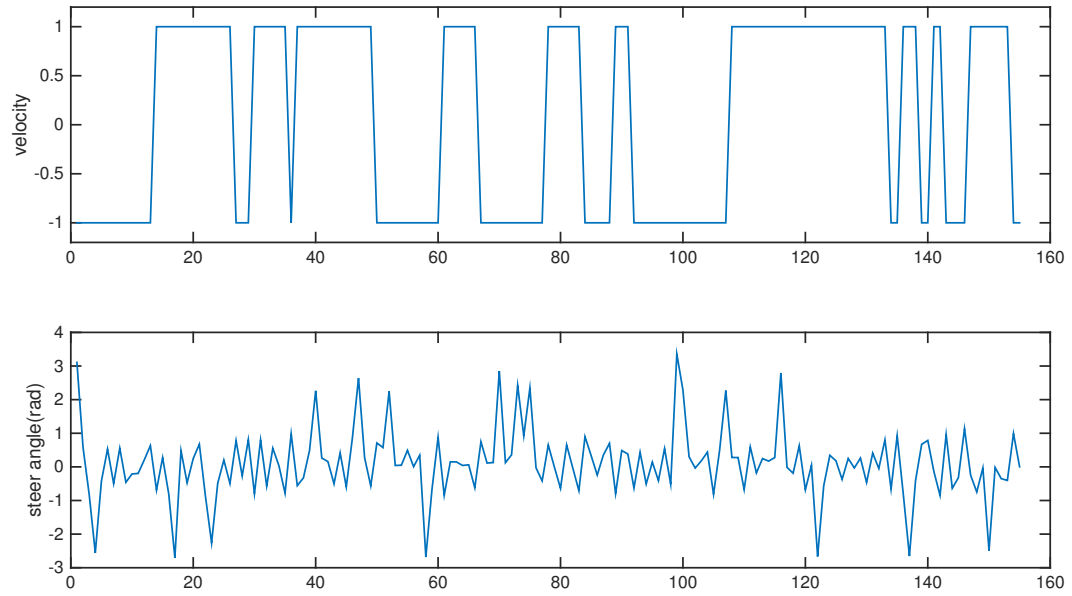
Figure 2: Above: velocity of path in Fig 2. Below: steering angle of path in Fig 2.