Robotics: Planning and Navigation

Assignment - 1

Team Name : Puzzles
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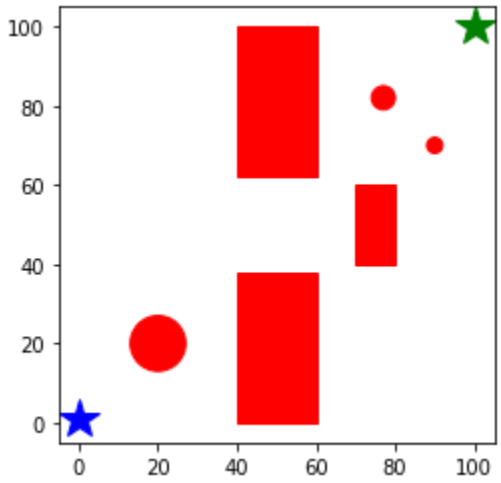
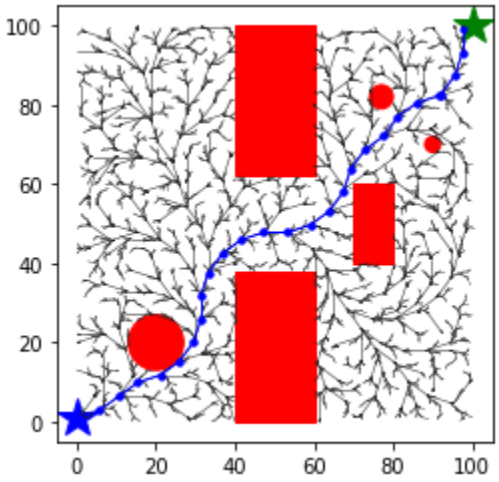
Non - holonomic RRT

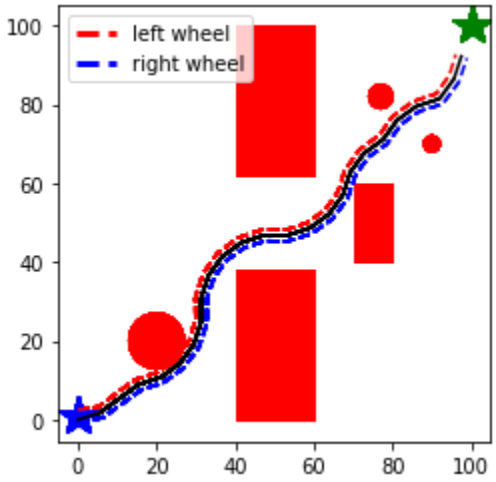
Set - 1

The first environment was given, which had 3 rectangles and 3 circles of different sizes as obstacles. The environment, start position and goal position is as shown below.



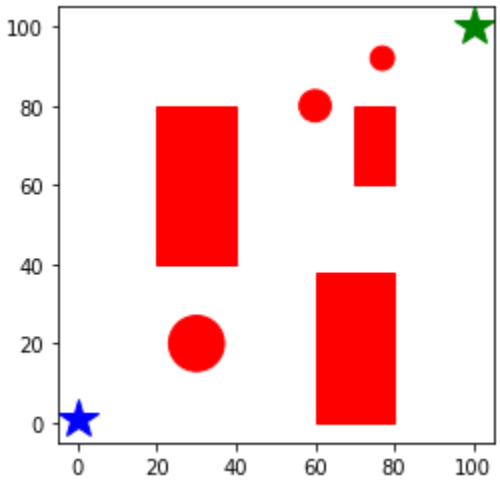
The RRT tree and path and the wheels trajectory which we got after running the algorithm is as follows,



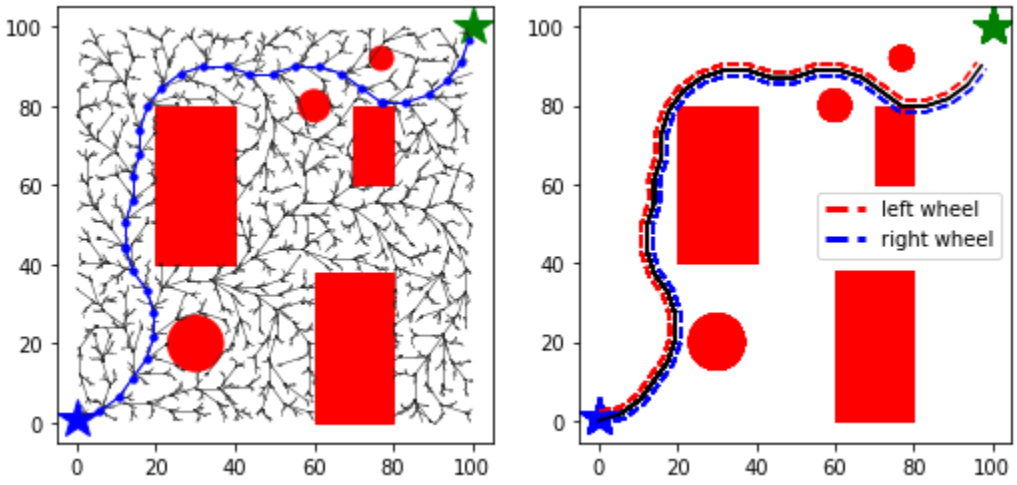


Set - 2

The second environment was custom made, which also had 3 rectangles and 3 circles of different sizes as obstacles. The environment, start position and goal position is as shown below.



The RRT tree and path and the wheels trajectory which we got after running the algorithm is as follows,



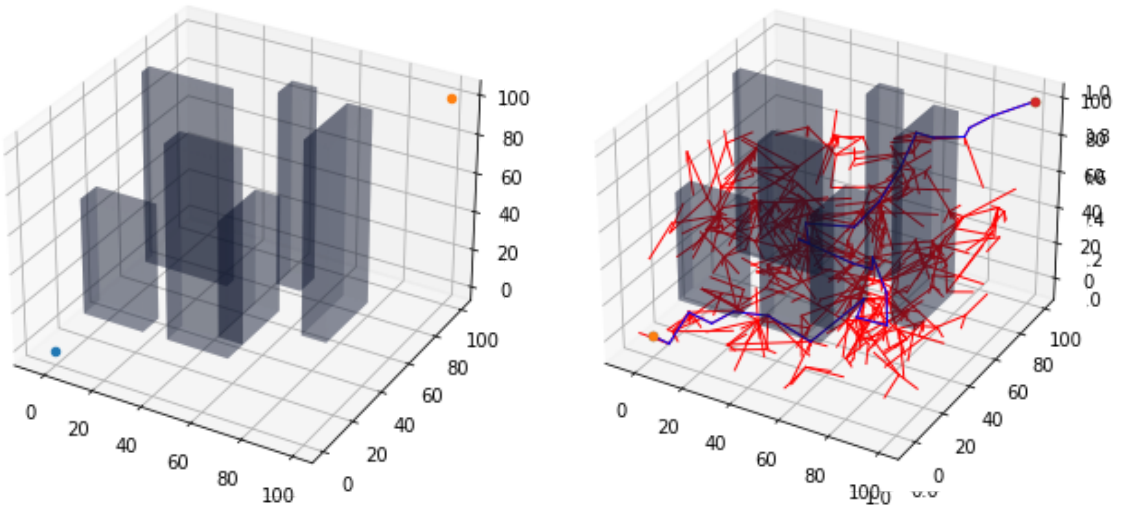
Simulations

The simulation videos, snapshots for RRT tree and RRT path and wheels trajectory of each step in the algorithm can be found here under the non-holonomic folder.

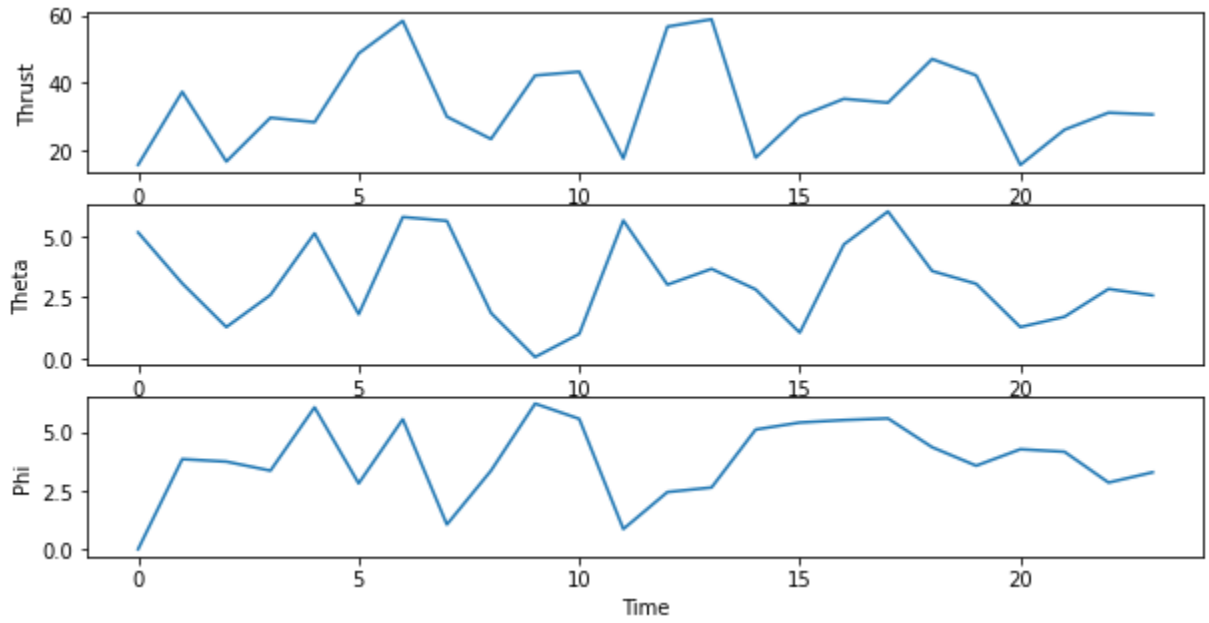
Holonomic RRT

Set - 1

The first environment was given, which had 6 cuboids of different sizes as obstacles. The environment, start position and goal position and the RRT tree and path which we got after running the algorithm is as follows,

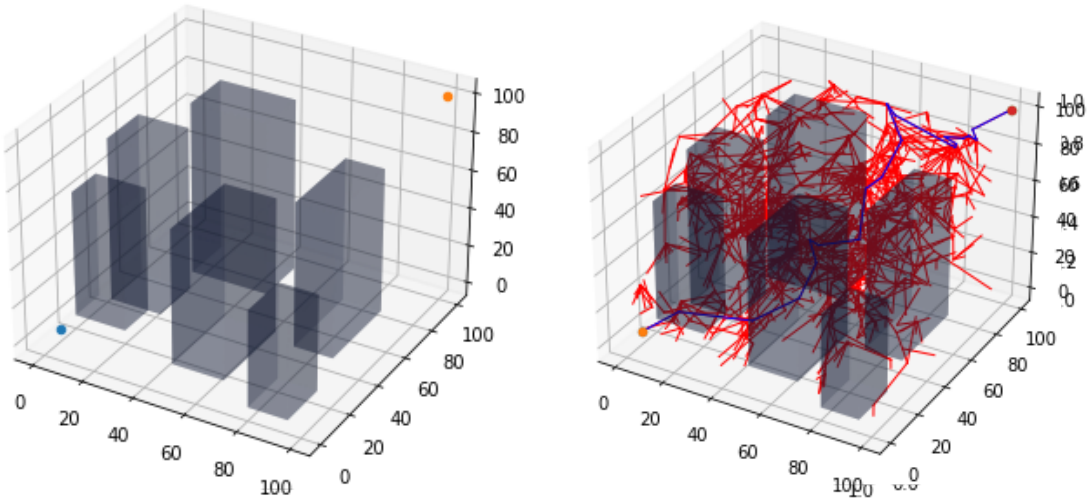


The graphs for the parameters are as follows

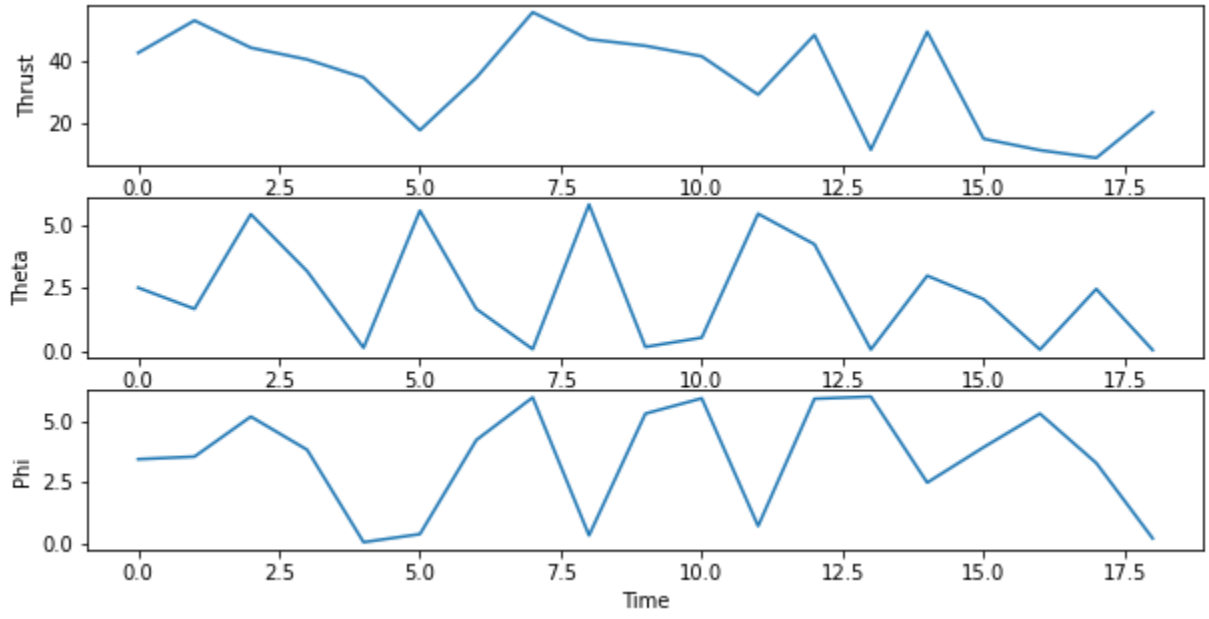


Set - 2

The second environment was custom built, which also had 6 cuboids of different sizes as obstacles. The environment, start position and goal position and the RRT tree and path which we got after running the algorithm is as follows,



The graphs for the parameters are as follows



Simulations

The simulation videos, snapshots for RRT tree and RRT path of each step in the algorithm can be found here under the holonomic folder.