

Project1 Phase3 Report

Jiawei Tang 20672550

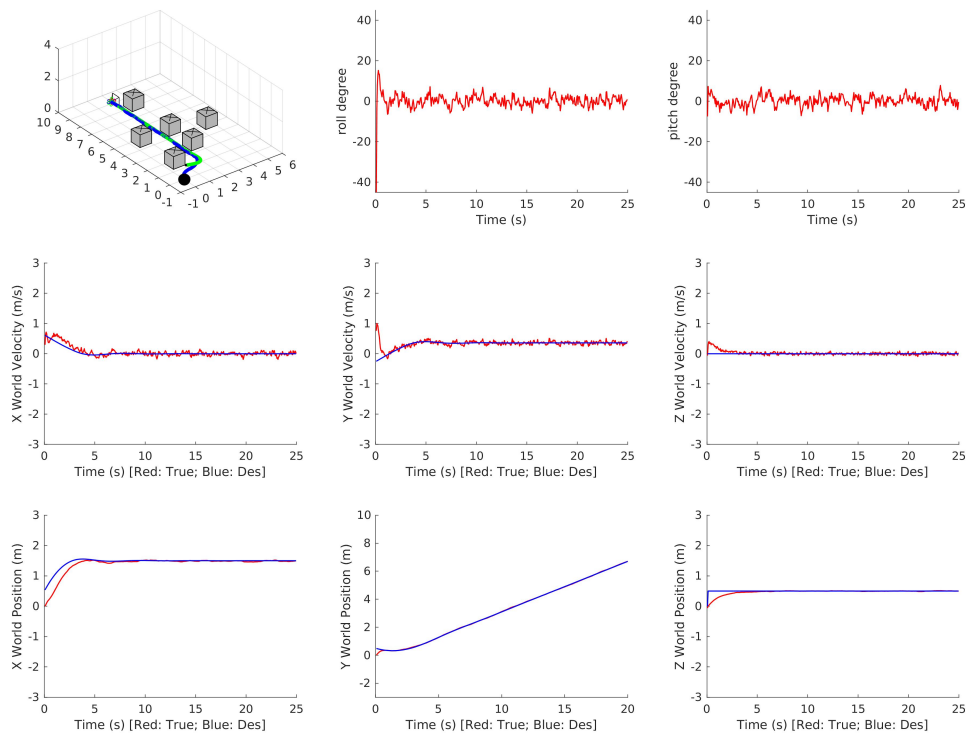
Remainder

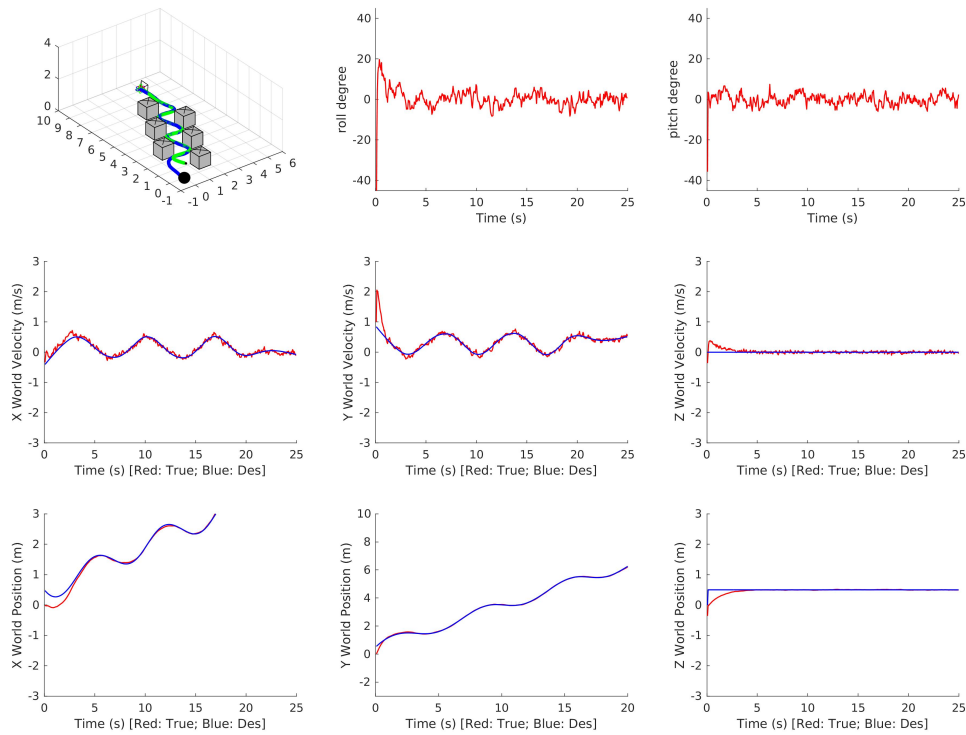
1. I used **global variables** in my PID controller implementation, hence simply using original `test_trajectory.m` cannot run my code successfully. **Please use my `test_trajectory.m` to verify the result.** Thank you.
2. By default, the path generated by my `path_from_A_star.m` is for 3D case with A Star algorithm. I also provide options for 2D case and Dijkstra algorithm. Simply change the flags in `path_from_A_star.m`.

```
isASTAR = 1; % 0 for Dijkstra 1 for A*
```

```
is3D = 1; % 0 for 2D 1 for 3D
```

Figures





Analysis

1. Since the data structure is provided, the space complexity is fixed. For the time complexity, I did not do much optimization as the searching task and sorting task was done by the function in matlab. Both space complexity and time complexity can be optimized through using a better data structure and designing better searching and sorting algorithms.
2. Both A star and Dijkstra algorithm can provide us a optimal path from the start point to the target point if it exists. In some scenarios A star is faster than Dijkstra as a heuristic function is used for providing a better search directions.