Project 1 Phase 2

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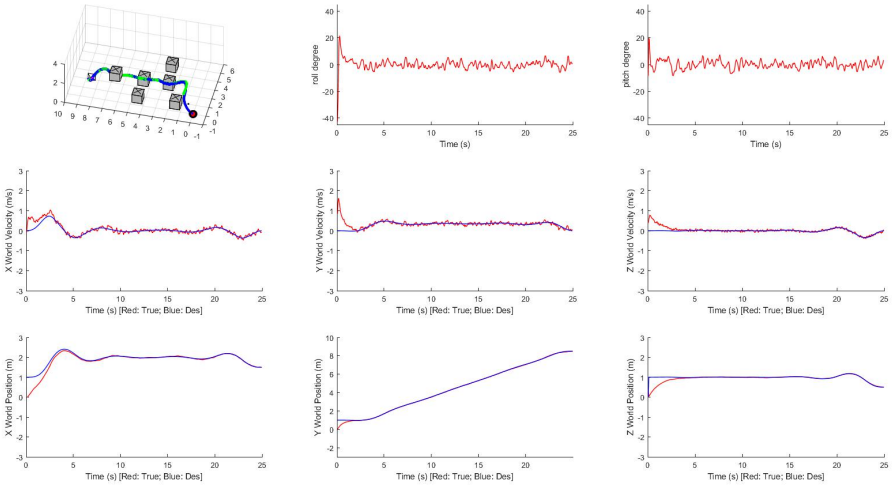
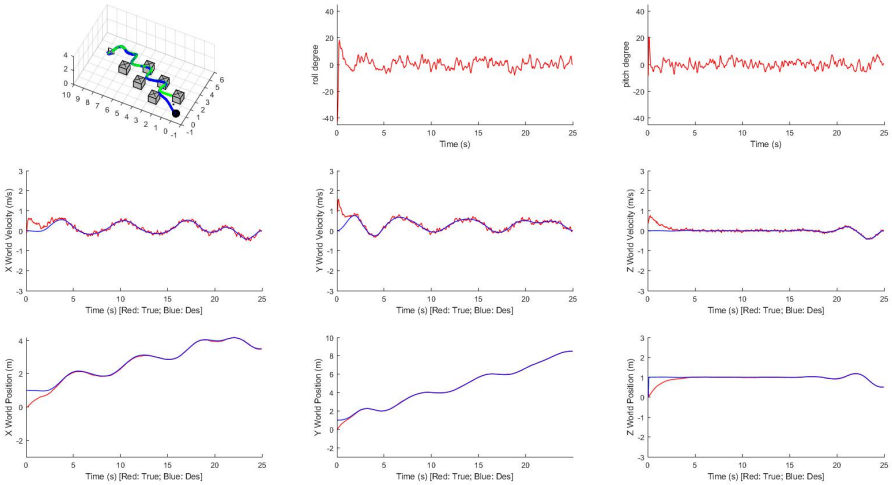
1. Figures

Map_1:



Map_2:



2. Analysis

In this task, I implemented a 3D A star algorithm in this Matlab codes. I set neighbors only focus on 6 directions so the heuristic function is based on Manhattan distance. From my perspective, I think we can

replace expanded tensor with open_set and close_set for space optimization. Also, maybe a new data structure for map is better than matrix for its sparsity. Because of the voxelization of space, I set a 0.5 offset in 3 axis so that the UAV can arrive the red star desired position.

3. Other thoughts

During the programming period, I noticed that even though A star is very fast for planning a obstacle-avoided path but it’s not always optimal in whole space. There are all isolated obstacle point, so we can just easily plan a obstacle-avoided path. Maybe we can fuse planner with generator, using obstacles to build a spatial constraint so there is a flight corridor for trajectory generation.