ELEC 5660 Project 1 Phase 1 Report

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***Abstract*—This report presents results, figures and numbers of the Project 1 Phase 1**
***Index Terms*—Optimal Control, UAV**

I. Results

1) Hover Trajectory
   - RMSE Position(m):0.021235
   - RMSE Velocity(m/s):0.046251
   - RMSE Yaw(deg):0.36754
2) Circle Trajectory
   - RMSE Position(m):0.017626
   - RMSE Velocity(m/s):0.045773
   - RMSE Yaw(deg):0.39202
3) Square Trajectory
   - RMSE Position(m):0.021235
   - RMSE Velocity(m/s):0.046251
   - RMSE Yaw(deg):0.36754

II. Parameters

- position_Kp = 5;
- position_Kd = 10;
- attitude_Kp = 0.001;
- attitude_Kd = 100;

III. Analysis

The simulator is a bit too naive.

Should always tune the attitude controller first.

Euler angle is not smooth, which is a flaw of the representation.

*Equal Contribution

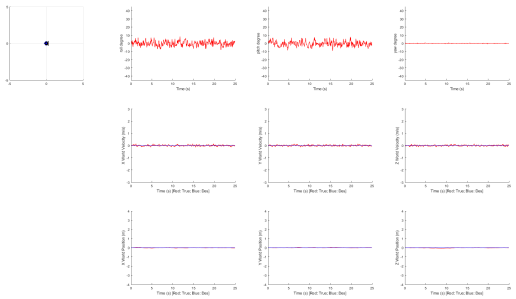

Fig. 1: **hover trajectory**.

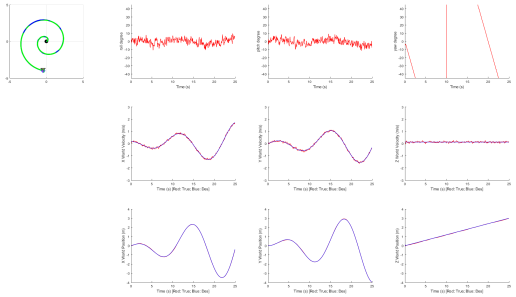

Fig. 2: **circle trajectory**.

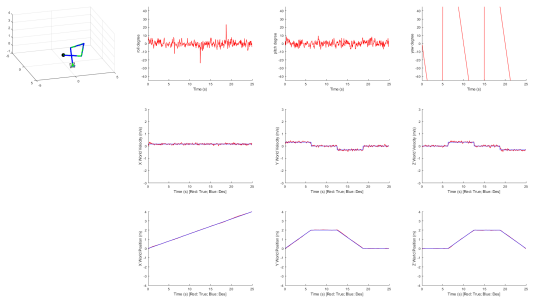

Fig. 3: **square trajectory**.