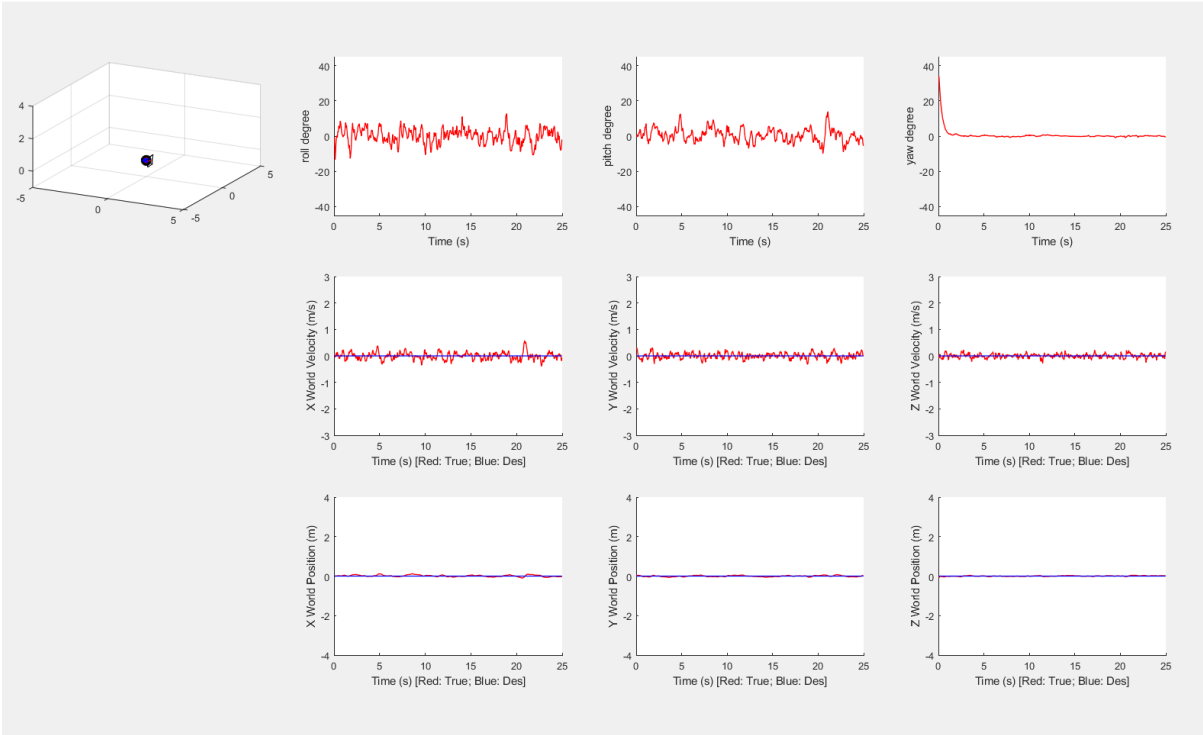


# ELEC5660 Project 1 Phase 1 Report

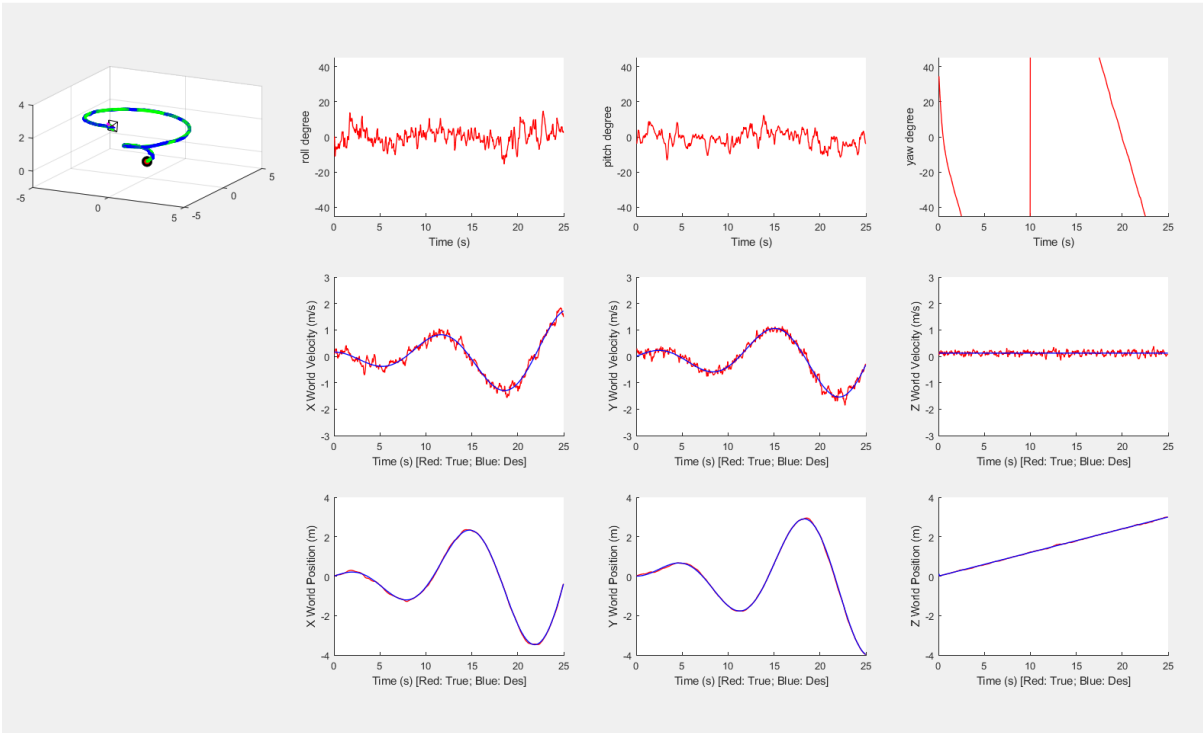
LIANG, Yuchen Eric (20582717)

## Plot by simulator

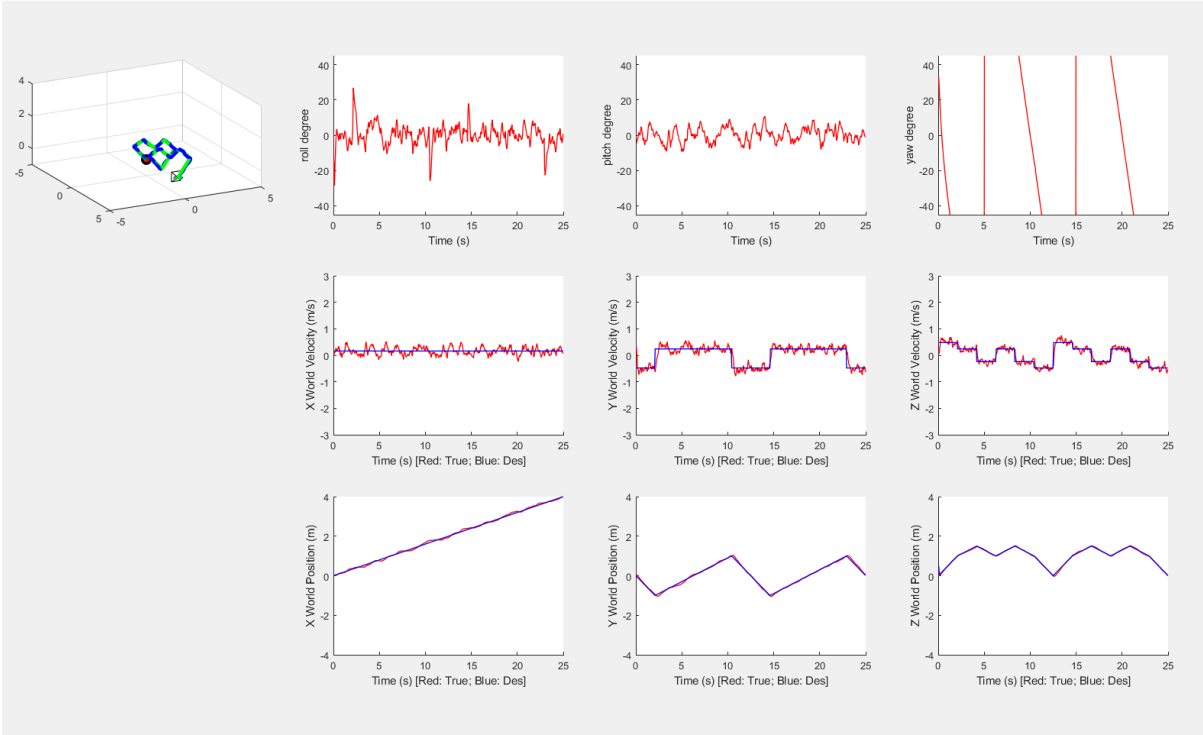
### Hovering



### Circle trajectory



Heart trajectory



Controller statistics

PID parameters

	x	y	z	roll	pitch	yaw
Kp	8	10	18	2000	2000	2000
Kd	4	6	9	70	70	70

Result analysis

RMS error

RMS error	x	y	z	v_x	v_y	v_z	phi	theta	psi
Hovering	0.0391	0.0285	0.0170	0.1309	0.1070	0.0779	0.0368	0.0337	0.0611
Circle	0.0418	0.0349	0.0190	0.1362	0.1119	0.0812	0.0349	0.0373	0.0623
Heart	0.0375	0.0365	0.0204	0.1273	0.1315	0.0909	0.0401	0.0390	0.0620

The result is acceptable though there are some oscillations and also some overshoot. The PID parameters is tuned using the Ziegler-Nichols method. Given more time and patience, the parameters should be able to achieve better performance.