

Week4

a.

We completed all tasks on class:

- We updated all functions.
- We finished D controller (with $\text{neutral_power} = 1300$ and $K_d = 100$)
- We finished PD controller ($K_p = 1.8$, $K_d = 100$)
- We finished PID controller ($K_p = 3.6$, $K_d = 200$, $K_i = 0.005$)

b.

1) What went well:

- We finished P/PD/PID controller easily.

2) What did not go well:

- We could not tune PD to a good balance, and spent a lot of time on tuning. Finally, we found the reason was noise. We adjusted the complementary filter $A = 0.002$ (from $A = 0.02$), and then tuned it to a good balance easily.

- We found that when just used PD controller, the location of battery would affect the balance position.

3) What will you change for next class.

- Read every tip carefully.

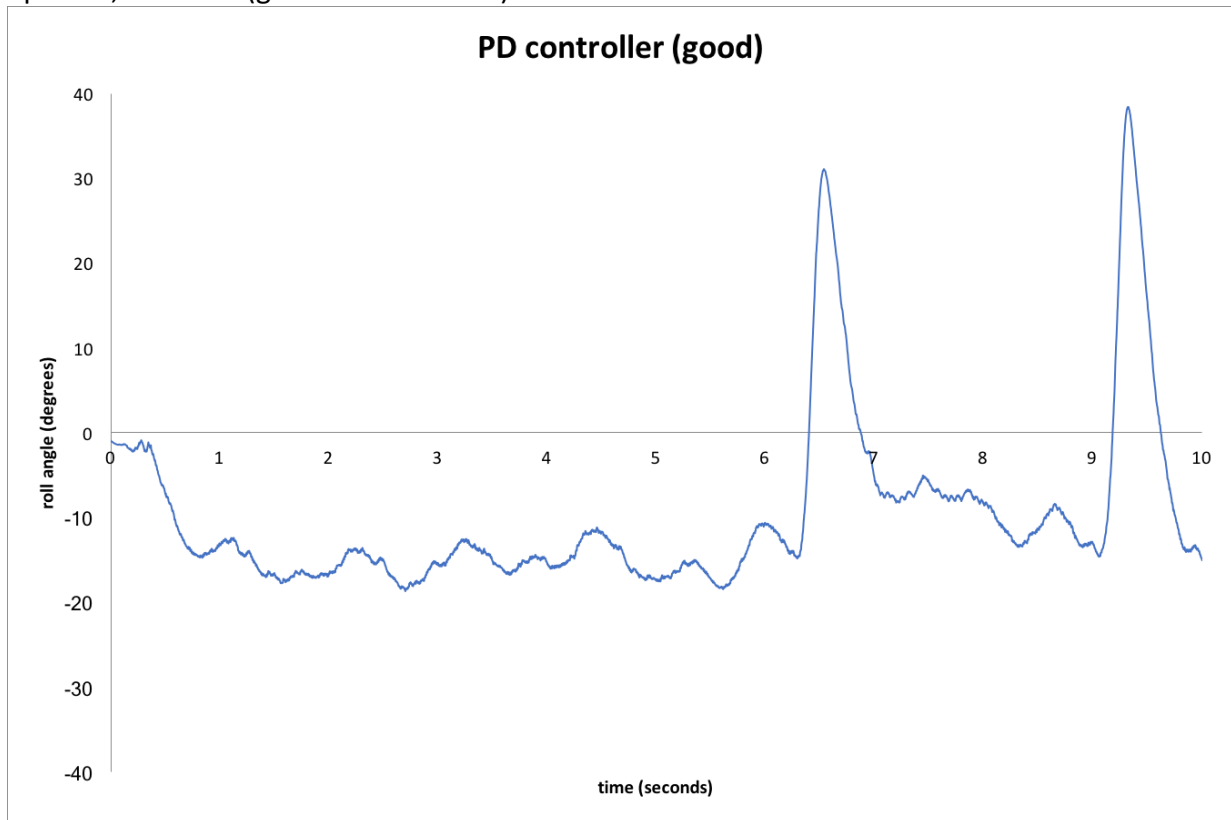
c. - Eric 50%

- Hong 50%

We learn and do everything together, and contribute evenly to our job.

d. Attached codes

$K_p = 1.8$, $K_d = 100$ (good PD controller)



$K_p = 3$, $K_d = 100$ (bad PD controller)

