

# PID Controller

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Describe the effect each of the P, I, D components had in your implementation

- P component: Increasing  $K_p$  will cause the system to react more quickly, but also to overshoot more.
- I component: This component helps reduce steady-state error, but makes the system more oscillatory.
- D component: This component adds damping to the system, thereby decreasing overshoot.

Describe how the final hyperparameters were chosen.

Based on the  $K_p$ ,  $K_i$ , and  $K_d$  values from the lecture, I manually tweaked the hyperparameters. Especially, the  $K_i$  value is kept small to reduce settling time and overshoot.