Postlab Questions

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1. What gain parameters did you end up using for your PI controller? • Describe the response of the system to speed changes.

During the process, I encountered an issue with the controller on my Mac. I was unable to directly modify parameters and see results on the graph. However, thanks to the collaborative effort with my partner, who had the necessary hardware, I was were able to suggest and change values for the parameters used in the project.

When choosing K_p we choose a value of 15-30, and were able to see that as the K_i value was decreasing. The error would take a longer period of time to get to the target RPM. If we were to increase the K_i value we would see that the time it would take to reduce the error would be a shorter amount of time, however, if the K_i was set to too high of a value the error would overshoot and have to take additional time to correct. Normally this would be corrected by a derivative term.

if K_p was small the error would take a longer time for it to be reduced to the target RPM. So with these observations.

We choose

$K_i = 20$

$K_p = 15$

And saw improvement.

Just for constancy and mention the target RPM values were in a range of 0 to 80 as we adjusted the parameters above.