Chase Griswold

ECE 6780-003

TA: Bailey Martin

Prelab 07 Questions

7.2 — Postlab 7. Please answer the following questions about the motor control lab, and submit your source code.

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

To reduce the damping, I used a Ki = 2 and a Kp = 5. This slowed the PWM duty-cycle to have a more linear relationship with the increase/decrease of the motor RPM, giving it more of a ramp-up (increase) or discharge (decrease) characteristic that did not yield the drastic PWM spike observed before optimization. It also allowed the motor RPM increase and decrease to behave in a much more stable manner, since the reduction in the impulse-like change of the PWM is likely associated with less ripple and hence fewer extreme electrical changes make their way to the motor.

Basically, everything smoothed out a lot, and there were less instances of variation in the RPM as it increased or decreased based on the commands.