demoOne.m

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This script compares the simulated close and open loops with the experimental versions

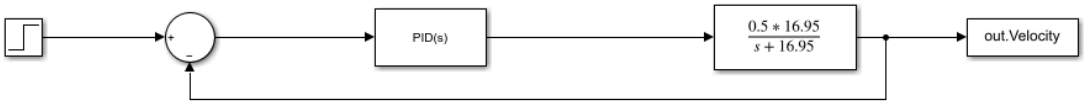
required file: tuningD1.slx

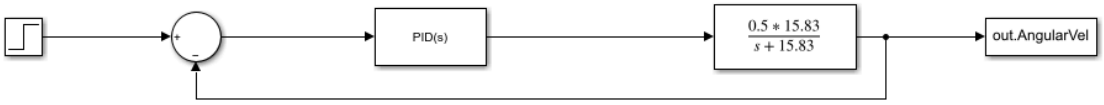
Run a Simulation

This simulation applies a step input into a transfer function and the motor model in order to compare their open and closed loop responses.

open the block diagram so it appears in the documentation when published. Make sure the block diagram is closed before running the publish function

```
open_system('tuningD1')
%
% run the simulation
%
out=sim('tuningD1');
```



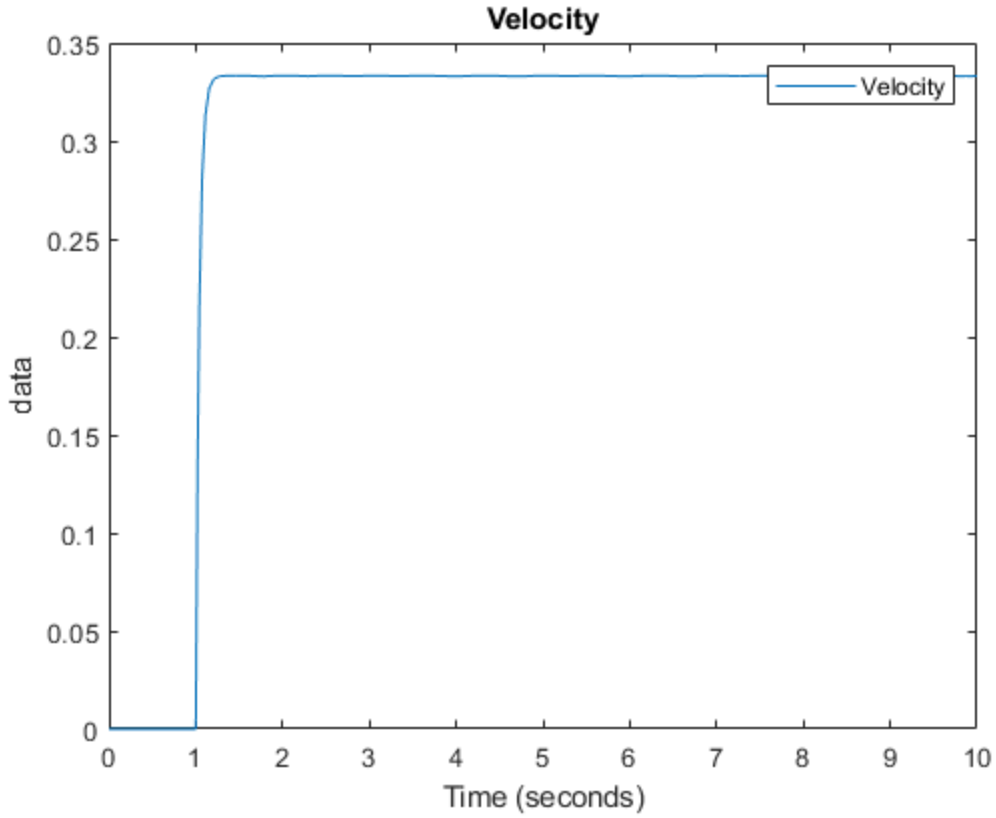


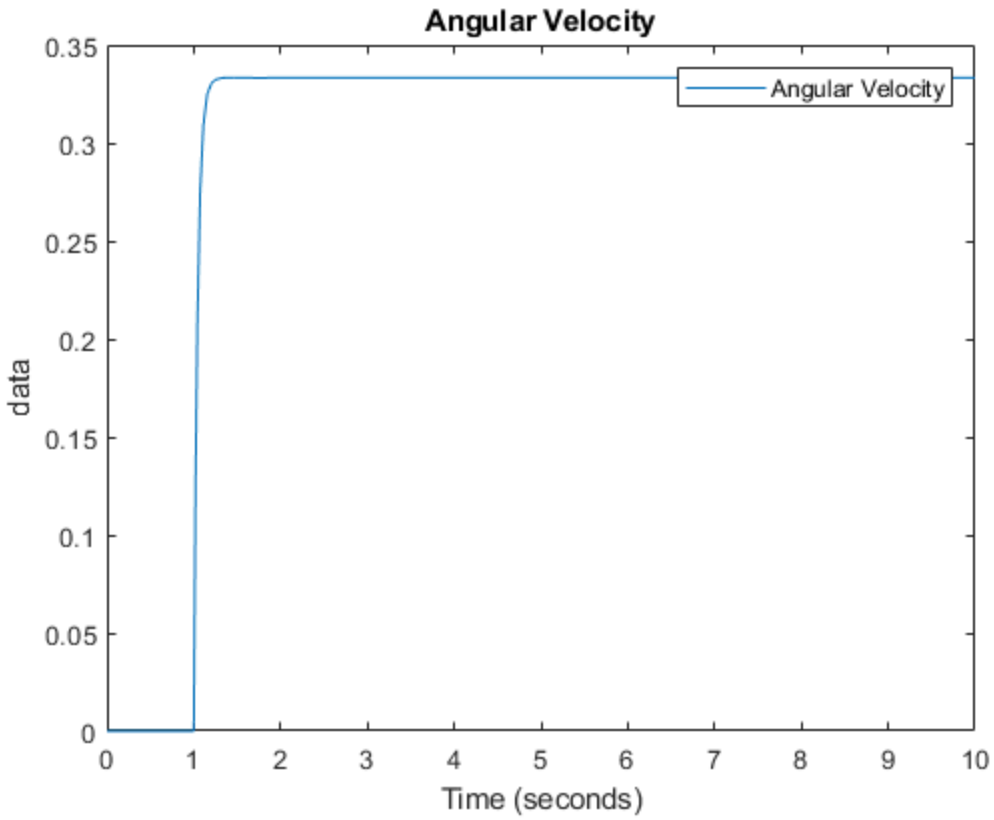
A Plot of the results

This was the tuning document for the two controllers implemented in the arduino. One was for the angular error, the other for the distance tracking. Both of the transfer functions were based on experiments we ran with the motor. Both controllers ended up basically being proportional controllers.

```
figure
plot(out.Velocity)
legend('Velocity')
title('Velocity')
```

```
figure
plot(out.AngularVel)
legend('Angular Velocity')
title('Angular Velocity')
```





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