Chapter 1. Controller Settings

Table 1.1. cs

Field	Value
a	< arduino>
servoPin	D9
s	< arduinoio.Servo>
sensorPin1	A0
sensorPin2	A1
interp	interpTable: [11×3 table]
bulb	red: 'D6' green: 'D5' blue: 'D3'
Ts	0.0300
n	1
n_startup	10
weightNewPos	0.5000
weightOldPos	0.5000
weightNewInput	0.3000
weightOldInput	0.7000
weightNewVel	0.3500
weightOldVel	0.6500
type	RL
kp	0.0021
kd	0.0021
nTrials	25
interv	200
MaxInput	0.0400
balanced	0.4600
max	0.5000
min	0.4200
tolerance	0.0048
posTol	1
velTol	200
dataPoints	4

Chapter 2. Diagnostic Variables

Table 2.1. diagnostics

Field	Value
trialData	diagnostics.trialData [2]
settings	diagnostics.settings [2]
efficiency	diagnostics.efficiency [2]

Table 2.2. diagnostics [2].trialData

Field	Value
AvgOvershoot	-27.2390
overshoot_time	2.0747
PO	129.7097
AvgRebound	19.3983
rebound_time	4.2638
P_rebound	-71.2150
inactiveControlPercentage	0.0050
meanLastPosition	-22.7835
SDLastPosition	6.2899

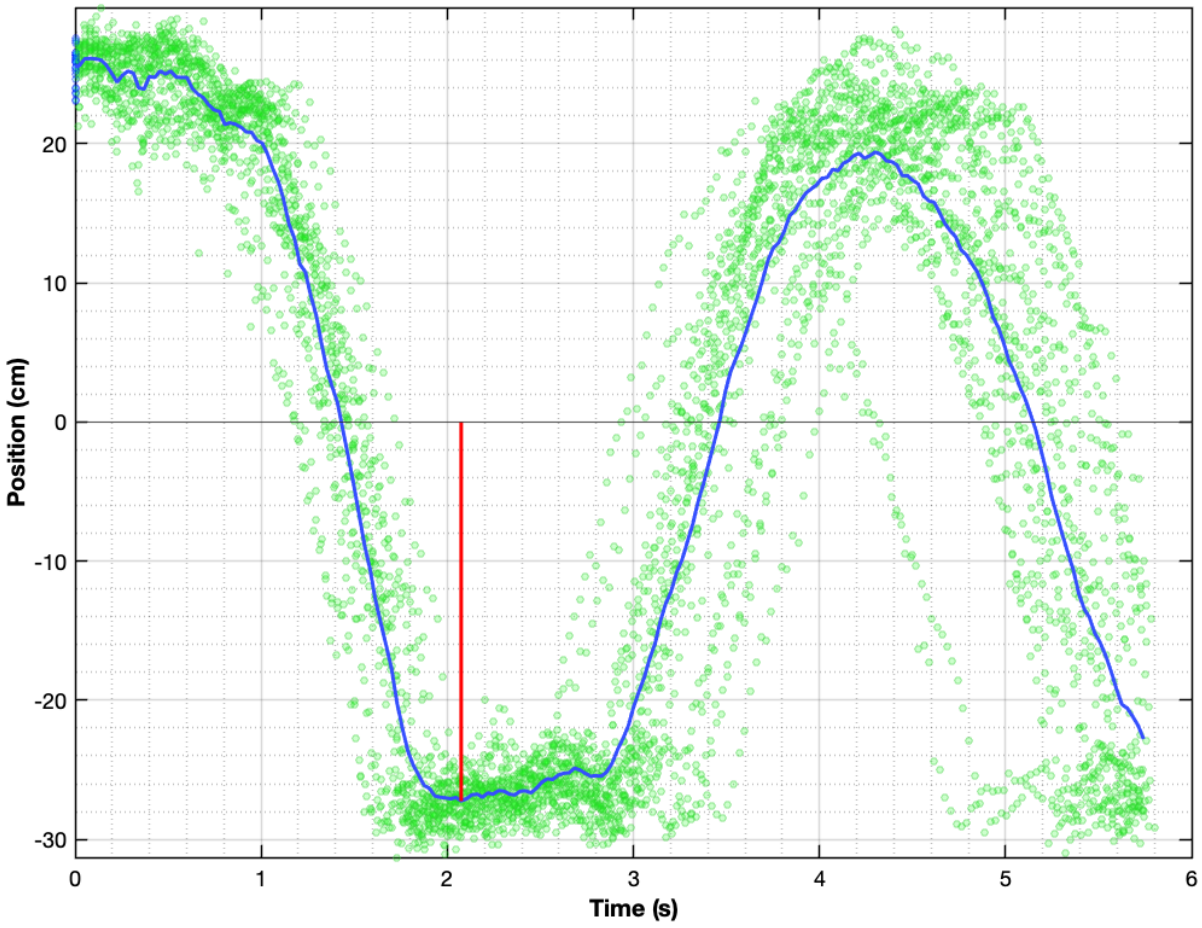
Table 2.3. diagnostics [2].settings

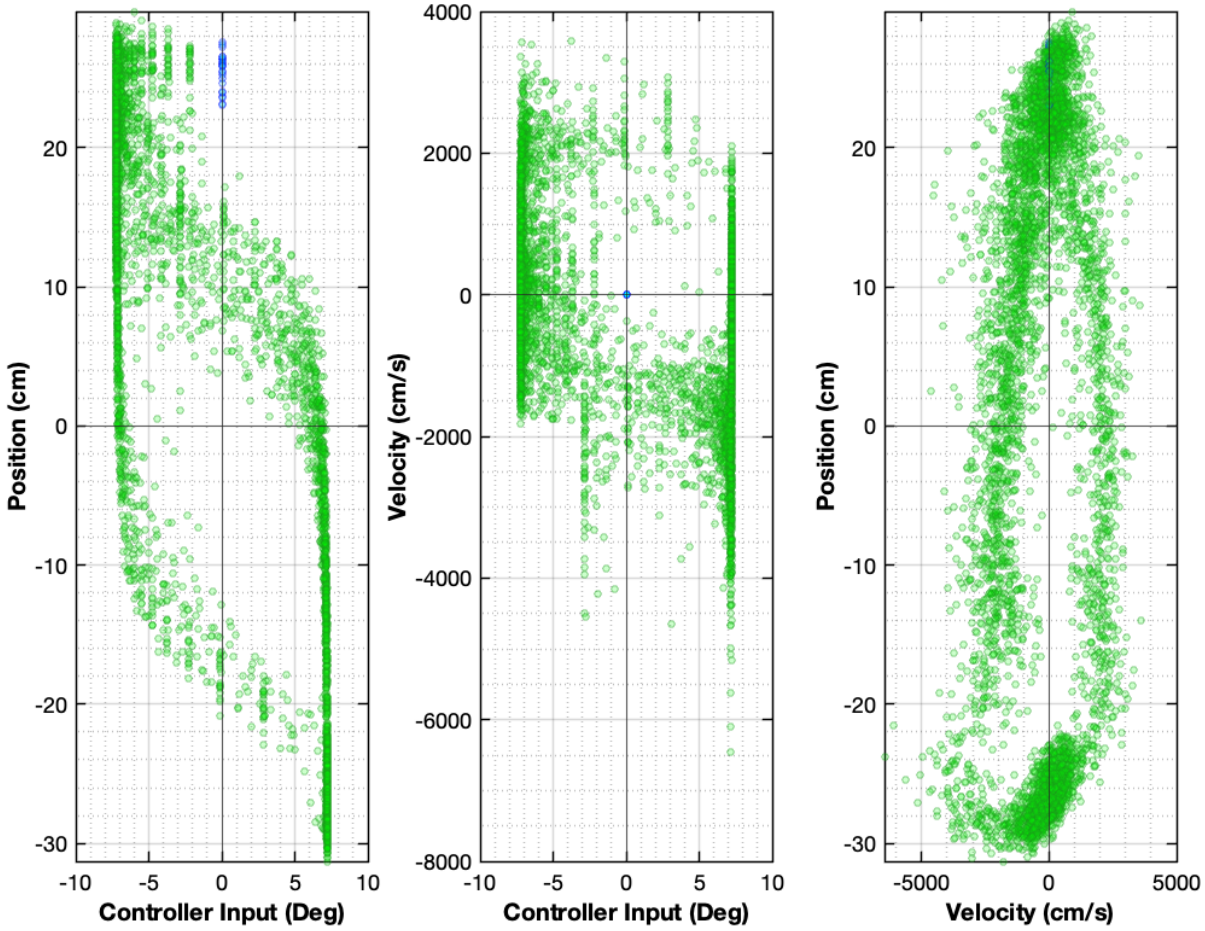
Field	Value
kp	0.0021
kd	0.0021
intervals	200
n_sample	1
maxInput	0.5000
minInput	0.4200
nTrials	25

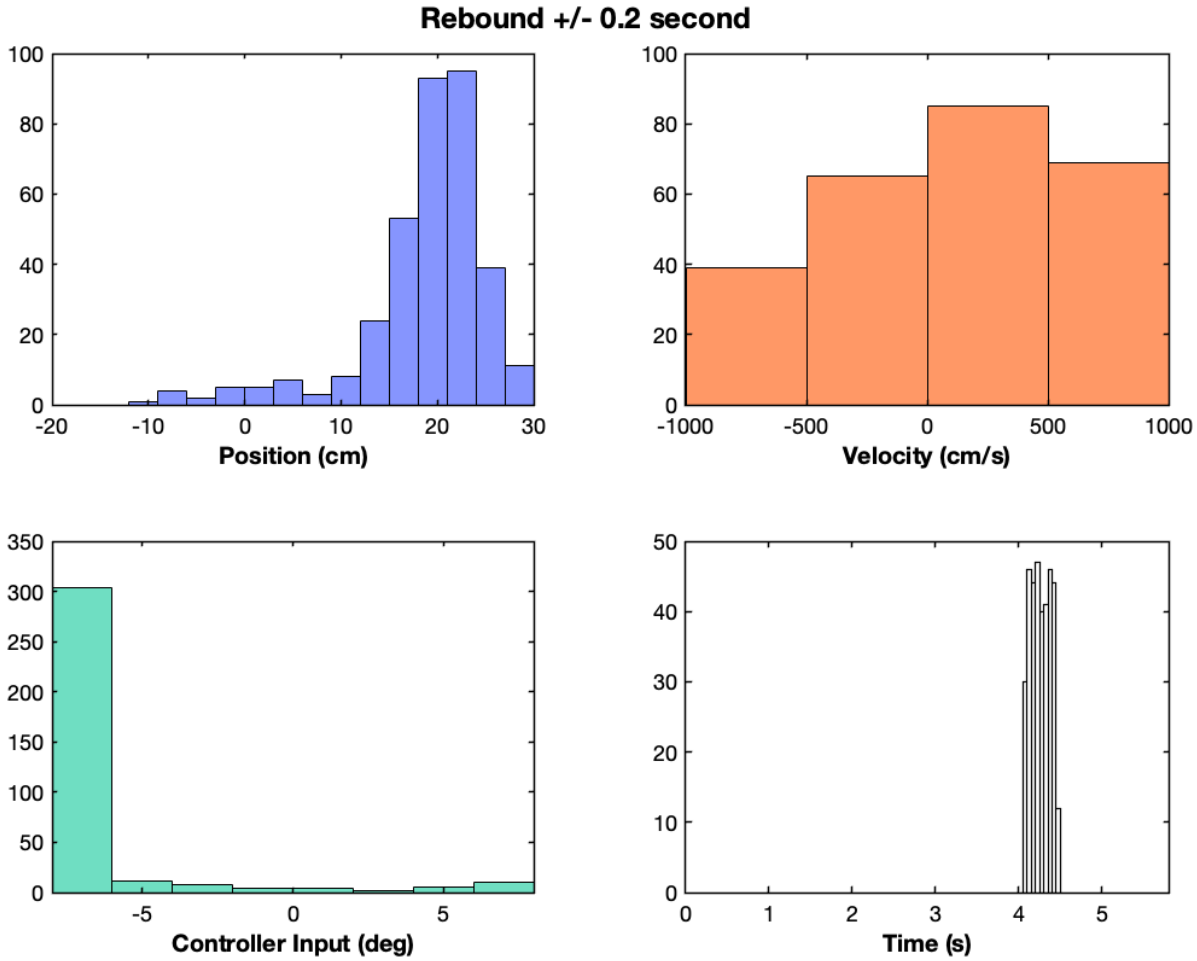
Table 2.4. diagnostics [2].efficiency

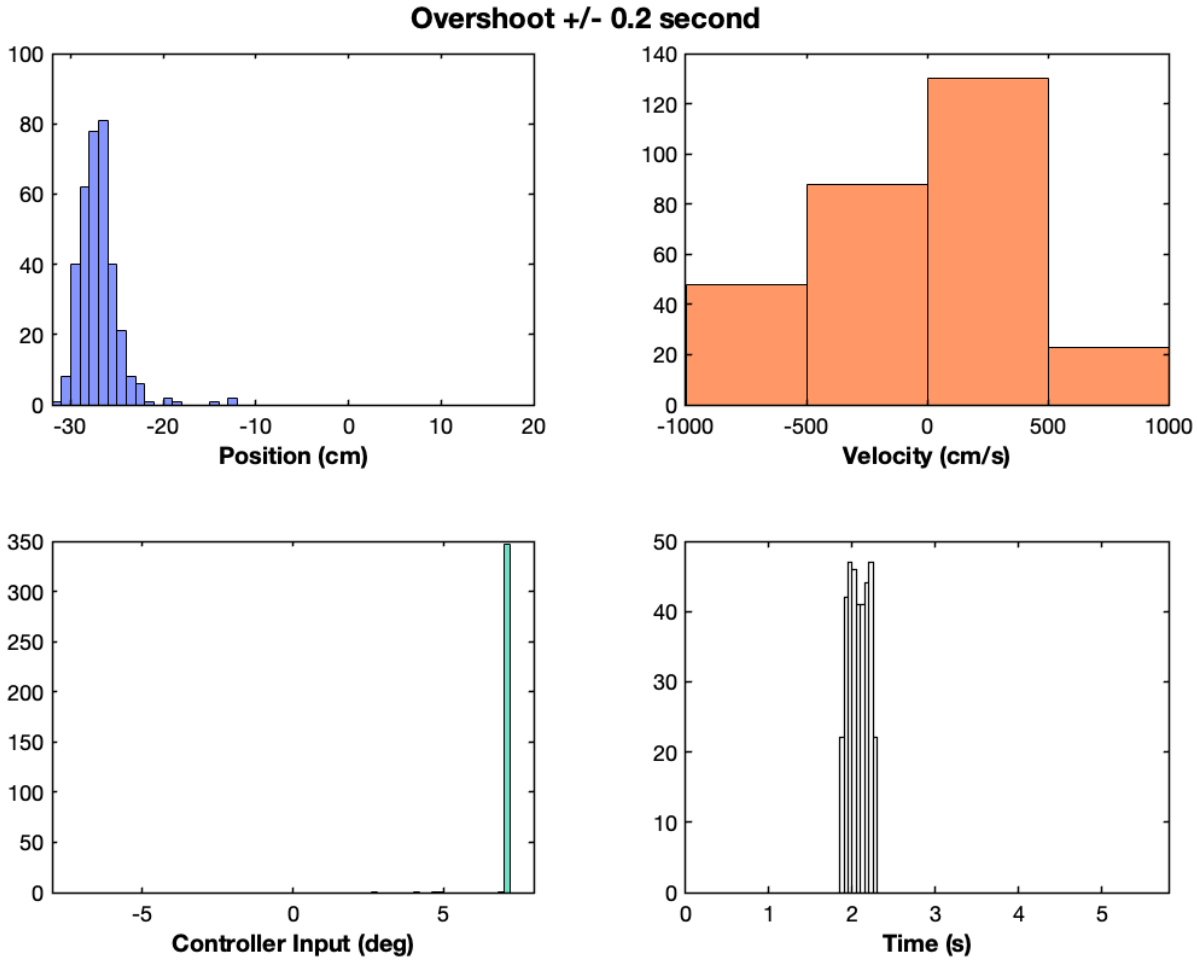
Field	Value
AvgLoopTime	0.0287
AvgLoopFrequency	34.8316

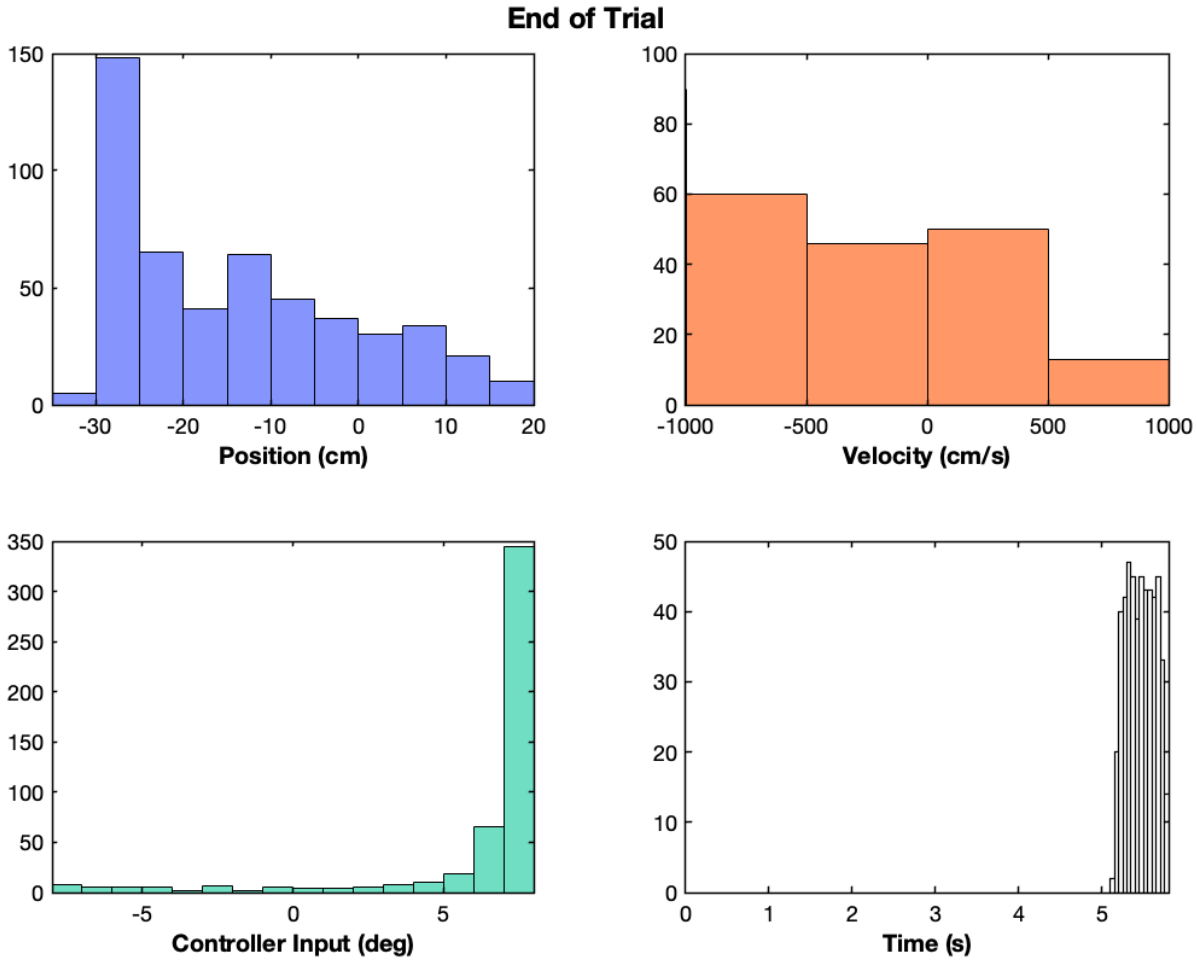
Chapter 3. Figures

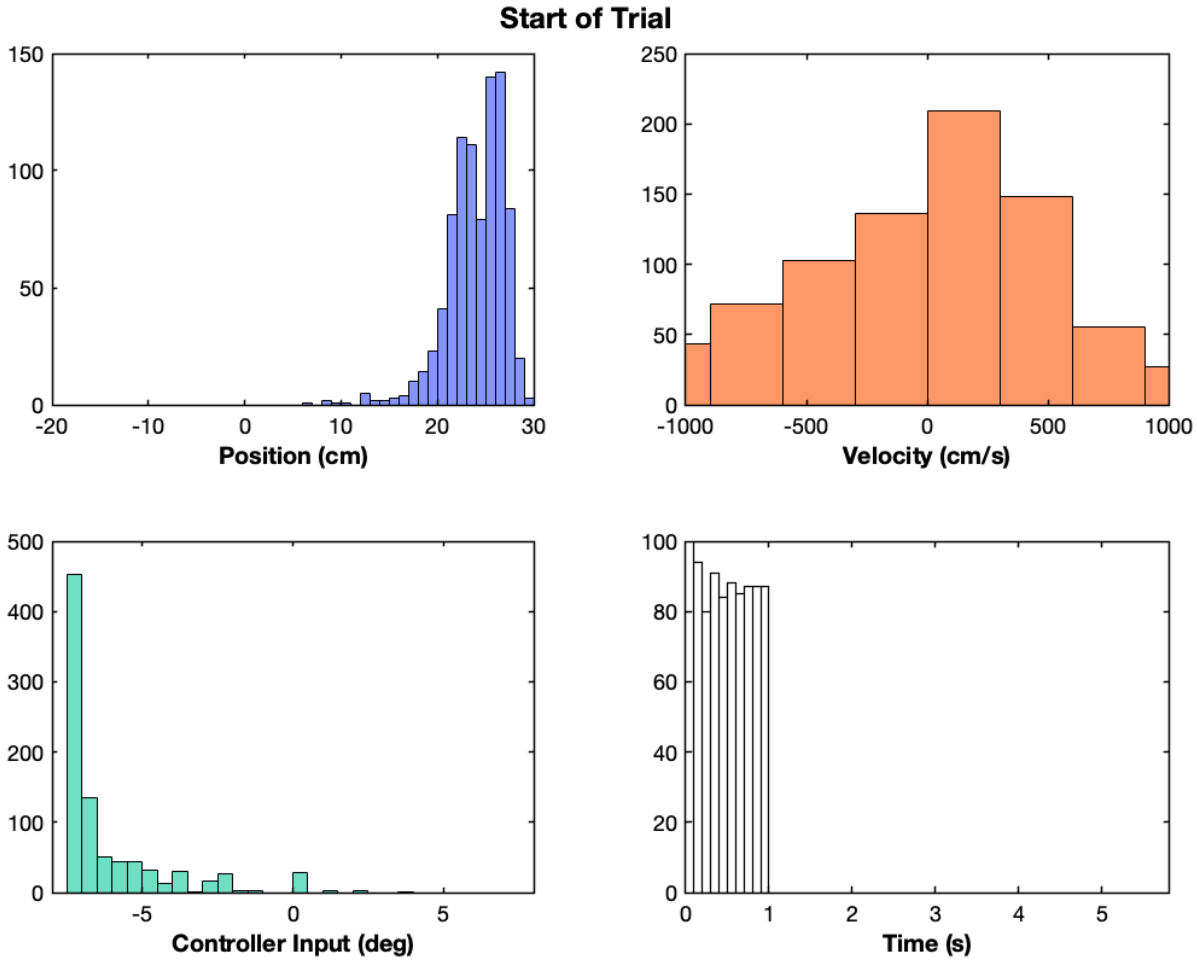


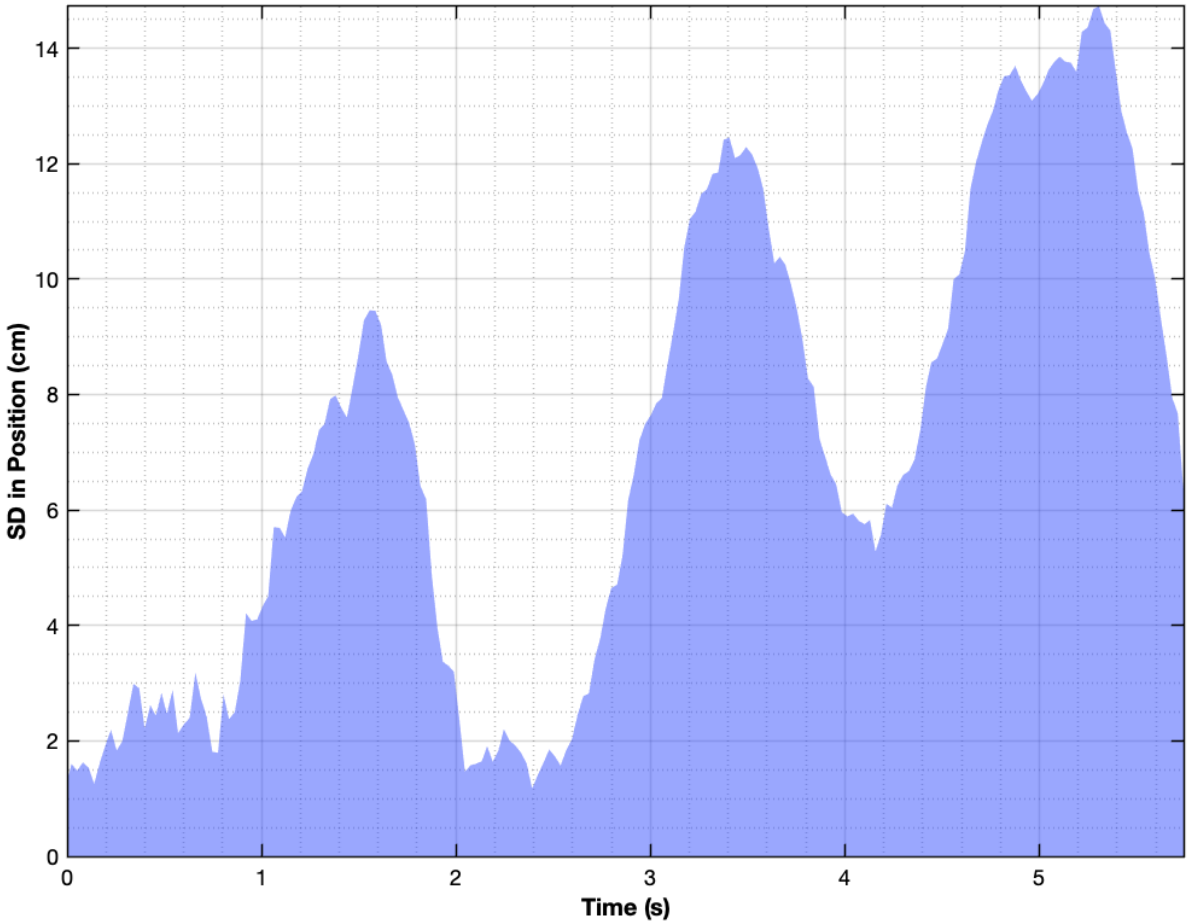

Position (cm)
Controller Input (Deg)
Velocity (cm/s)
Controller Input (Deg)
Position (cm)
Velocity (cm/s)

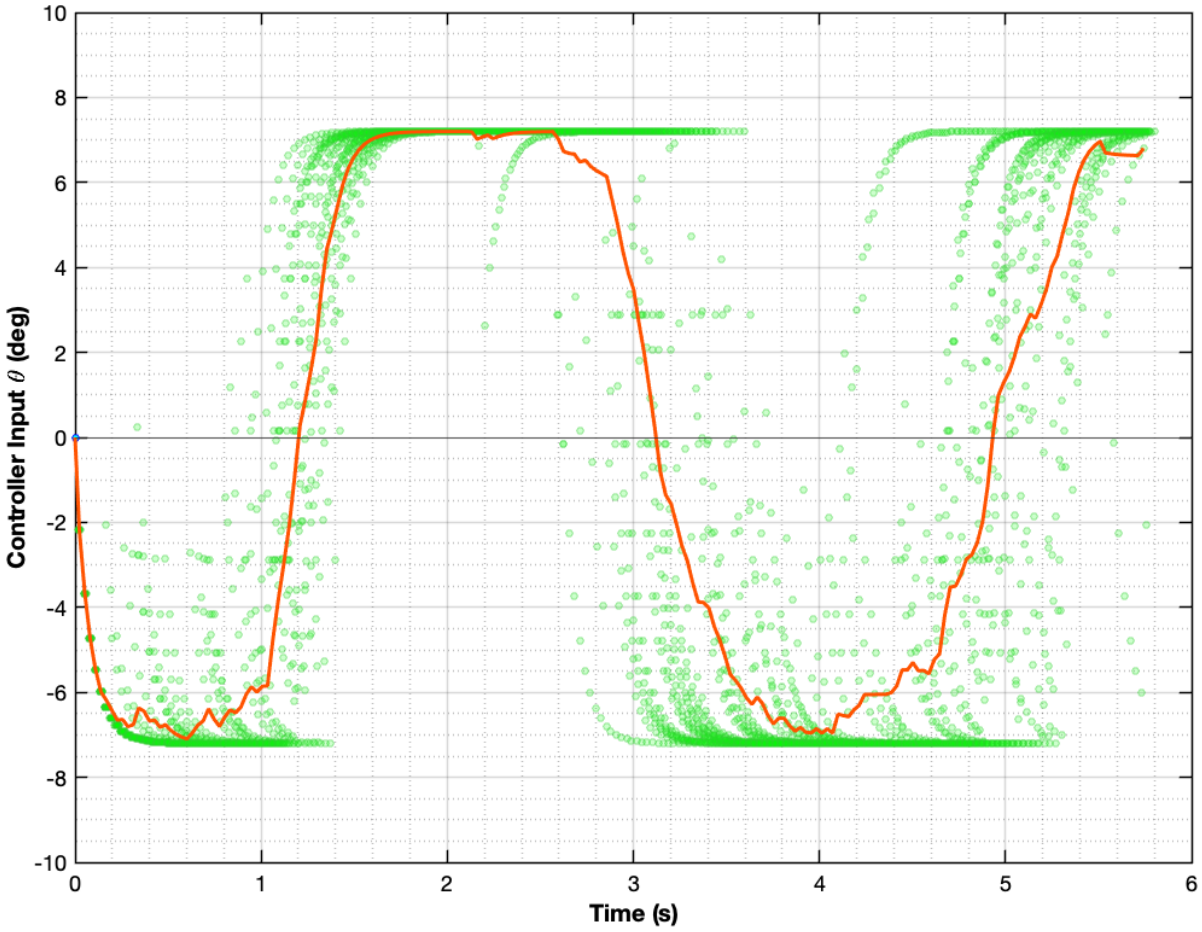

Rebound +/- 0.2 second
Position (cm)
Velocity (cm/s)
Controller Input (deg)
Time (s)

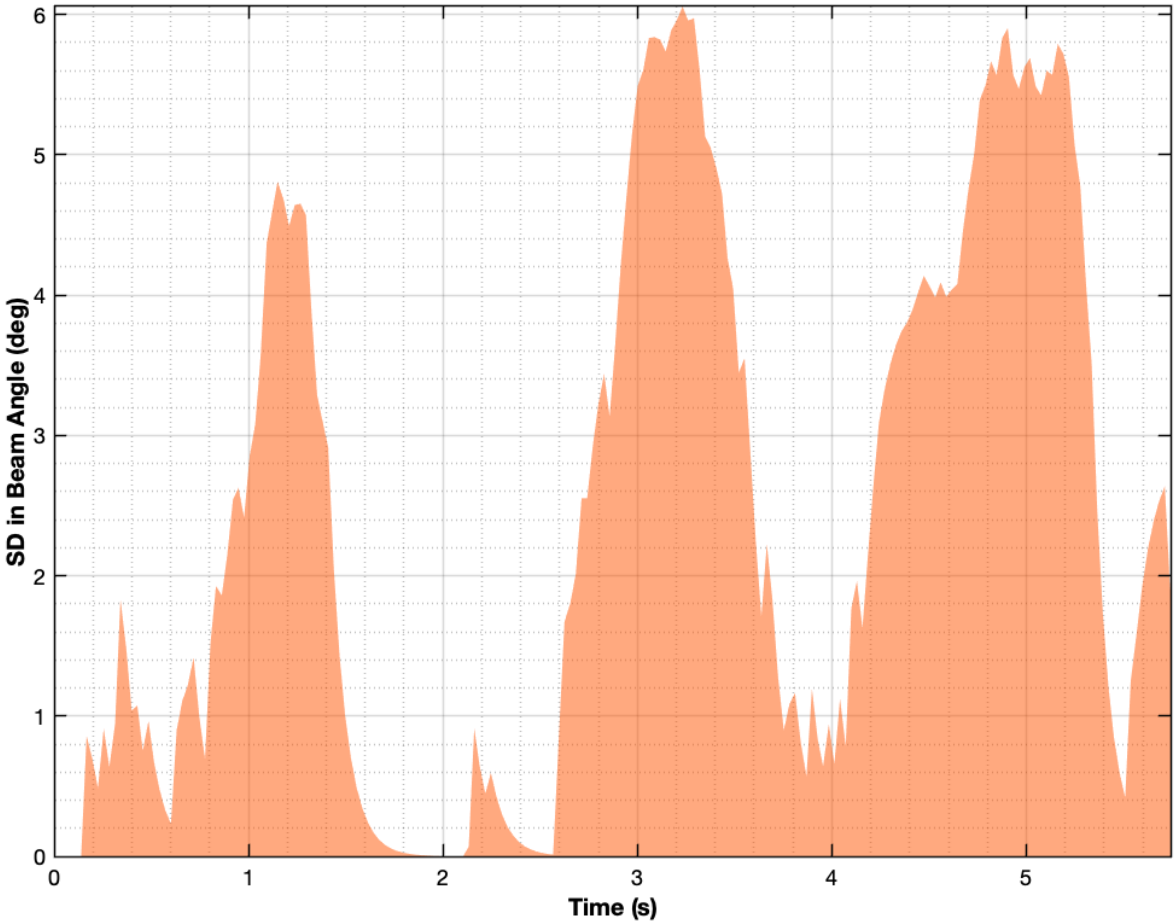

Overshoot +/- 0.2 second
Position (cm)
Velocity (cm/s)
Controller Input (deg)
Time (s)

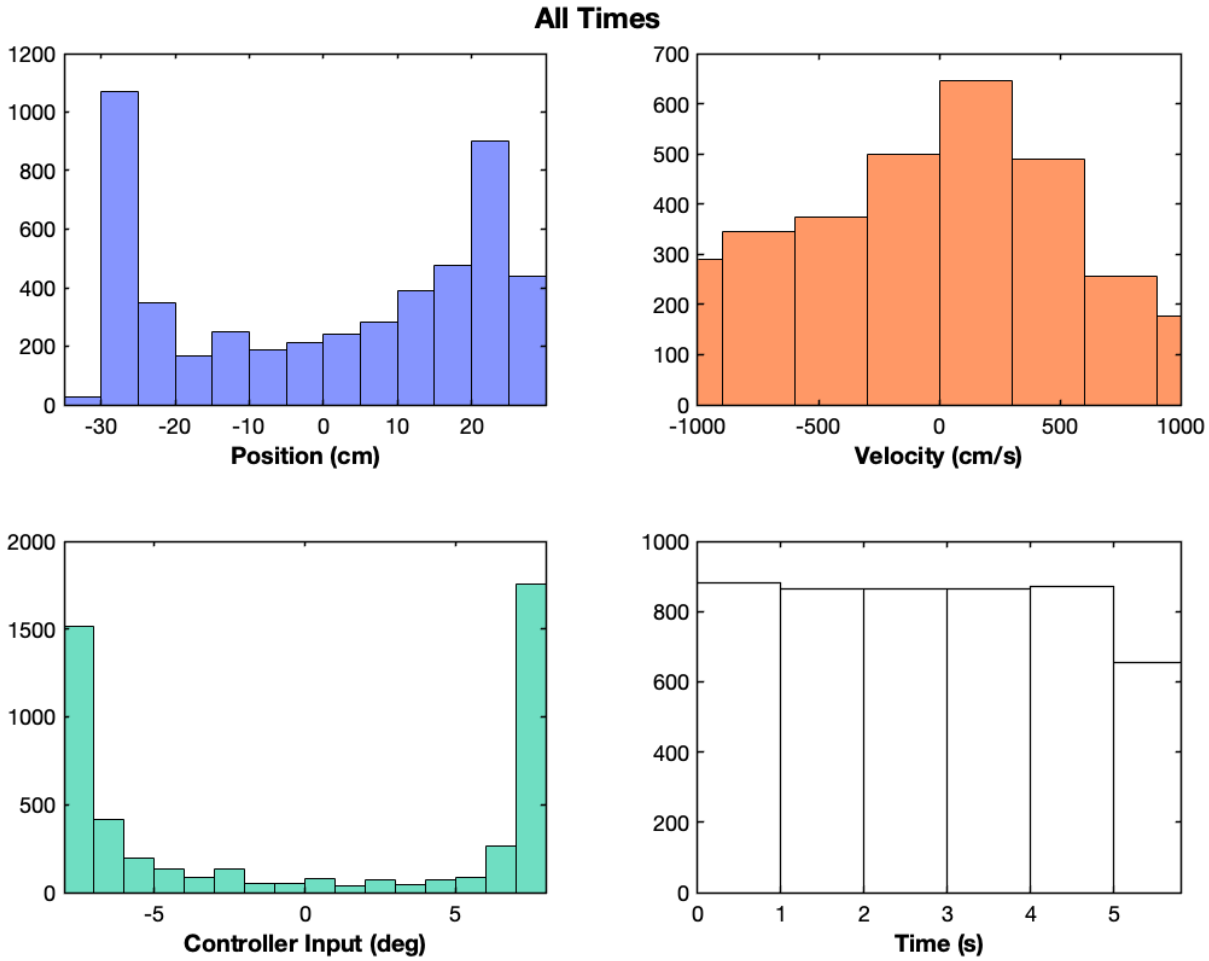

End of Trial
Position (cm)
Velocity (cm/s)
Controller Input (deg)
Time (s)


Start of Trial
Position (cm)
Velocity (cm/s)
Controller Input (deg)
Time (s)


SD in Position (cm)
Time (s)
0
2
4
6
8
10
12
14
0
1
2
3
4
5


Controller Input θ (deg)
Time (s)
10
8
6
4
2
0
-2
-4
-6
-8
-10
0
1
2
3
4
5
6


SD in Beam Angle (deg)
Time (s)
0
1
2
3
4
5
6


All Times
Position (cm)
Velocity (cm/s)
Controller Input (deg)
Time (s)