

Control System Laboratory Report

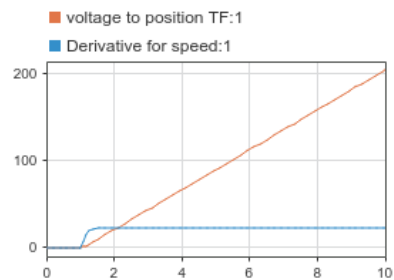
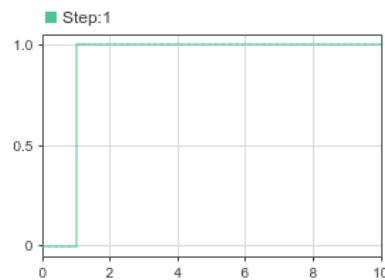
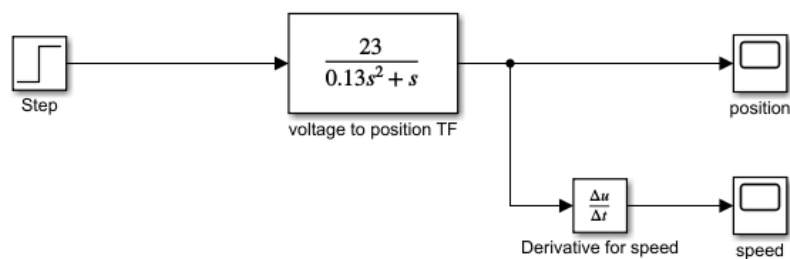
Name and ID no. of the Student:

ANANTHA SAI SATWIK VYSYARAJU , 2019A3PS1323H

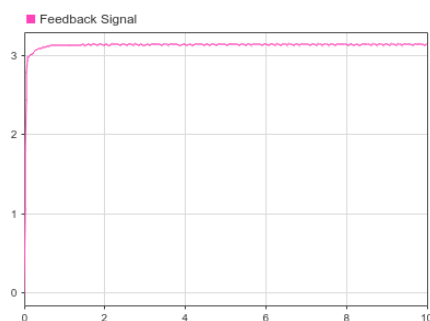
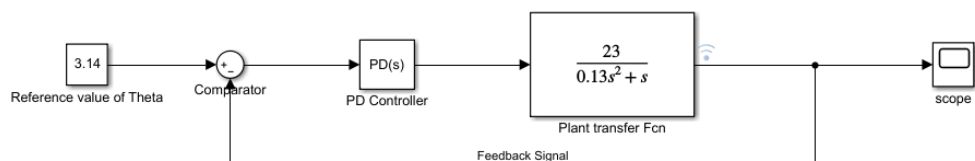
Title of the Experiment: BALANCE CONTROL

Model/Simulation:

9-A:

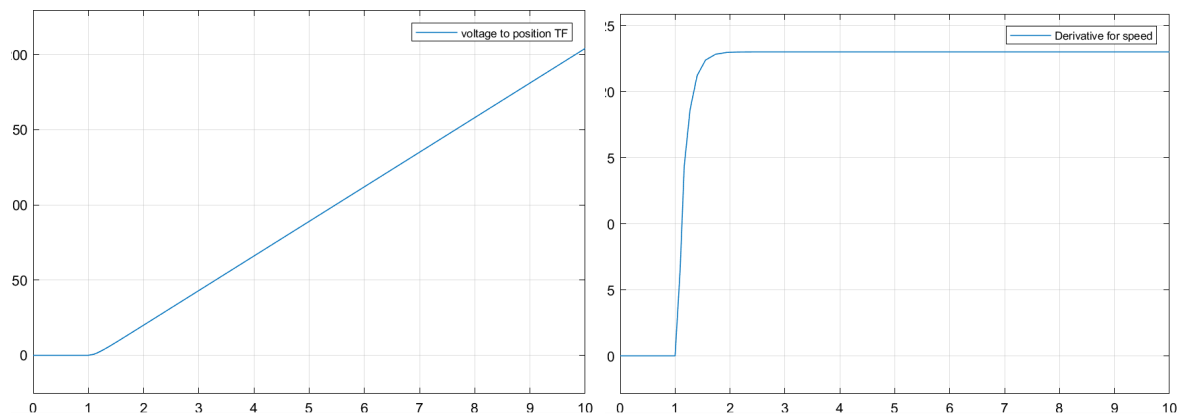


9-B:

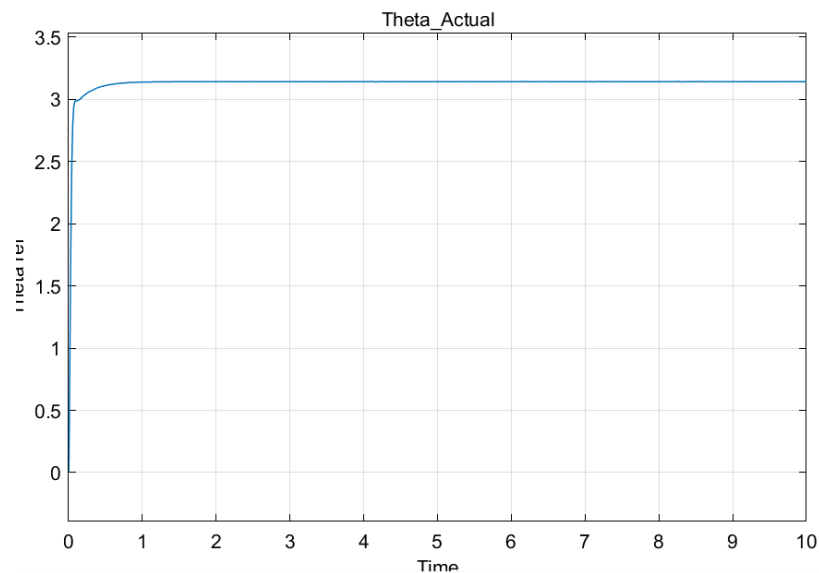


Results:

9-A:



9-B:



Conclusive remarks:

Given using the servo motor and pendulum can be rotated to any angle. In the experiment given, we have to rotate the pendulum to an angle of 180° into an upright position and to maintain the position of the pendulum stable at the angle of 180° (or 3.14) which can be achieved by using a PD-controller.

We have to tune the PD controller with the given values. Introducing a proportional controller increases the speed of the response of the system at the cost of stability which can be seen by more oscillations on the system. To overcome this and have a constant steady-state error we can use a derivative controller which increases the stability of the system keeping the steady-state error nearly constant. Combining these two we get a PD controller which makes the system response stable.