Control System Laboratory Report

Name and ID no. of the Student:

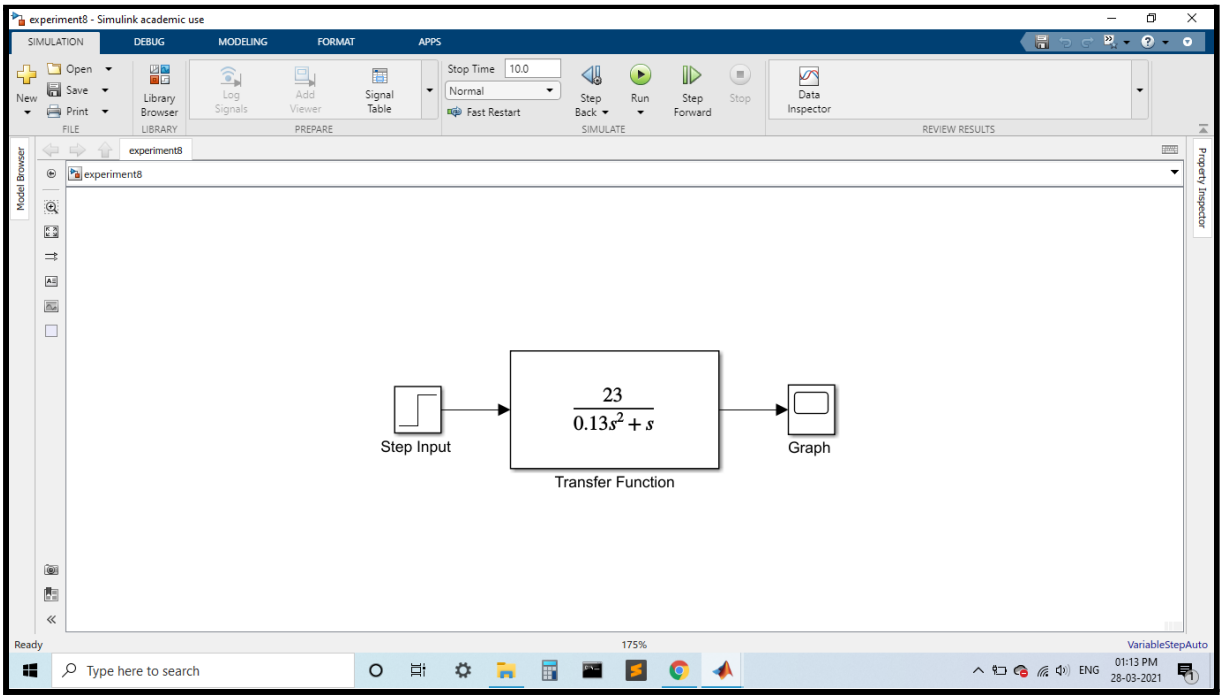
VISHWAS VASUKI GAUTAM, 2019A3PS0443H

Title of the Experiment:

MATLAB Simulink model and stability analysis in simulation environment

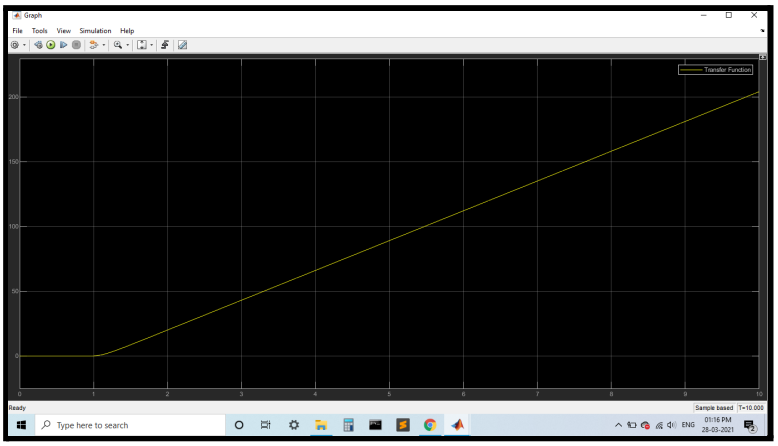
Model/Simulation:

The image below shows the simulink model for the dynamic system:

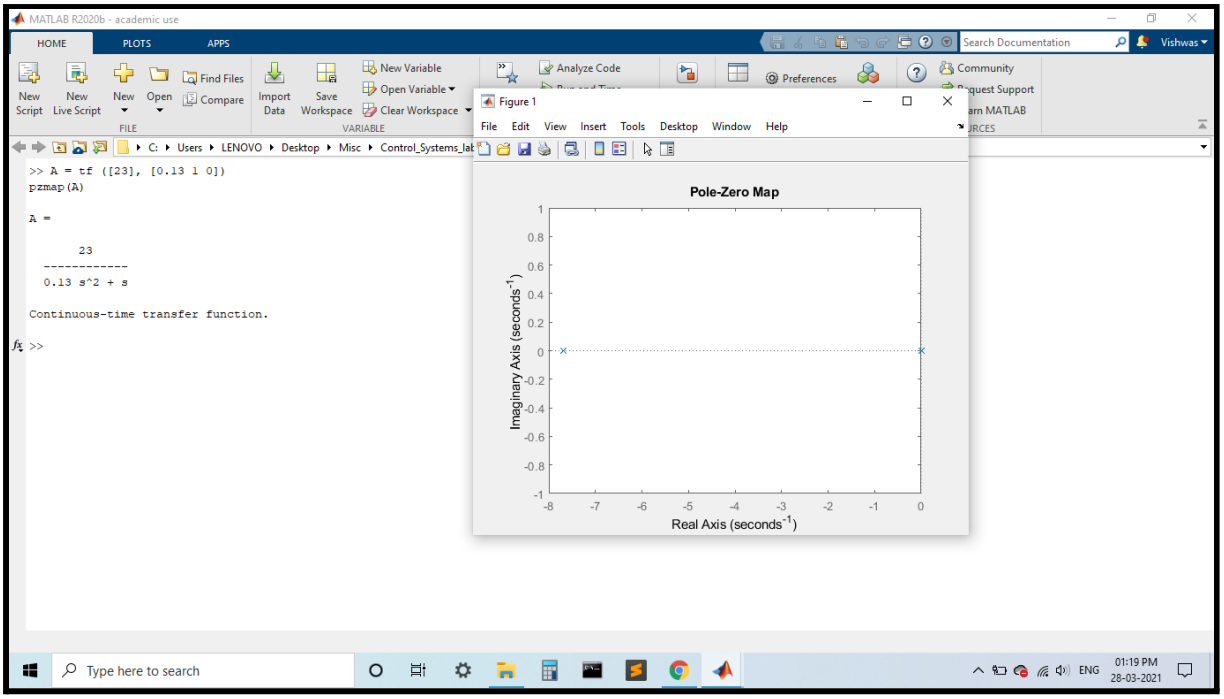


Results:

The above simulink model is run and the results obtained are:



The pole plot result using pzmap() is shown below



Conclusive Remarks:

It can be clearly seen from the results obtained and from the pole plot that the voltage-position servo transfer function is marginally stable, meaning that the system is only stable for certain inputs while it is unstable for other inputs. Since, Marginally stable systems have one pole on the imaginary axis and the other poles in the left-hand side of 'S' plane.

The stability of the system can also be defined using the principle of bounded inputs and bounded outputs. A system is said to be stable if every bounded input yields a bounded output and a system is unstable if any bounded input yields a unbounded output. So here, the system is unstable.