RIS - LAB 2

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LAB 2 – (TASK 1.24)

TASK 1.24

1,2&3)

Following the steps from manual, initializing Tsample = 0.0100 and opening our “motor_params.mat” file, we create the system to be as follows:

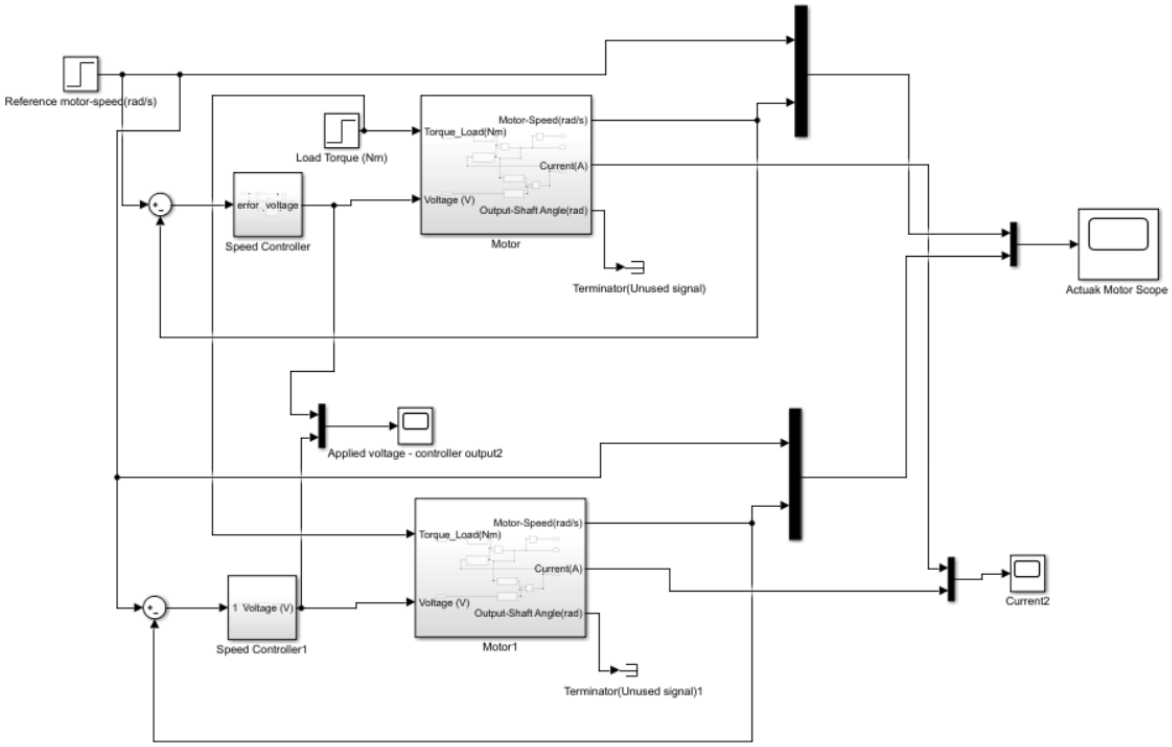

Figure 1.1: System Model

4)

```
Tsample =

    0.0100

>> s= tf('s');
>> Gs= K_P + K_I/s

Gs =

  0.0084 s + 0.15
  ---------------
         s

Continuous-time transfer function.

>> Gz= c2d(Gs, Tsample, 'tustin')

Gz =

  0.00915 z - 0.00765
  -------------------
         z - 1

Sample time: 0.01 seconds
Discrete-time transfer function.
```

Figure 2.1: Matlab result for working on Gz

Changing PID controller subsystem of one of the two controllers to that shown in Fig. 1.16, we get the controller subsystem to be as follows:

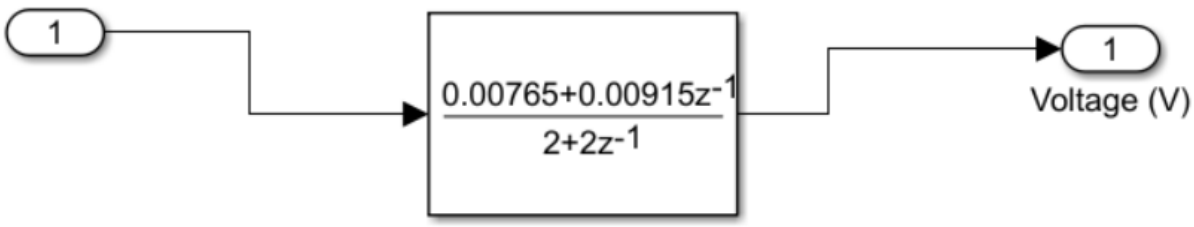

Figure 3.1: Controller Subsystem

5)

Simulating for a step reference-speed-input, we get the voltage (controller's output) scope to be as follows:

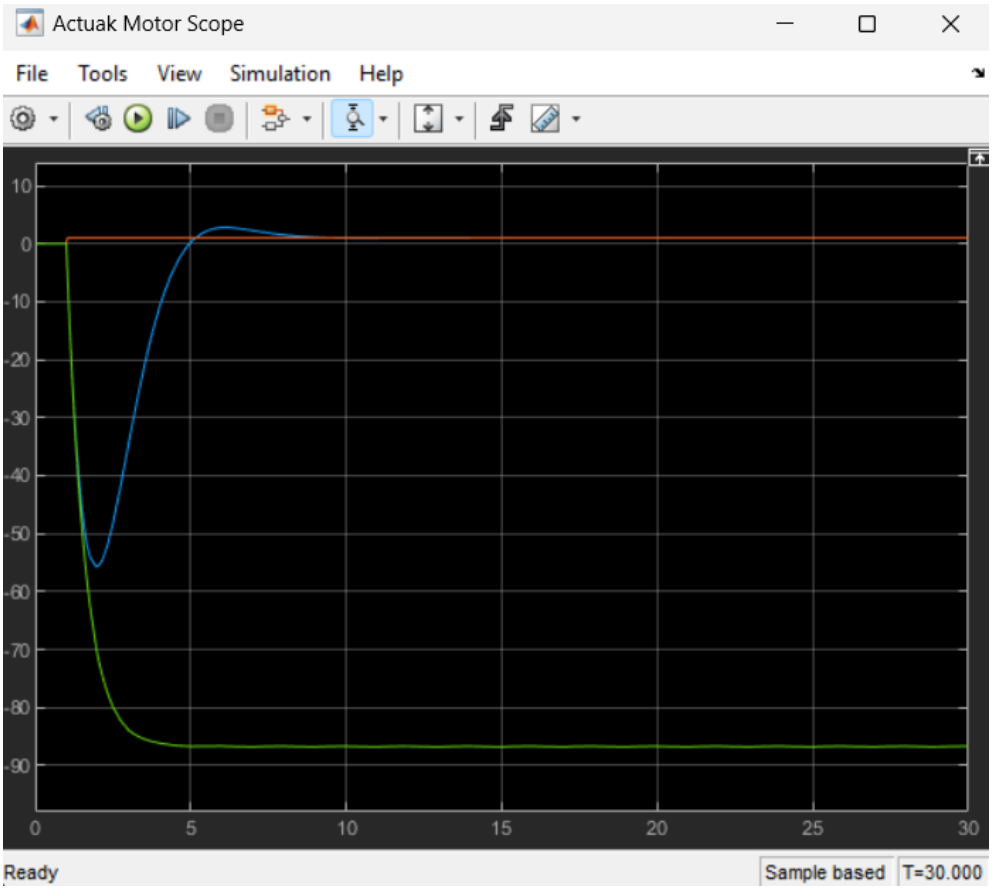

Figure 4.1: Actual Motor Scope

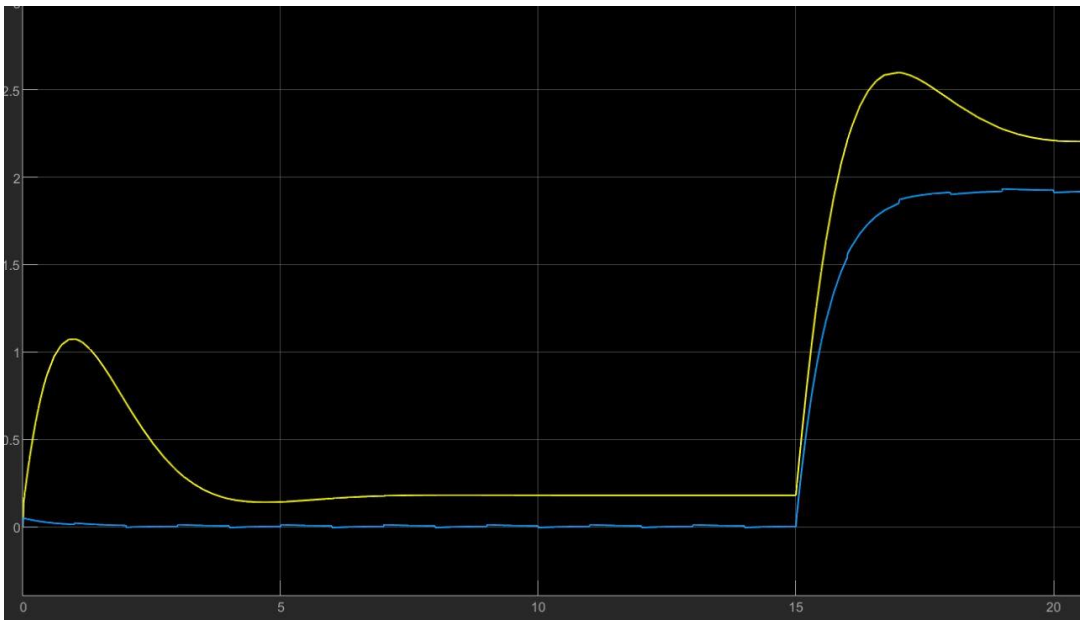

Figure 5.1: Voltage scope at t=0.5s

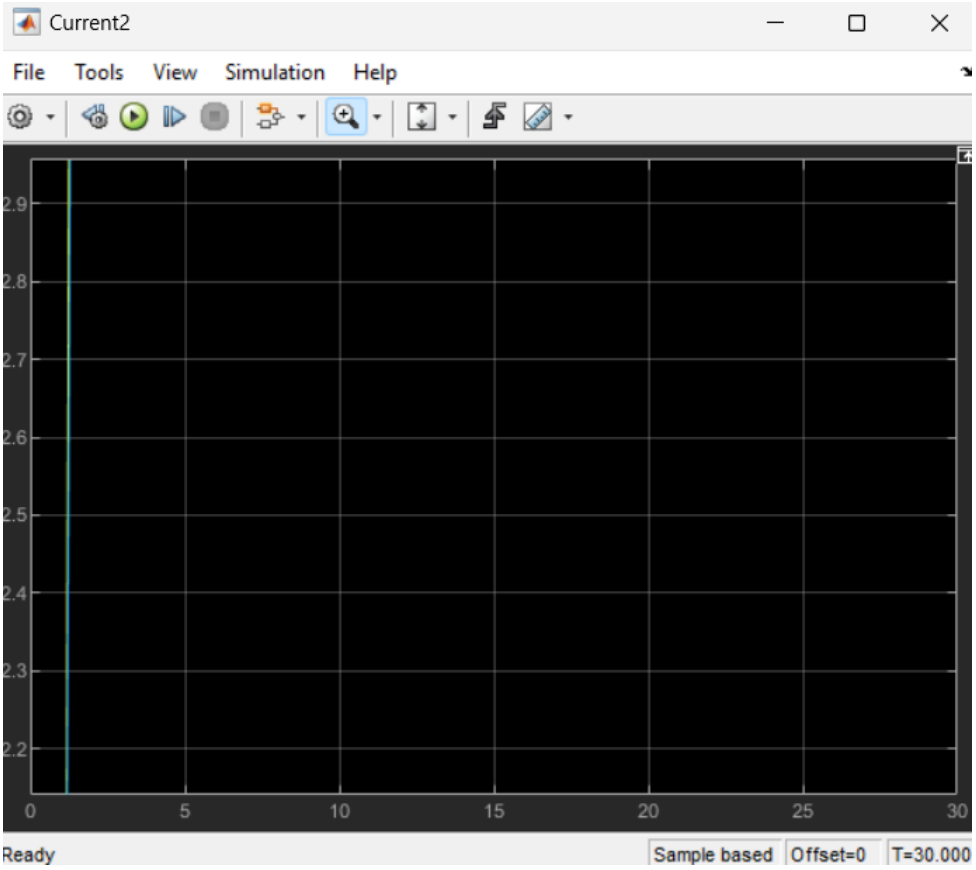

Figure 6.1: Current Scope