Module 13 - Higher Order Systems

ME3050 - Dynamics Modeling and Controls

Mechanical Engineering

Tennessee Technological University

Topic 4 - MATLAB Simulation

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- Control Systems Toolbox
- SS function and Dynamic System Object
- Step, and Impulse Function
- Response Graphs

Control Systems Toolbox

Control System Toolbox provides algorithms and apps for systematically analyzing, designing, and tuning linear control systems. You can specify your system as a transfer function, state-space, zero-pole-gain, or frequency-response model.

Control Systems Toolbox

SS function and Dynamic System Object

Create a dynamic system object the file with the **ss()** function

```
[SYS]=ss(A,B,C,D)
```

- Input 1: A - the name of the file to open
- Input 2: B - direction of access 'r' or 'w'
- Input 3: C - the name of the file to open
- Input 4: D - direction of access 'r' or 'w'
- Output 1: FID - the file identifier

SS function and Dynamic System Object

Step, and Impulse Function

Step, and Impulse Function

Response Graphs

Response Graphs

References

- System Dynamics, Palm III, Third Edition -
- MATLAB-State Space handout - FIX TYPO IN HANDOUT!