ENPM 667 Project 1

Group members:

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Readme:

1. First Download MATLAB and ensure that you download the necessary control system design and logic, Fuzzy Logic Libraries and Packages which contain the Fuzzy Logic Designer.
2. Place all the files in a folder.
3. Run MATLAB and set the folder as your working directory.
4. Run Project1_667_codefile.m.
5. Go to apps and select fuzzy logic designer.
6. Import the project1_pid.fis file.
7. Export the file to the workspace.
8. Then click on Simulink and open the Project1_667_ZeigFuzzy.slx file.
9. Run the Simulink file for about 20seconds.
10. Click on the scopes of the 2nd order functions, to observe response and the parameter variation.

11. Similarly perform the same for the 3rd order and 4th order systems.
12. Once the simulation has run, there will be a new output variable ‘out’ in the workspace.
13. We can check the step-response performance parameters for the Fuzzy tuned PID and Zeigler-Nichols PID, by executing the following commands in the command line:
    a. 2nd order system:
        i. stepinfo(out.Fuzzy_2.Data,out.Fuzzy_2.Time)
        ii. stepinfo(out.Zeig_2.Data,out.Zeig_2.Time)
    b. 3rd order system:
        i. stepinfo(out.Fuzzy_3.Data,out.Fuzzy_3.Time)
        ii. stepinfo(out.Zeig_3.Data,out.Zeig_3.Time)
    c. 4th order system:
        i. stepinfo(out.Fuzzy_4.Data,out.Fuzzy_4.Time)
        ii. stepinfo(out.Zeig_4.Data,out.Zeig_4.Time)