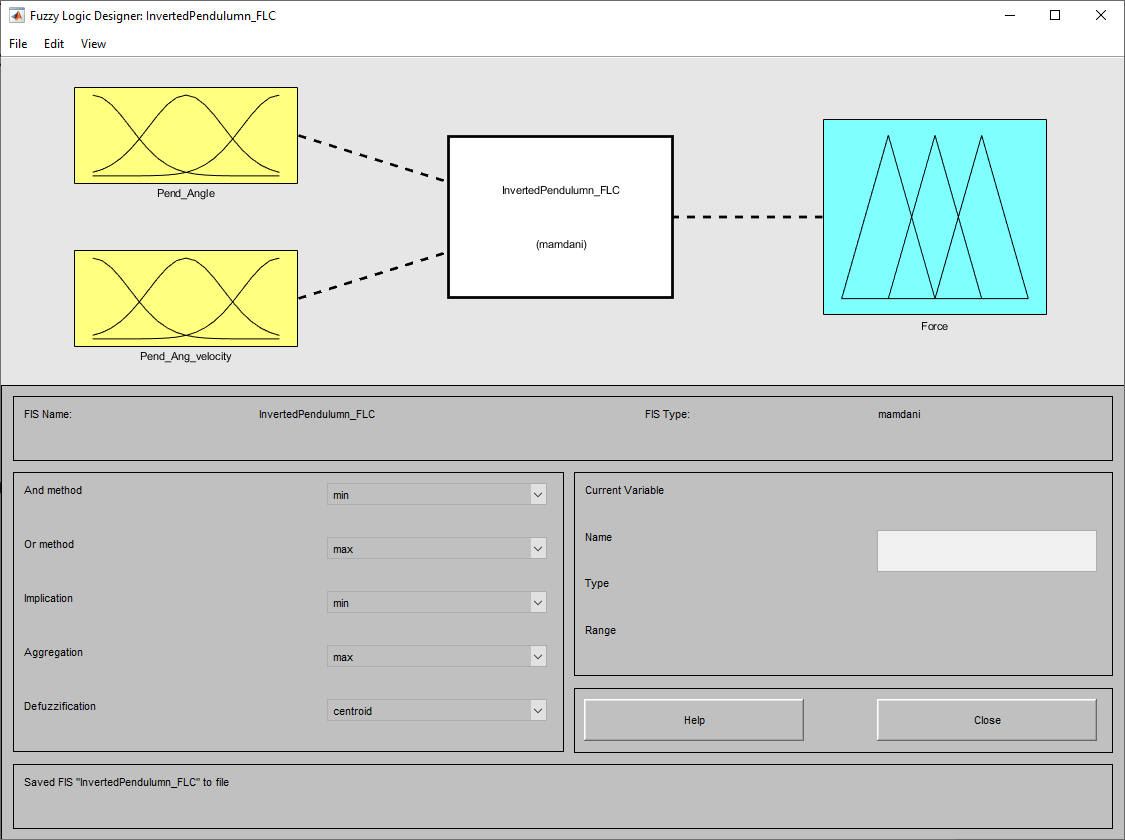
**E. Task5**

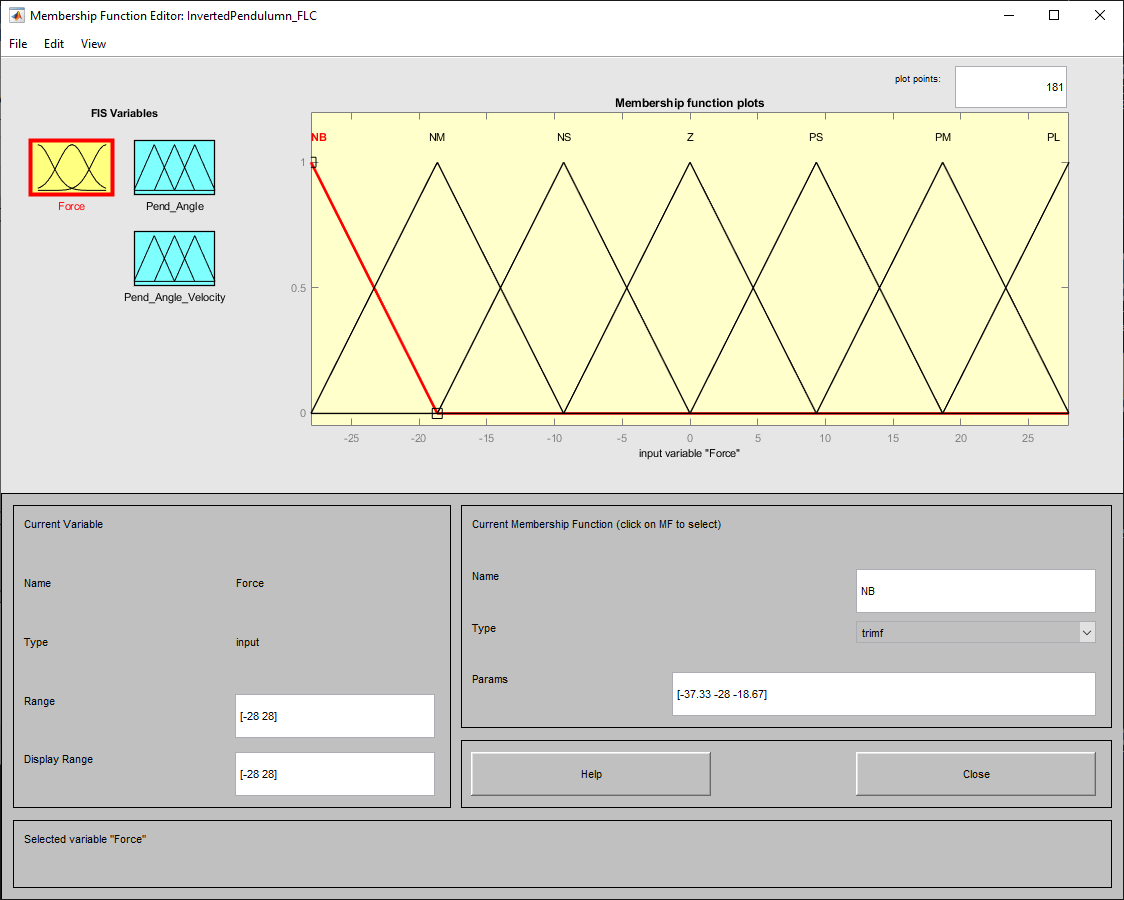
**Fuzzy control (Naren)**

1. Formulate a Fuzzy logic strategy and implement it in Matlab.
2. Explain the design and tuning process followed.
3. Comment on the results.
4. Provide the printout the Fuzzy design.
5. Compare and discuss the results with respect to task 4.

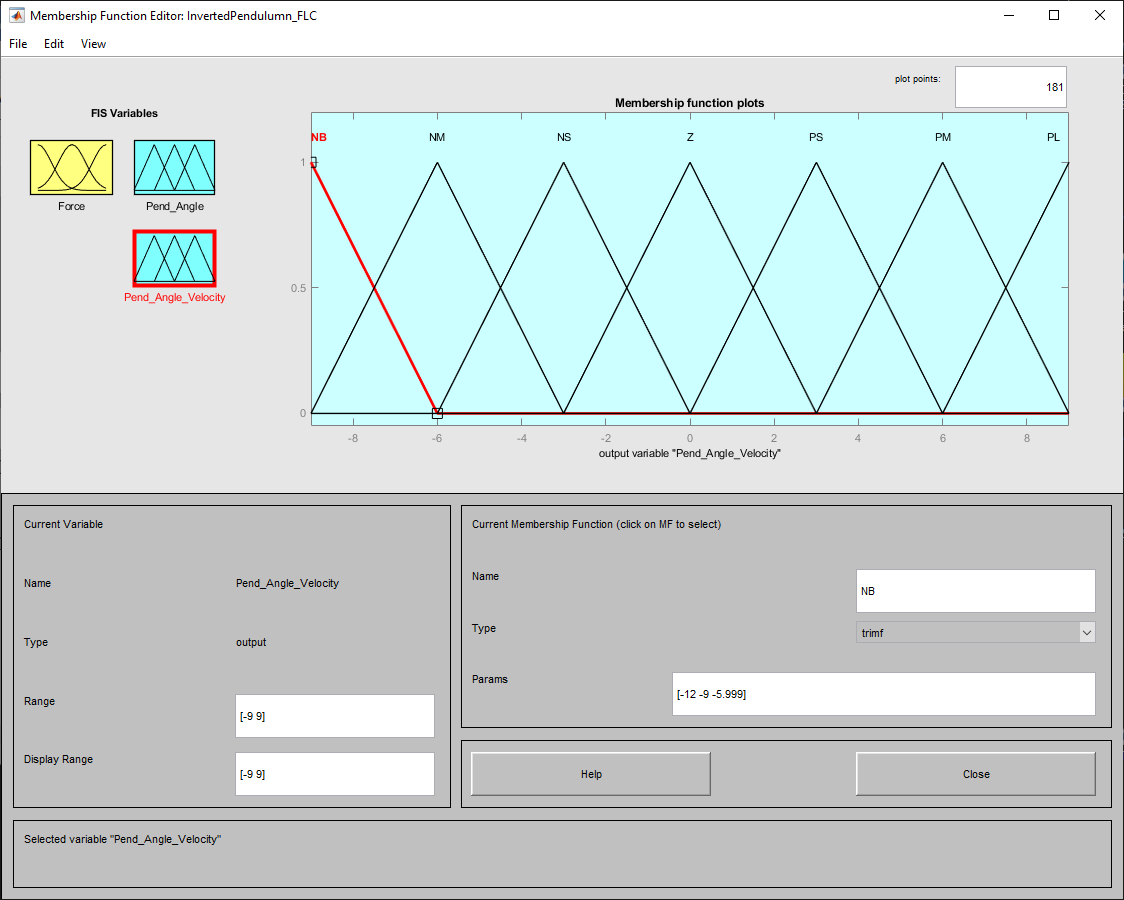
Main System block (FIS editor) :



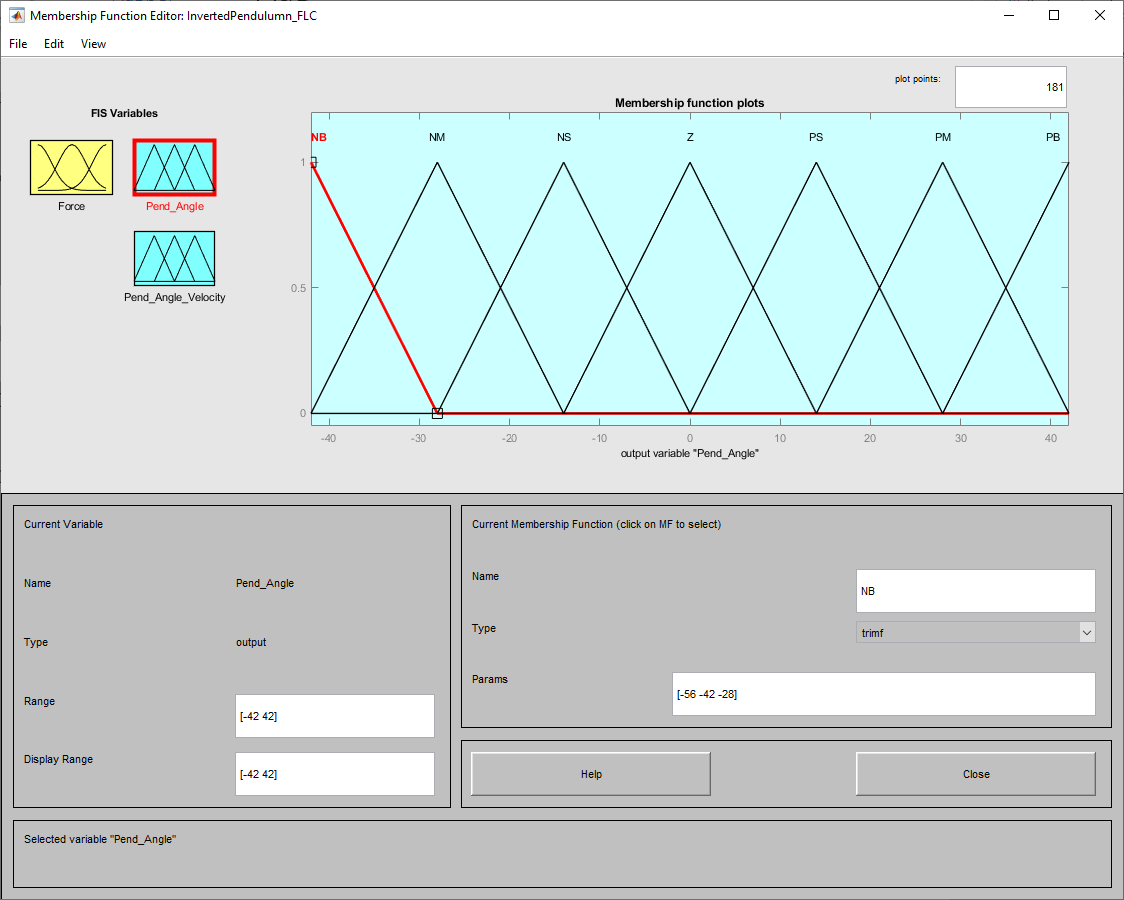
Output (Force) Membership function:



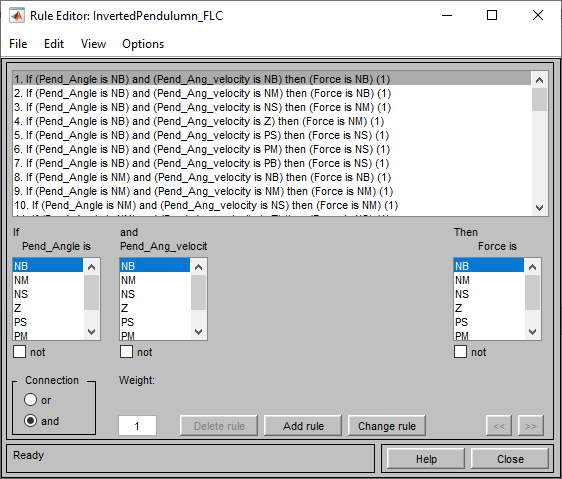
Input 1 (Angular Velocity):



Input 2 (Pendulum Angle):



Rule Viewer:





Inverted Pendulum FLC Rule Table:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Ang\_Vel  θ | NB | NM | NS | Z | PS | PM | PB |
| NB | NB | NB | NM | NM | NS | NS | NS |
| NM | NB | NM | NM | NS | NS | NM | NM |
| NS | NM | NS | NS | NS | PS | PS | PS |
| Z | NB | NM | NS | NS | PS | PM | PB |
| PS | PM | PS | PM | PS | Z | NS | NS |
| PM | PB | PM | PS | PM | PS | Z | Z |
| PB | PB | PM | PM | PS | PS | PM | PS |

Surface View:

