

COL333 - Assignment 4

Fuzzy Inference System

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November 10, 2017

1 Structure

The fuzzy inference system has a structure as shown in fig. 1.

There are 3 inputs and 1 output.

The inputs are

- CGPA : It has a range from $[0, 10]$
- Sports : The number of games played/won. It has a range from $[0, 100]$
- Co-curricular Activities : The number of certificates won. It has a range from $[0, 50]$

The output is a Performance Score. It has a range from $[0, 10]$

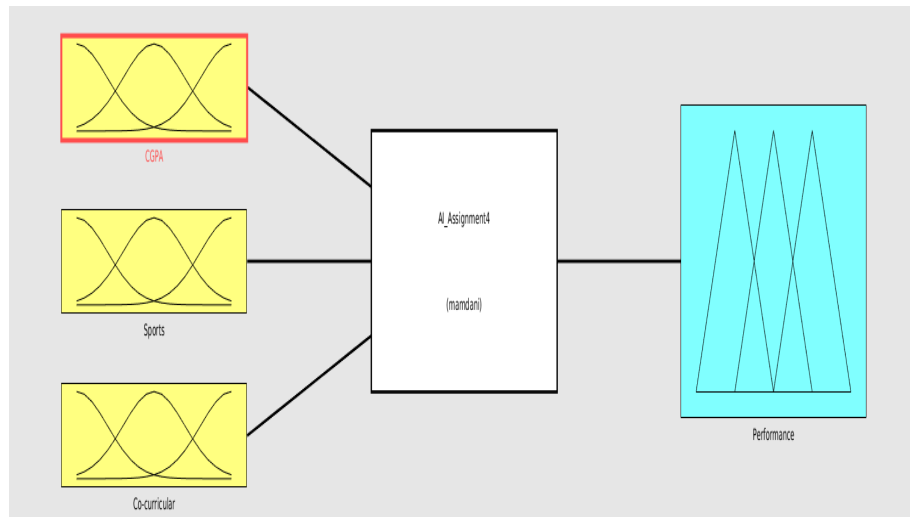
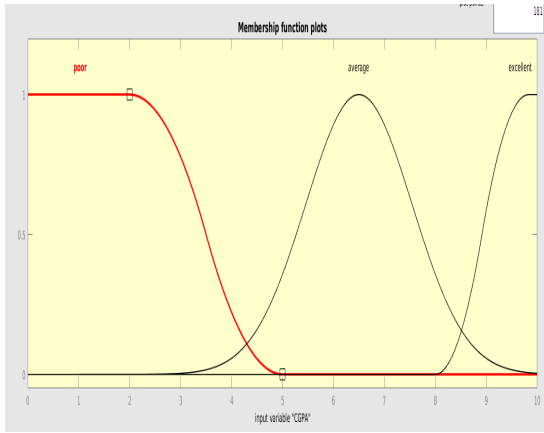


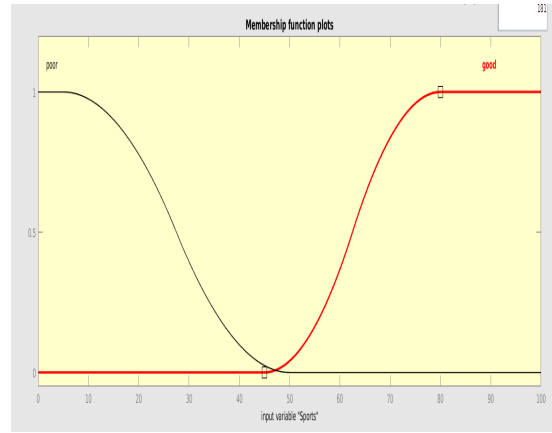
Figure 1: Structure of Fuzzy Inference System

2 Membership Functions

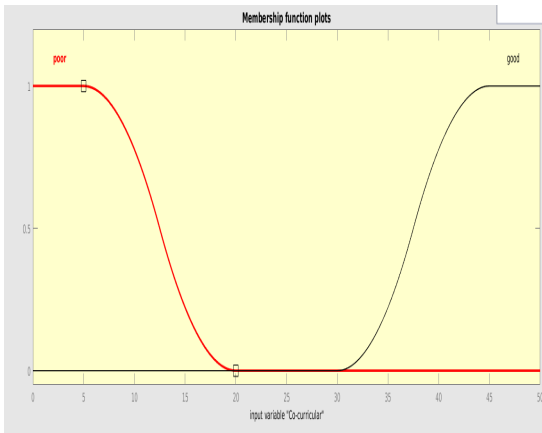
The following membership functions were used for the various inputs and outputs as shown in fig. 2



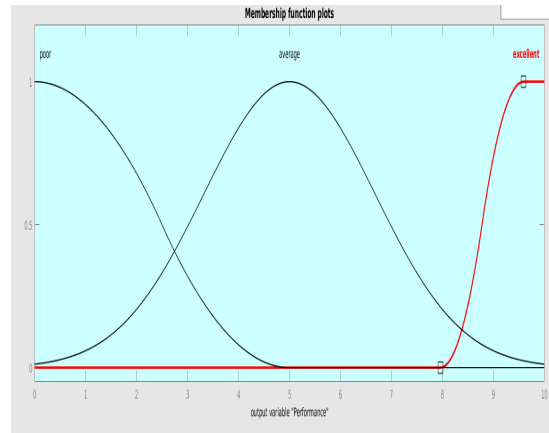
(a) CGPA



(b) Sports



(c) Co-curricular Activities



(d) Performance

Figure 2: Membership Functions for inputs and outputs

3 Rules

The rules used for inference were:

- If (CGPA is excellent) then (performance is excellent)
- If (CGPA is average) and (Sports is good) and (Co-curricular is good) then (performance is excellent)
- If (CGPA is poor) then (performance is poor)
- If (CGPA is average) and (Sports is poor) and (Co-curricular is poor) then (performance is average)
- If (CGPA is average) and (Sports is not good) and (Co-curricular is good) then (performance is average)
- If (CGPA is average) and (Sports is good) and (Co-curricular is not good) then (performance is average)

4 Sample Output

A sample output is shown in the fig. 3 for the input value of CGPA=9.5, Sports=50, Co-curricular=25. The performance score for this input is 8.84

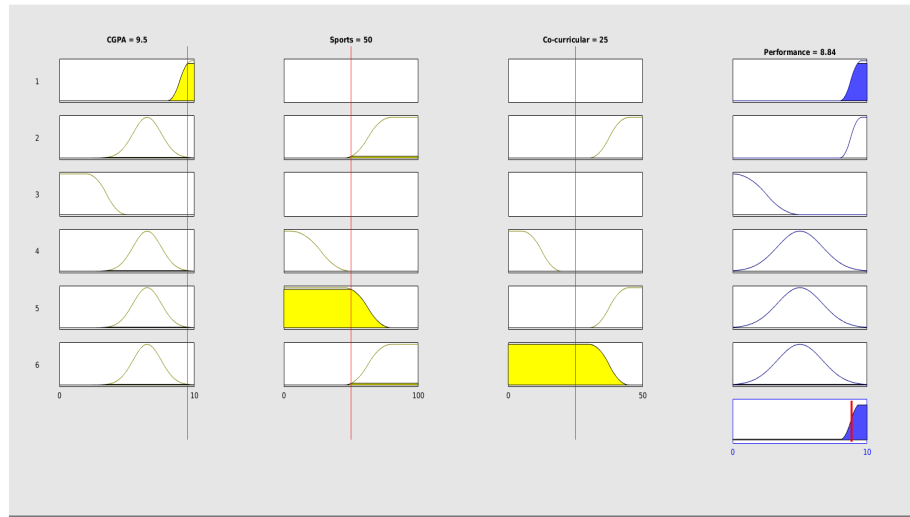


Figure 3: Demo for a sample input case