WBS – Fuzzy Logic - Worker performance

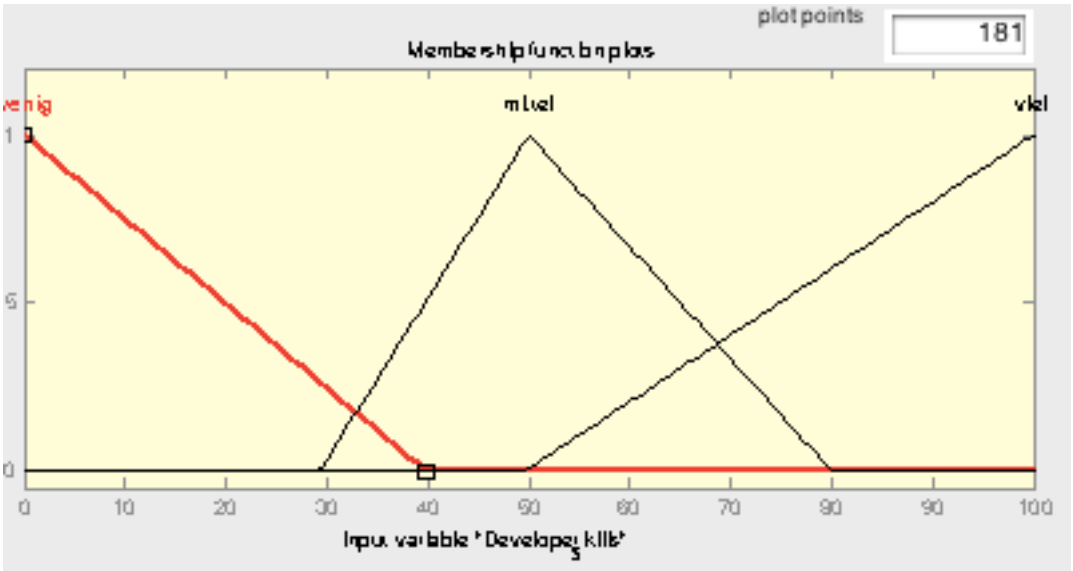
A typical example for an employer is the question, whether he needs to hire a highly skilled programmer or not (and pay the surprice)

Rules

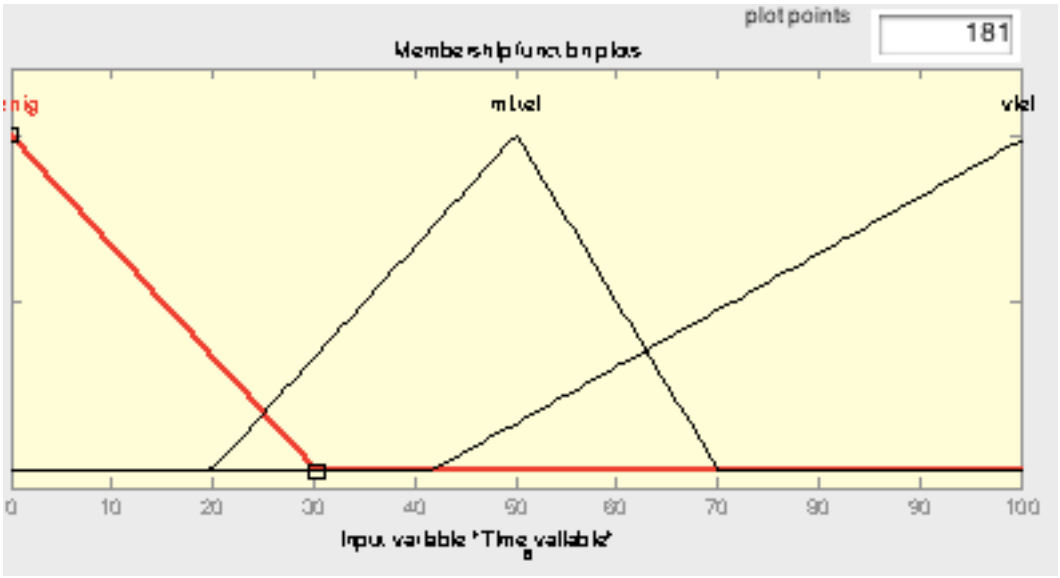
No	Developer Skills	Time available	Result
1	Poor	Low	Bad
2	Middle	Low	Bad
3	High	Low	Middle
4	Poor	Middle	Middle
5	Middle	Middle	Middle
6	High	Middle	Perfect
7	Poor	High	Perfect
8	Middle	High	Perfect
9	High	High	Perfect

Variables

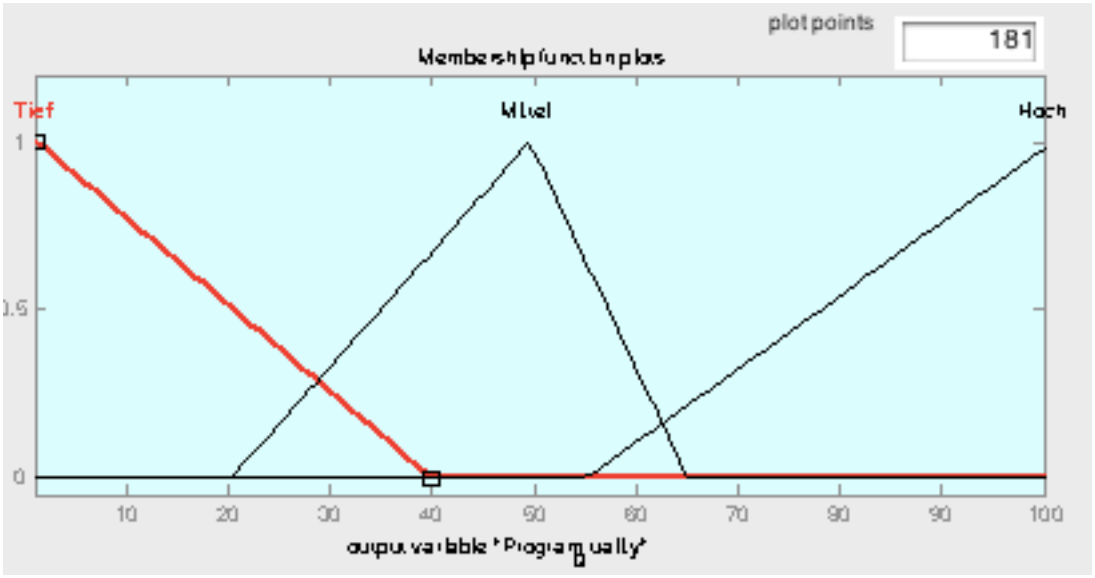
Developer Skills 1 (poor) -100 (good)



Time available 1 (nearly nothing) - 100 (a lot)



Resulting Program Quality 1 (very bad) - 100 (perfect)



Calculation

Developer Skills 25 and Time available 29

1. fuzzyfize

Developer Skills Poor (0.4)

Time available Low(0.1) Middle (0.3)

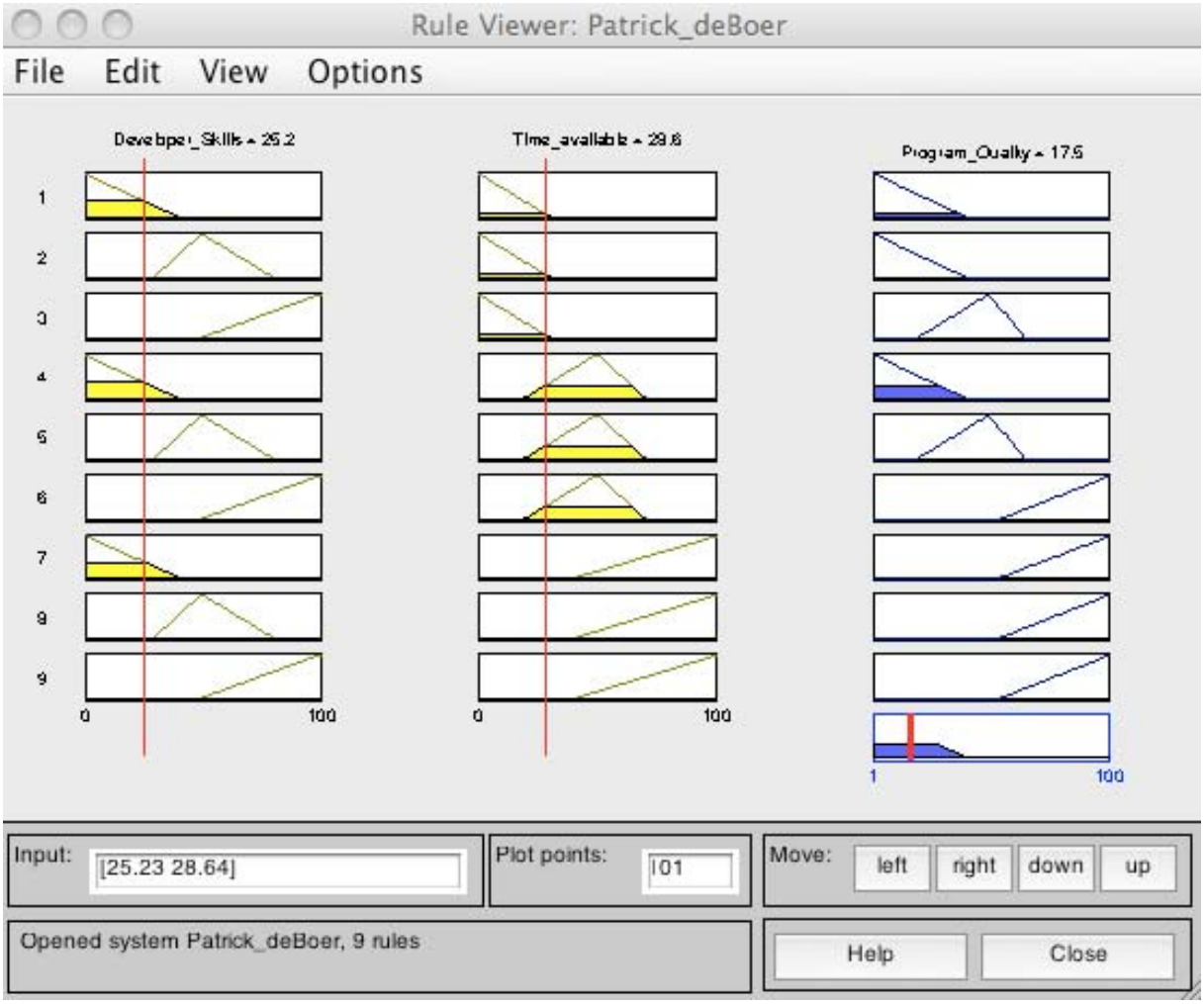
2. rules

IF Developer Skills = Poor AND Time available = Low THEN Quality = Bad
Developer Skills 0.4 AND Time available 0.1 THEN Quality 0.1

IF Developer Skills = Poor AND Time available = Middle THEN Quality = Bad
Developer Skills 0.4 AND Time available 0.3 THEN Quality 0.3

3. unfuzzy

Result Matlab: Quality = 17.5



Ruleset

```
[System]
Name='Patrick_deBoer'
Type='mamdani'
Version=2.0
NumInputs=2
NumOutputs=1
NumRules=9
AndMethod='min'
OrMethod='max'
ImpMethod='min'
AggMethod='max'
DefuzzMethod='centroid'

[Input1]
Name='Developer_Skills'
Range=[0 100]
NumMFs=3
MF1='wenig':'trimf',[-40 0 39.8148148148148]
MF2='mittel':'trimf',[29.2328042328042 50 80]
MF3='viel':'trimf',[49.6031746031746 100 140]

[Input2]
Name='Time_available'
Range=[0 100]
NumMFs=3
MF1='wenig':'trimf',[-40 0 30.2910052910053]
MF2='mittel':'trimf',[19.82 50 70.07]
MF3='viel':'trimf',[41.6666666666667 101 141]

[Output1]
Name='Program_Quality'
Range=[1 100]
NumMFs=3
MF1='Tief':'trimf',[-38.3 1.26 39.8928571428571]
MF2='Mittel':'trimf',[20.25 49.5 65]
MF3='Hoch':'trimf',[55.0833333333333 101 141]

[Rules]
1 1, 1 (1) : 1
2 1, 1 (1) : 1
3 1, 2 (1) : 1
1 2, 1 (1) : 1
2 2, 2 (1) : 1
3 2, 3 (1) : 1
1 3, 3 (1) : 1
2 3, 3 (1) : 1
3 3, 3 (1) : 1
```

Matlab Ruleseditor