Rental Apartment Price Recommendation System Using Fuzzy Logic

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System Design

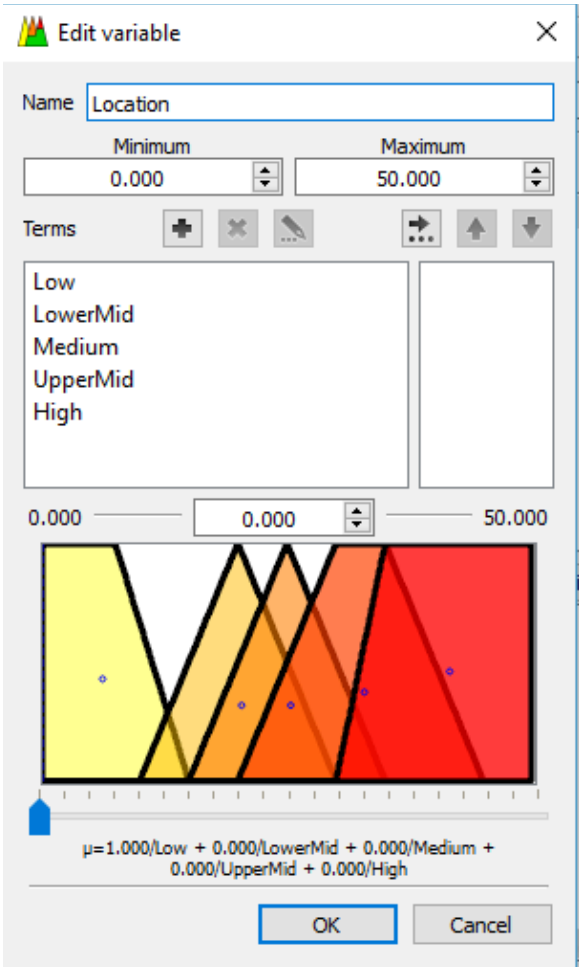
The system is a fuzzy logic recommender that takes 6 different variables and outputs the price of a rental apartment. Each of the variables is explained below.

System Input Variables

The six input variables are Location, Season, Size, Day, Meals, and Transport. The choice to pick these variables takes form from the real-life domain. While setting prices, companies take careful consideration of these criteria, and customers perceive prices accordingly. The system designer chose the UAE as criteria for their research.

Location

City	Low (Fujairah)	LowerMid (RAK)	Medium (Sharjah)	UpperMid (Abu Dhabi)	High (Dubai)
0	1	0	0	0	0
10	.5	0	0	0	0
15	0	.5	0	0	0
20	0	1	.5	0	0
25	0	.5	1	.5	0
30	0	0	.5	1	0
35	0	0	0	1	.5
40	0	0	0	.5	1
45	0	0	0	0	1
50	0	0	0	0	1

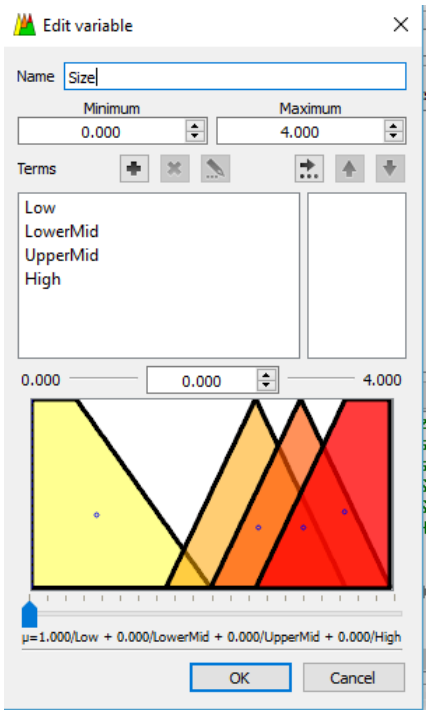


Season

Season	Low (Autumn)	LowerMid (Fall)	UpperMid (Winter)	High (Summer)
0	1	0	0	0
1	1	0	0	0
1.5	0.5	0.5	0	0
2	0	1	0	0
2.5	0	0.5	.5	0
3.0	0	0	1	.5
3.5	0	0	0	1
4.0	0	0	0	1

Size

Size	Low (1-Room)	LowerMid (2-Room)	UpperMid (3-Room)	High (4-Room)
0	1	0	0	0
1	1	0	0	0
1.5	0.5	0	0	0
2	0	.5	0	0
2.5	0	1	.5	0
3.0	0	0.5	1	.5
3.5	0	0	.5	1
4.0	0	0	0	1



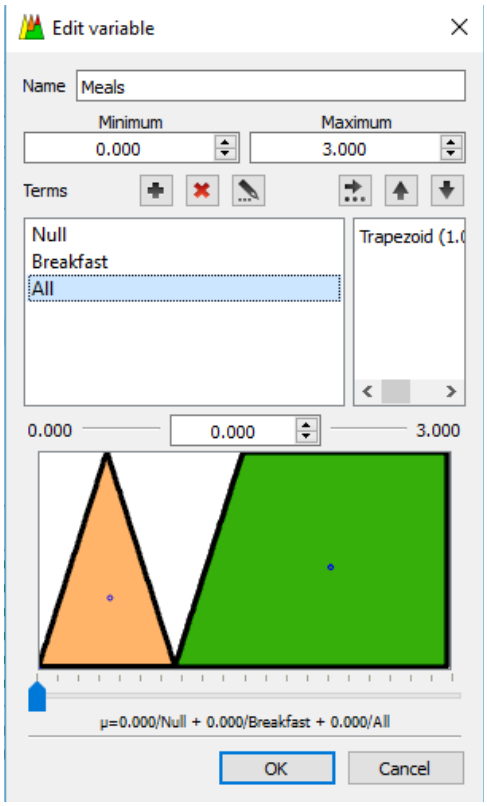
Day

The Day variable consists of two terms, Weekend and Weekday, with each assigned Gaussian distribution graphs as such:

Meals

Meals consists of three terms:

- Null, a discrete term of value (0, 0), this represents the user does not require a meal plan
- Breakfast, triangle
- All, trapezoid



Transport

Transport consists of three terms:

- Null, a discrete term of value (0, 0), this represents the user does not require transport
- Airport, triangle
- All, Gaussian graph