Practical 9 Exercise:

1. Please use fuzzy logic to implement a smart air conditioning system. The system must be able to determine the cooling temperature automatically based on the room temperature and room density. The membership functions and the rules suggested by an expert are as follows:

   Suggested membership functions:
   M1: Temperature on subjective ranges [0, 50] (in degree Celcious)
   M2: Density on subjective ranges [0, 30] (representing how many person)
   M3: Cooling temperature has a range of [16, 30] (in degree Celcious)

   * Each of them should be represented with Low, Medium, and High triangular membership function. You may estimate the range of each level.

   Suggested rules in your fuzzy inference system:

   R1: If the room temperature is low AND the density is low, then the cooling temperature will be moderate.

   R2: If the room temperature is medium AND the density is high, then the cooling temperature will be low

   R3: If the room temperature is high then the cooling temperature will be low.

   What would the cooling temperature be in the following circumstance?

   room_temperature =16

   room_density = 25

References:

Scikit-fuzzy documentation is available at http://pythonhosted.org/scikit-fuzzy/