Activity-4
Autumn 2024

1. Define the following terminologies of fuzzy set:
   I) Support, II) Core, IV) alpha cut, and V) Singleton.

2. Suppose that fuzzy set A is described by $\mu_A(x) = bell(x; a, b, c)$. Show that the classical fuzzy complement of A is described by $\mu_{\bar{A}}(x) = bell(x; a, -b, c)$

3. Prove the Generalized DeMorgan's law: T(a,b)=N(S(N(a),N(b))) and S(a,b)=N(T(N(a),N(b))). where, N(.), T(.) and S(.) suggest fuzzy complement, T-norm and S-norm operators, respectively.

4. Given A= {x1,x2} B = {y1,y2,y3} C = {z1,z2,z3}
Let, R is the fuzzy relation between A and B.
Let, S is the fuzzy relation between B and C.

$$R = \begin{bmatrix} 0.6 & 0.3 & 0.8 \\ 0.5 & 0.5 & 0.2 \end{bmatrix} \quad S = \begin{bmatrix} 0.4 & 0.2 & 0.3 \\ 0.7 & 0.5 & 1.0 \\ 0.6 & 0.8 & 0.5 \end{bmatrix}$$

Solve out fuzzy relation between A and C (R o S).
(Use max-min composition operator)

Duration: 40 Mins.
Modality: Hand-written and then upload the scanned copy as PDF.
Naming Convention: Activity4_CI_RollNo (last four digits); e.g.: roll no is 220534, then my file name should be Activity4_CI_0034.