Fuzzy Set Operations

Union:

$$\boldsymbol{\mu_{A\cup B}}\ ^{(x)} = \boldsymbol{Max}\{\boldsymbol{\mu_A}\ ^{(x)}, \boldsymbol{\mu_B}\ ^{(x)}\}$$

Intersection:

$$\boldsymbol{\mu_{A\cap B}}\ ^{(x)} = \boldsymbol{Min}\{\boldsymbol{\mu_A}\ ^{(x)}, \boldsymbol{\mu_B}\ ^{(x)}\}$$

Complement

$$\mu_{\grave{A}}\ ^{(x)} = 1 - \mu_A\ ^{(x)}$$

$$\mu_{\grave{B}}\ ^{(x)} = 1 - \mu_B\ ^{(x)}$$

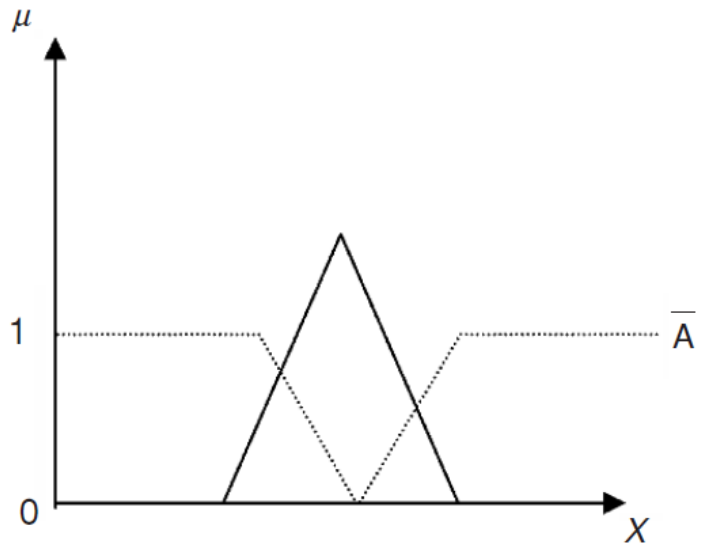
De Morgan's laws

$$\bar{A} \cup \bar{B} = (A \cap B)'$$

$$\overline{(A \cap B)} = \bar{A} \cup \bar{B}$$

Deference

A−B=A ⁄B =A∩B′
B−A=B⁄A = B∩A′



Complement of fuzzy set A

Ex: Considers two fuzzy sets A and B

$$A = \left\{\frac{1}{2} + \frac{0.5}{3} + \frac{0.6}{4} + \frac{0.2}{5} + \frac{0.6}{6}\right\}$$

$$B = \left\{\frac{0.5}{2} + \frac{0.8}{3} + \frac{0.4}{4} + \frac{0.7}{5} + \frac{0.3}{6}\right\}$$

complement , union , intersection , difference , demorgane law.