

1. Data ( $x_{il}$ ) sample and filter, selection of class number ( $k$ ), fuzzy exponent ( $\phi$ ), & distance  $d(x_{il}, c_{lj})$  calculation method

2. Initial membership  $m_0$  (random matrix meets Eq. 2, 3, & 4)

3. Calculate the membership  $m_{ij}$  (Eq. 7) and the centroid  $c_{lj}$  (Eq. 6)

4.  $|J(i)-J(i-1)| < \varepsilon$  or reach maximum iteration number

Min (J)

5. Stop, obtain output  $m_{ij}$  &  $c_{lj}$