

Programming Assignment Sheet 4

Programming Assignment 4 Generating Fuzzy Rules

Generate fuzzy rules by fuzzy clustering the famous Iris data. Proceed as follows.

- a) Download the Iris data set from the course web page.
- b) Either implement the FCM algorithm as described in the lecture or find a suitable clustering software, *e.g.* <http://www.borgelt.net/cluster.html>.
- c) Obtain the membership matrix U by fuzzy clustering the Iris data into three groups.
- d) Project U down to the four attribute axis.
- e) Compute the upper envelope of the membership degrees.
- f) Compute the convex completion of them to diminish non-convex fuzzy sets.
- g) Linearly interpolate the membership values to obtain membership functions.
- h) First stretch and then normalize these functions.
- i) Cylindrically extend these one-dimensional fuzzy sets to obtain the four-dimensional ones.
- j) Plot your obtained fuzzy sets for each attribute.