# Comparing and Contrasting Fuzzy Min-Max Neural Network with the Classical Statistical Clustering Methods in Classification of Richets Disease

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Determination of a pattern for categorization of the observations has been one of the main issues in many of the recent studies.

One approach is fuzzy clustering; Fuzzy sets were introduced in 1965 by Lotfi Zadeh (1) as a new way to represent vagueness in every day life. They are a generalization of conventional set theory, one of the basic structure underlying computational mathematics and models. Computational pattern recognition has played a central role in the development of fuzzy models because fuzzy Interpretations of data structure are very natural and intuitively plausible way to formulate and solve various problems. (2)

Another approach is Neural Networks, Neural Networks have in recent years become powerful intelligent tools, used widely in pattern recognition and other application. Some of their main advantages are learning capability for developing new solutions to problems that are not too well defind, ability to deal with computational complexity, and facility of carrying out quick interpolative reasoning.

It is a fact that the health status of the subjects (normal, health Vs sick), is the main variable in most of the studies in the field of medical sciences. Therefore, it is crucial to employ appropriate categorization methods in order to minimize the risk of error in these studies. Categorization of the data is one of the main issues in multivariate statistical analysis. In the present study, we tried to introduce a method that uses a clustering fuzzy approach, on the basis of neural network, for categorization of the subjects in to "health" and "sick" groups(3,4).The results were also compared with the classical statistical methods.

108 students participating in this study were tested for 3 variables: calcium, phosphrus and alkaline phosphatase in order to identify whether they were suffering from richets. The results indicated that categorization of the subject on the basis of fuzzy neural network enjoyed 92% accuracy,while cluster analysis(single 78% upgma 78% complete 77% wards 62% k-means 81% ) and discriminant analysis(equal 88% proportional 87% )are more erroneous.

**Reference**

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