ABSTRACT

This work presents o method for fuzzy clustering. Instead of the traditional fuzzy based rules, it was used a model called Fuzzy Pattern Trees (FPT), which is ahierarchical tree-based model, having as internal nodes, fuzzy logical operators and the leaves are composed of a combination of fuzzy terms with the input attributes. The method was obtained by creating a tree for each cluster, this tree will be a “logic class” description which allows the interpretation of the results. The learning method originally designed for FPT was replaced by Cartesian Genetic Programming where the fitness function reflects the quality of the clustering obtained through different indices. The FPT method was compared against other clustering techniques, such as: k-means, k-medoids, Agglomerative, Fuzzy C-means, Kohonen and DBSCAN on several datasets from artificial bases and the UCI Machine Learning Repository and it presented competitive results. It was also used to solve a segmentation problem from a mobile operator with promising results.

Keywords: Machine Learning, Clustering, Cartesian Genetic Programming, Clustering, Interpretability.