Hesitant fuzzy agglomerative hierarchical clustering algorithms.

Summary: Recently, Hesitant Fuzzy Sets (HFSs) have been studied by many researchers as a powerful tool to describe and deal with uncertain data, but relatively, very few studies focus on the clustering analysis of HFSs. In this paper, we propose a novel hesitant fuzzy agglomerative hierarchical clustering algorithm for HFSs. The algorithm considers each of the given HFSs as a unique cluster in the first stage, and then compares each pair of the HFSs by utilizing the weighted Hamming distance or the weighted Euclidean distance. The two clusters with smaller distance are jointed. The procedure is then repeated time and again until the desirable number of clusters is achieved. Moreover, we extend the algorithm to cluster the interval-valued hesitant fuzzy sets, and finally illustrate the effectiveness of our clustering algorithms by experimental results.

Keywords: hesitant fuzzy set; interval-valued hesitant fuzzy set; agglomerative hierarchical clustering; hesitant fuzzy distance
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