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AN INCISIVE NEIGHBORHOOD DISCERNING ITERATIVELY AGGREGATING NOMENCLATOR (INDIAN) SYSTEM FOR PATTERN RECOGNITION IN UNSUPERVISED ENVIRONMENTS

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ABSTRACT

A novel system for pattern recognition in unsupervised environments, which combines the conceptual elegance of clustering schemes based on inter-sample distance measures with the computational simplicity of histogram approaches, is presented in this study. The multi-dimensional histogram of the entire data set is first derived and by scanning this histogram space, the significant hills therein are identified. The centroids of these hills are deemed to be representative of the given input sample set. This representative pseudo-sample set is then input to the CURRY system (International Journal of System Science, Vol. 6, No. 1, January 1975, pp 23-32), which has the innovative capability of self learning the number of clusters inherent in the environment, to derive the nuclei of these inherent clusters. The total input data set is then clustered with these cluster nuclei as prototypes. The two major advantages of this new approach are:

- The conceptual satisfaction of lessening the sensitivity, of the clustering approaches based on inter-sample distance measures, to individual outliers of the sample distributions through selection of a representative pseudo-sample set.

- The computational economy achieved in processing large data sets, such as those arising in remote sensing environments, through the choice of a significantly smaller but representative subset of pseudo-samples.

AUTOMATIC CLASSIFICATION OF AIRCRAFT AND SATELLITE IMAGES USING MIXED INTEGER PROGRAMMING

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