

TWO APPROACHES TO SOLVING PROBLEMS CLUSTERING BROADLY VIEWPOINT INDUCTIVE MODELING

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We describe two original approaches to solving the problem of clustering in the production of broadly based on the use of inductive paradigm approach to cluster analysis. The methods can be used in many areas of applied system-analytical studies pertaining to the problems of structuring, classification, clustering and modeling of complex systems.

Clustering criterion, the target sign inductive modeling.

In the traditional formulation of the problem of cluster analysis "without a teacher" as one of the most important areas of pattern recognition and intelligent decision support systems (ISPPR), there are well known impropriety to overcome numerous to be applied a priori information with heuristic and intuitive assumptions about existing sampling sites, including - data table experiment. We also know that in solving problems of pattern recognition plays an important role subspaces design phase of informative features.

This, of course, affect the objectivity of problem solving simulations. This paper discusses two approaches to solving the problem of selecting informative features (ensemble features) for the purpose of cluster analysis and obtain stable clustering sets of data observations obtained in active or passive experiments, which are not essential.

Considerations pursue within the so-called problem statement dual (double) clustering or clustering in broad terms, which often occurs in the economy, the environment, energy, medical diagnosis, biology and in various other ways.

Purpose - presentation of two approaches to solving the problem of clustering in a broad sense as problem identification and cluster formation of homogeneous groups of objects with parallel synthesis of optimal ensembles informative features based on the methodology of inductive cluster analysis and the use of target features

in a design criterion for evaluating the quality of clustering as a regular element.

Research Methods. The following approaches are based on the application of the principles and methodology of inductive modeling of complex systems (IMSS) to meet the challenges of clustering [1]. This work benefited from the desk review [2], the methodology of the group method of data handling (GMDH) [3], and references to well-known [4] and advanced algorithms cluster analysis [5].

Results. Since the difference between the following methods of traditional [4] is that they are based on applying the principles of IMSS (self), it will be considered as selection criteria and [6] for solving clustering and matching circuit multi algorithms.

Problem Solving Methods

Describes solution optimality criteria set out above in the broadest sense of the problem cluster analysis to be used in procedures inductive clustering.

Conclusions

The problem of clustering in a broad sense is often used for preliminary analysis of "raw" data to identify compact groups of the objects and, importantly, in terms of optimal design criteria designed subspaces factor. This approach, in particular, is often used as a preliminary step before applying more "sophisticated" instruments, such as, for example, parameter identification. This can significantly reduce the volume of calculations at the stages of structural identification, as has previously been synthesized ensemble.

The paper describes two approaches to solving the problem of clustering with the submitted statement. Both approaches are based on the application of the methodology of inductive approach to cluster analysis. The methods can be used in many areas of applied system-analytical studies pertaining to the problems of structuring, classification, clustering and modeling of complex systems.