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A fuzzy biclustering algorithm for single cluster. (Chinese. English summary) Zbl 1265.68222
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Summary: Biclustering algorithms are a new type of data mining method, which are commonly evaluated using the mean squared residue. Biclustering algorithms based on mean squared residue mostly use a greedy strategy, which can not obtain accurate clusters with appropriate size. However, fuzzy theory can improve the performance of biclustering algorithms based on mean squared residue and obtain more accurate clusters with appropriate size. This paper presents a fuzzy biclustering algorithm for solving a single cluster. Firstly, the paper defines the fuzzy variables called significant indicators for the biclustering problem. Then, it builds a novel fuzzy biclustering model, and presents an algorithm and its convergence analysis. Finally, a comparison with the biclustering algorithm FLOC and fuzzy coclustering simulation data and real data shows that the fuzzy biclustering algorithm is more effective.

MSC:

- 68T20 Problem solving in the context of artificial intelligence (heuristics, search strategies, etc.)
- 68T10 Pattern recognition, speech recognition
- 68T37 Reasoning under uncertainty in the context of artificial intelligence
- 68P15 Database theory

Keywords:

biclustering algorithm; mean squared residue; fuzzy clustering