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Data Mining Spatial: Unsupervised Classification of Geographic Data

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Abstract : In recent years, the volume of geospatial information is increasing due to the evolution of communication technologies and information, this information is presented often by geographic information systems (GIS) and stored on of spatial databases (BDS). The classical data mining revealed a weakness in knowledge extraction at these enormous amounts of data due to the particularity of these spatial entities, which are characterized by the interdependence between them (1st law of geography). This gave rise to spatial data mining. Spatial data mining is a process of analyzing geographic data, which allows the extraction of knowledge and spatial relationships from geospatial data, including methods of this process we distinguish the monothematic and thematic, geo- Clustering is one of the main tasks of spatial data mining, which is registered in the part of the monothematic method. It includes geo-spatial entities similar in the same class and it affects more dissimilar to the different classes. In other words, maximize intra-class similarity and minimize inter similarity classes. Taking account of the particularity of geo-spatial data. Two approaches to geo-clustering exist, the dynamic processing of data involves applying algorithms designed for the direct treatment of spatial data, and the approach based on the spatial data pre-processing, which consists of applying clustering algorithms classic pre-processed data (by integration of spatial relationships). This approach (based on pre-treatment) is quite complex in different cases, so the search for approximate solutions involves the use of approximation algorithms, including the algorithms we are interested in dedicated approaches (clustering methods for partitioning and methods for density) and approaching bees (biomimetic approach), our study is proposed to design very significant to this problem, using different algorithms for automatically detecting geo-spatial neighborhood in order to implement the method of geo- clustering by pre-treatment, and the application of the bees algorithm to this problem for the first time in the field of geo-spatial.

Keywords : mining, GIS, geo-clustering, neighborhood
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