Abstract

Nowadays, the need to techniques, approaches, and algorithms to search on data is increased due to improvements in computer science and increasing amount of information. This ever increasing information volume has led to time and computation complexity. Recently, different methods to solve such problems are proposed. Among the others, nearest neighbor search is one of the best techniques to this end which is focused by many researchers. Different techniques are used for nearest neighbor search. In addition to put an end to some complexities, variety of these techniques has made them suitable for different applications such as pattern recognition, searching in multimedia data, information retrieval, databases, data mining, and computational geometry to name but a few. In this paper, by opening a new view to this problem, a comprehensive evaluation on structures, techniques and different algorithms in this field is done and a new categorization of techniques in NNS is presented. This categorization is consists of seven groups: Weighted, Reductonal, Additive, Reverse, Continuous, Principal Axis and Other techniques which are studied, evaluated and compared in this paper. Complexity of used structures, techniques and their algorithms are discussed, as well.
A Survey on Nearest Neighbor Search Methods

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A Survey on Nearest Neighbor Search Methods

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Index Terms

Computer Science       Applied Mathematics

Keywords

Data Structure   kNN Algorithm   Nearest Neighbor Search   Query Processing