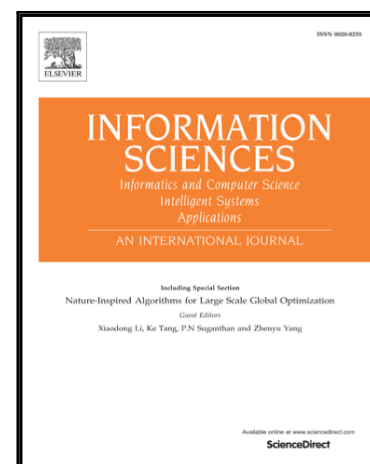


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Improving ATM Coverage Area Using Density Based Clustering Algorithm and Voronoi Diagrams

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Abstract

Facility location is a problem of paramount importance and optimizing business operations without affecting customer service is very challenging. In the case of banking services, the location of bank branches and ATMs must match the service demands (turn around time for service, reachability etc) of the customers' and the expected quality of service is determined by the socio-economic background of the customer. Therefore, it is necessary to formulate the optimization problem so as to reflect the customers' expectations and tolerance for quality of service in a given geographical region. The ability to do so requires clustering people living in the region into several smaller areas called service areas. An ideal clustering algorithm should consider the social behavior of people living in the service area and the uncertainty associated with their social behavior.

In this paper, we propose a modification to generalized density based clustering algorithm (GDBSCAN) to deal with fuzziness in the values describing the population demographics and the preferences for ATM location among customers utilizing the ATM services. The modified version of GDBSCAN clustering algorithm, which we call GFDBSCAN, is used to cluster people around key socio-economic parameters. GFDBSCAN can also be used to cluster geographical regions based on the requirement and preferences expressed by the customers for services like business outlets, ATMs, bank branch operations, public utilities, etc. We apply the proposed algorithm

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