

## LOCATION AREA PLANNING USING SIMULATED ANNEALING WITH A NEW SOLUTION REPRESENTATION

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**ABSTRACT.** *Location area planning problem is to partition the cellular/mobile network into location areas with the objective of minimizing the total cost. This partitioning problem is a difficult combinatorial optimization problem. In this paper, we use the simulated annealing with a new solution representation. In our method, we can automatically generate different number of location areas using Compact Index (CI) to obtain the optimal/best partitions. We compare the results obtained in our method with the earlier results available in literature. We show that our methodology is able to perform better than earlier methods.*

**Keywords:** Location management, Simulated annealing, Location area planning, Compact index

**1. Introduction.** The substantial growth in micro-cellular communication networks has generated a lot of interest among researchers to provide a good quality of service with minimum cost. Location area management is one of the important areas that has been addressed in literature. One of the strategies for providing a good quality of service at minimum cost is to partition the network into Location Areas (LA). The minimum cost has two components namely location update cost and searching cost. Location update cost is incurred when the user changes itself from one location area to another network. The searching cost incurred when a call arrives, the search is done only in the location area to find the user.