Abstract

The growing complexity in the electronic hardware now necessitates in improving the performance of searching algorithms. Genetic algorithms do not guarantee global optimum solution to NP-Hard problems but are generally good at finding acceptable solution to problems. In complex combinatorial spaces, hybridization with other optimization techniques can greatly improve the efficiency of search. Memetic algorithm (MA) is an improvisation over genetic algorithms (GA) that combines global and local search by using evolutionary algorithms to perform exploration while the local search methods are used for exploitation. Here, exploitation is the process of visiting entirely new regions of a search space where the gain can also be high.

This paper discusses the (MAs) as a solution to Standard Cell Placement (SCP) problem and procedures are laid down to strike a balance between genetic search and local search in MAs. A comparison of MA with the already established results for SCP using conventional and Hybrid
techniques by the author depicts improvement in the performance of SCP algorithm in terms of solution quality and computing speed. About 15% improvement in overall wire-length was observed along side it being 25% faster over the Tabu Search (TS) algorithm discussed in previous works of the author.

Reference

Performance Enhancement of Standard Cell Placement Techniques using Memetic Algorithm


Index Terms

Computer Science
Evolutionary
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Key words

SCP
Memetic Algorithm

(MA)
NP-hard