

CHAOTIC SIMULATED ANNEALING FOR SOLVING STOCHASTIC DYNAMIC FACILITY LAYOUT PROBLEM

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ABSTRACT

Stochastic dynamic facility layout (SDFLP) is a Combinatorial Optimization facility layout problem. SDFLP is modeled as QAP where the product demand is random over multiple periods. This paper proposes a novel approach of solving SDFLP using Chaotic Simulated Annealing (CSA). Unlike conventional Simulated Annealing (SA) which uses Gaussian distribution, CSA uses chaotic initialization and chaotic sequences to find the optimal solution. To evaluate the performance of CSA on SDFLP two cooling schedules have been considered - Exponential and Cauchy. The paper reports results of the CSA algorithm used on data sets available in literature for facility size $N=12$ and time period $T=5$. To prove the efficacy of the proposed SDFLP solution, CSA is applied on facility size for $N=15, 20, 25, 30$ and time period $T=5$ and its results are discussed.

Keywords: *Facility layout; stochastic dynamic facility layout; simulated annealing; cooling schedule; meta-heuristic; chaotic simulated annealing*