

調適型螞蟻演算法應用於旅行推銷員問題之研究

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摘要

The Ant Algorithm, also named as Ant Colony Optimization (ACO), is recently a famous meta-heuristic approach that has been successfully applied to solve many complicated Combinatorial Optimization Problems. Furthermore, several variants of the Ant Algorithm, such as Ant System (AS), Ant Colony System (ACS), Ant-Q, Max-Min AS (MMAS) and Rank-based AS (ASrank), have been proposed. These variants mainly differ in the routes building mechanism and the pheromone update mechanism. Therefore, this paper aims to present an Adaptive ACS (AACS) as well as two modified pheromone update mechanisms for ACS (MACS1 and MACS2). We selected 24 TSP benchmark instances to test and analyze the performance of AACS, MACS1 and MACS2. The average percentages of errors among 24 TSP instances are 0.46% for AACS, 0.55% for MACS1 and 0.47% for MACS2. Indeed, computational results imply that our proposed AACS, MACS1 and MACS2 are capable of improving the performance of traditional ACS.

關鍵字：Ant Colony Optimization, Traveling Salesman Problem, Adaptive Parameters Control