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Abstract

There are various metaheuristic algorithms which are used to solve the Traveling Salesman problem. Ant colony optimization (ACO) is one such algorithm, which is inspired by the foraging behavior of ants. In this paper, we have proposed a modified model, entitled as Signed Adaptive Ant System (SAAS) for pheromone updation of the Ant-System; SAAS exploits the properties of Adaptive Filters. The proposed algorithm is implemented using sign-LMS (Least Mean Square) based algorithm. It imparts no information about the correction factor of the LMS adaptive

algorithm but provides the sign value of each function in the correction factor of the LMS algorithm. SAAS modifies its properties in accordance to the requirement of surrounding domain and for the betterment of its performance in dynamic environment. The proposed algorithm is also easier for hardware implementation. The results of an experimental evaluation, conducted to evaluate the usefulness of the new strategy, are well described. Our algorithm shows effective results as compared to other existing approaches.

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Index Terms

Computer Science

Algorithm

Key words

Adaptive Filter

Least Mean Square (LMS) Algorithm

Sign Least Mean Square (sign-LMS) Algorithm

Ant System (AS)

Ant Colony Optimization (ACO)

Adaptive Ant System (AAS)

Sign Adaptive Ant System (SAAS)

Traveling Salesman Problem (TSP)