

Recommendation of Tour Route Schedules Using the Cat Swarm Optimization Algorithm (Case Study of Yogyakarta)

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Abstract

Tourism plays a significant role in supporting the development of a country. One popular region among tourists is Yogyakarta. With the advancement of digital information, it has become easier for tourists to find information about attractions they want to visit. However, many tourists still rely on information from others to use as a reference in planning their travel schedule for several days. To address this issue, we propose a system that can recommend a personal travel itinerary within a few days of tour visit. We can consider that determining a tourist route is the same as finding the optimal solution to the traveling salesman problem (TSP). Various algorithms can be used to solve TSP, including the Cat Swarm Optimization Algorithm (CSO). In our research, we develop a system that can generate optimal recommendations for scheduling tourist routes in Yogyakarta using the CSO algorithm by combining the concept of Multi-Attribute Utility Theory to meet the needs of users based on various criteria such as ratings, cost, and time. Our experiment uses Simulated Annealing (SA) as the base model. The proposed method showed that the CSO algorithm performed better than the SA in optimality and computational efficiency. Specifically, the CSO algorithm produced itineraries that are 1.67% more optimal than SA when considering multi-criteria and faster than SA in computation time when considering single-criteria. These findings suggest that the CSO algorithm is an effective and efficient method for generating optimal tours.

Keywords: Travelling Salesman Problem, Cat Swarm Optimization, Multi-Attribute Utility Theory, Recommender System, Tour Planning, Yogyakarta Tour.