Recommendation for Scheduling Tourist Routes Using Particle Swarm Optimization (Case Study of Yogyakarta)

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Abstract
Tourism is a significant industry, with international travel contributing over $1 trillion in global tourism sales by the end of 2019. With the expected rise in the Indonesian tourism sector, planning a trip can be challenging for travelers who are unfamiliar with the destination and want to make the most of their time. To address this, we propose an individualized tourism route recommendation system that considers the user's needs and preferences to create suitable travel itineraries for N-Day. Our proposed method combines Particle Swarm Optimization (PSO) with Multi-Attribute Utility Theory (MAUT) to evaluate numerous solutions based on ratings, cost, and trip time, while also accommodating travel time constraints such as tourist location working hours. We compared our suggested technique to FA and BF parameter testing with 9 variations, and our findings showed that our approach outperformed 1.34% and 97.90% better optimization compared to FA and a 99.72% improvement in terms of computation time compared to BF. These findings highlight the efficacy and efficiency of our approach in optimizing multi-criteria evaluations and computation time for tourism route recommendations. By leveraging PSO and MAUT, our system can generate personalized travel itineraries that align with the preferences and constraints of individual travelers. This empowers tourists to make the most of their time, explore popular attractions, and enhance their overall travel experience.

Keywords: Particle Swarm Optimization, Traveling Salesman Problem, Multi-Attribute Utility Theory, Route Recommendation