Route Planning for Optimization Approach PSO_GA Sharing System (Scooter Sharing-Public Transportation) with Hybrid Optimization Approach PSO_GA

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Abstract : In the current decade and sustainable transportation systems, scooter sharing has attracted widespread attention as an environmentally-friendly means of public transportation which can help develop public transportation. The combination of scooters and subway in the area of sustainable transportation systems can provide a great many opportunities for developing access to public transportation. Of the challenges which have arisen and initiated discussions of interest about the implementation of a scooter-subway system to replace personal vehicles is the issue of routing in the aforementioned system. This has been chosen as the main subject of the present paper. Thus, the present paper provides an account for routing in this system. Because the issue of routing includes multiple factors such as time, costs, traffic, green spaces, etc., the above-mentioned problem is considered to be a multi-objective NP-hard optimization problem. For this purpose, the hybrid optimization approach of PSO-GA has been put forward in the present paper for the provided answers to be of higher accuracy and validity than those of normal optimization methods. The results obtained from modeling and problem solving for the case study in the MATLAB software are indicative of the efficiency and desirability of the model and the proposed approach for solving the model