

# Maximizing UAV target coverage under flight range and target service time constraints

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**Abstract**— Using Unmanned Aerial Vehicles (UAVs) for reconnaissance purposes requires considering many different criteria such as limited UAV flight range, specified target service time, etc. Furthermore, it is desired that UAV should service more targets as many as possible. Thus, route planning is required to be optimal to cover maximum number of the targets while respecting all the given constraints. This article proposes a genetic algorithm (GA) to creating an optimized route for visiting maximum number of targets under the flight range and target service time constraints. In order to evaluate the success of the proposed GA method, we also developed an alternative approach, based on the Nearest Neighbor (NN) heuristic. To compare the success of these two methods we executed extensive simulation tests. The results indicate the success of the proposed GA method by increasing the number of covered targets compared to the solution based on the NN heuristic.

**Index Terms**— Unmanned Aerial Vehicles (UAVs), routing, target coverage, genetic algorithm, optimization



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