

GOOGLE MAPS BASED MULTI-DESTINATION ROUND-TRIP PLANNER

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ABSTRACT

The Travelling Salesman Problem is a well-known combinatorial optimization problem in both Mathematics and Computer Science. This paper introduces an Android Application that utilizes the Google Maps API and several known algorithms and heuristics that solves this problem, allowing users to plan a tour consisting of multiple destinations. The algorithms and heuristics are Dynamic Programming, Genetic Algorithm, Twice around the Tree and 2-opt. The Dynamic Programming Algorithm runs in exponential time, making calculations of more than eleven locations infeasible with most hardware. The heuristics provide a solution to this, allowing polynomial run time but with the drawback of optimality not being guaranteed. Extra functionalities include additional information such as ratings, reviews, photos and weather of a location to be readily available to users; facilitating the planning process.

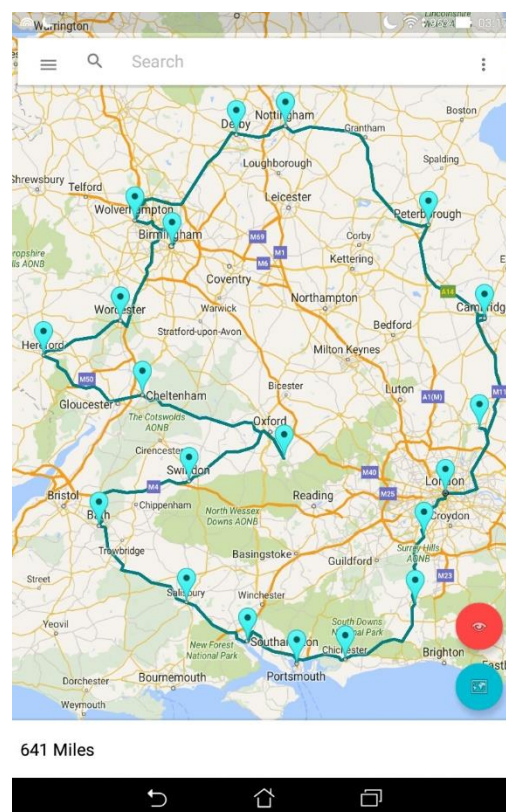


Figure 1. Travelling Salesman tour of twenty locations around the United Kingdom

H Gurung, Google Maps based Multi-destination Round-trip Planner, *Proc. 13th School Conf. for Annual Research Projects*, V F Ruiz (Ed), pp. xx–yy, University of Reading, 3rd June 2014.