College of Engineering Chengannur
Department of Computer Engineering
B. Tech. Computer Science & Engineering
CSD415 Project Phase I (2023)
Project Proposal & Approval
Domain: Web-Based DBMS Application

Project-group-number:11 **Tourism Planner Website**
01 Abin Skaria, 02 Jais Tomy, 03 Sahal Basheer, 04 Shiwine K Sebastian, 05 Souhrid Suresh

October 5, 2023

Abstract

Tourism is a thriving industry that contributes significantly to the global economy. As tourists seek immersive experiences and cost-effective travel options, the need for efficient itinerary planning becomes paramount. This project explores the application of the Traveling Salesman Problem (TSP) in the context of tourism to optimize tourist itineraries. The primary objective of this project is to develop a software tool that assists tourists in creating optimal travel routes by solving the TSP. The TSP is a well-known combinatorial optimization problem that seeks to find the shortest possible route that visits a set of locations exactly once and returns to the starting point. In the context of tourism, this problem translates to finding the most efficient route that allows tourists to explore a destination's key attractions while minimizing travel time and expenses. Our approach involves collecting and curating data on tourist attractions, transportation options, distances, and relevant costs. The TSP algorithm is then applied to this dataset to generate optimized itineraries. The software tool will provide users with the flexibility to customize their preferences, such as prioritizing certain attractions, accommodating time constraints, or selecting transportation modes.

1 Introduction

In the vibrant realm of global tourism, where exploration meets economic significance, the quest for immersive experiences and budget-friendly travel has never been more paramount. As travelers increasingly yearn for efficient, tailored itineraries, the intersection of technology and wanderlust becomes a focal point. This project delves into the intricate landscape of travel optimization, specifically tackling the challenges through the lens of the renowned Traveling Salesman Problem (TSP). At its core, the TSP represents a quintessential combinatorial optimization challenge — finding the shortest route that visits a set of locations exactly once and returns to the origin. When transposed into the context of tourism, this conundrum evolves into a powerful tool, capable of crafting optimal travel routes that allow tourists to traverse a destination's highlights while minimizing both time and expenses. In the heart of this endeavor lies the development of a sophisticated software solution, meticulously engineered to assist travelers in curating their dream journeys. By amalgamating comprehensive data on tourist attractions, transportation options, distances, and relevant costs, our approach harnesses the TSP algorithm to generate meticulously optimized itineraries. This software not only promises seamless exploration but also empowers users with the flexibility to customize their adventures — be it prioritizing specific attractions, accommodating time constraints, or choosing preferred modes of transportation. Embark with us on this innovative expedition, where cutting-edge technology meets the timeless allure of travel, reshaping the way we experience the world, one optimized itinerary at a time.

2 Report of Work Done

A thorough research was conducted to analyze all the TSP algorithm and select the best approximation and optimization algorithm to implement on project that has less time complexity. We analyzed similar websites like Wonderlog, TripIt TripAdvisor etc. and realised the significance of developing this webapp by implementing TSP

3 Proposed Project

3.1 Problem Statement

The project aims to develop a software tool utilizing the Traveling Salesman Problem (TSP) to assist tourists in creating optimal travel routes, enhancing their immersive experiences and cost-effectiveness while exploring tourist attractions.

3.2 Proposed Solution

The proposed solution for the system comprises a robust webapp built with ReactJs. This webapp ensures the best possible route planning along the selected tourist places. The best possible route is implemented by utilizing TSP algorithm. It will help the user in getting the optimal path to be taken along the given spots. Initially when the user gives the place it will show the possible the tourist spots, restaurants, hotels. The webapp consists of user interface where the user can add the places where the user wishes to travel. The app will provide the best path to be taken along with the map.

3.3 Hardware & Software Requirements

Any Desktop operating system or mobile OS that is compatible and capable of running Google Chrome is sufficient. ie. Mobile devices should have at least 4Gb RAM for smooth running of the application.

Programming language: ReactJs is used to develop the website it is very suitable for developing web applications. NodeJs is expected to be used as the backend for database management. Python is used to connect the database with the web application. Google Map API: the device should be capable of running Google Map API. For best performance recommend the latest version of Chrome.

3.4 Work Schedule

- **October to December (2023):**
  Get Familiarized with Google Maps API features. Analyzing various approximation and optimization algorithms related to tsp. Review and understand the best algorithm for implementation. Begin designing the project, including conceptualization and initial UI/UX planning.

- **January to April (2024):**
  Get Familiarized with ReactJs and NodeJs. In-depth learning of Python. Commence the project development phase. Work on user interface development and Implementation of data structure and algorithm visualization. Address any technical challenges that arise during development.

- **May to June (2024):**
  Enter the debugging and testing phase. Conduct thorough testing for functionality and performance. Optimize the webapp for smooth user experience.

References

[1] https://wanderlog.com/

[2] C. Sun, "A Study of Solving Traveling Salesman Problem with Genetic Algorithm," 2020 9th International Conference on Industrial Technology and Management (ICITM), Oxford, UK, 2020, pp. 307-311, doi: 10.1109/ICITM48982.2020.9080397.

[3] https://www.researchgate.net/publication/283427132_Optimization_of_Traveling_Salesman_Problem_Using_Affinity_Propagation_Clustering_and_Genetic_Algorithm

Guide: Smt Syeatha Merlin Thampy

Coordinator: Shri Ahammed Siraj K K