COMP4801

Final Year Project

Public Transport Review Hub

Group: fyp24003

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1. Introduction

1.1 Background

Public transport, including buses, minibuses, railways and taxis are essential to the daily lives of the millions of people in Hong Kong. Around 90% of passenger trips are taken using the public transportation system [1]. Because of the heavy reliance on public transport, choosing the service to be used in people's daily commute route is vital to people's quality of life. At the same time, online reviews play a significant role in shaping consumer decisions and driving improvements in products and services in today's digital age. It is also believed that the companies will make use of these reviews to improve their services. However, there is a noticeable gap in the availability of a dedicated platform where customers can share their experiences and provide feedback.

1.2 Motivation

Because of the lack of a public transport review platform, finding reviews that are related to public transport is very difficult. Currently, the reviews spreaded into different social media platforms such as Facebook, Instagram. It is hard for the public to know the service level of the specific public transport service. And it will require more effort for public transport service providers to gather opinion from theThe reviewing process by the service provider is also complicated because there is no feature that facilitates the input process in the existing platforms. Public transport reviewing platform with a wide range of transports and data analysis functions should be developed to reduce the gap. Therefore, we would like to develop a mobile app for all public transport reviews named Public Transport Review Hub. It will consolidate all reviews in a single platform which allows for easy access to public transport reviews . Helping the public choose which services to be used in their trips and letting companies improve their service quality based on customer feedback.

2. Project Objectives

Public Transport Review Hub will provide a dedicated platform for all public transport reviews. It will have four major functions.

FIrst, it provides search and review functionality. This function enables users to search for specific public transport services and submit reviews and ratings based on their experiences. It benefits the users to filter the review for specific types of transport they want. Secondly, it enhanced the review input process. The enhancement includes using Optical Character Recognition (OCR) to scan the word on paper and location tracking to help users input the location. This feature can shorten the input time of the reviews. Thirdly, this app provides the review page for comments and feedback. This page allows users to review existing reviews. Users can leave comments and feedback on other people's reviews. It encourages an in-depth discussion on that review. Finally, it provides a review summary page. This page will show a summary about a specific service or route including basic information about that service, average rating and the related reviews about that service. It will also make use of data visualization to analyze the review data. Users will be able to learn more about the service in a short time and the public transport service provider can use the function to find the area of improvement.

The above four contributions consummate the current transport reviewing process. It is believed that users will be more willing to share their public transport experience and help improve the quality of public transport services.

3. Methodology

3.1 Front End:

The front-end mobile application will be an interface which the users will be interacting with. It will be responsible for collecting user reviews as well as present data analysis to users.
It will be developed using the React Native framework. React Native is a mobile app UI framework which is using JavaScript/Typescript language [2].
There are multiple reasons for choosing this framework. React Native can be used to develop mobile apps for both IOS and Android platforms. It will allow the Public Transport Review Hub to be exposed to the maximum number of potential users which is very important for an app that heavily relies on collecting user reviews. It also eliminates the need of maintaining multiple codebase for different platforms which will make the development process easier. Native components from each operating system are used to render the app [3]. Allowing the app to provide similar experience to those native apps in their respective platforms and promotes learnability of the app.

3.2 Back End

The back-end server will be handling all users requests like getting and submitting reviews. It will also perform the authentication and authorization.Express.js will be used for this task. Express.js is a JavaScript back-end framework that is based on Node.js.
The main reason for using Express.js is its performance. Express.js is fast and minimalist so the servers written using Express.js will be highly efficient [4]. The speed of client-server interaction will be maximized and the waiting time of each action will be reduced.Improving the user experience. It also supports middleware features that enable authentication and authorization to be implemented[]. It will unintended access to database data and improve the security of the server. Furthermore, express js is mainly written in JavaScript which is the same for React Native. It will allow both front and back end to be developed using the same language without constantly switching back and forth. Increasing the efficiency and productivity of this project.

3.3 Database

Database will be responsible for storing all user data and reviews. PostgreSQL is used for the database and Prisma will be used as the ORM(Object–Relational Mapping). PostgreSQL is chosen because it is a relational database where the data are organized into tables and tables can be joined using different keys[5]. This allows relationships between tables to be found and enables analysis to be done to gain more insight about the data. Prisma is an ORM that lets the database be accessed using functions like an object instead of using SQL[6]. This allows for easier database access because SQL can be hard to write and understanded. Also, not using SQL prevents the risk of SQL injection which further fortifies the security of the database.

3.4 Location Tracking Function

A location tracking function will be provided to input current position or track the route over a period of time. This will allow users to enter location information quicker.
Google Map will be used as the map service for the route tracking feature. It is used because it is one of the most popular map services and it has many robust features that will be very useful for the app. The location information recorded by the device can be entered into Google Map and it will draw the route on the map [7]. It can also show information like distance and time of travel [7] which will be very useful for the users that want to know more about their journey. Additionally, Google Map will suggest routes to users[7] so users can compare the recommended path to the actual route they have taken. Allowing users to know whether they are taken on a detour in a taxi ride.

3.5 Text Recognition Function

Text Recognition is another feature that will be available in the app. Users can use this function to quickly scan important information like license plates and driver’s info.
Google ML Kit will be used for the OCR feature. Google ML Kit provides packages that utilize machine learning for mobile devices. Text recognition is one of the features in the package and it will be used in the app. All processes of ML Kit are done locally on the device without using an external server[8] so the processing speed will be higher. Local processing also means it will still work when being offline. Additionally, it enables real-time processing[9] which allows users to check the result immediately with little wait time.

3.6 Review Viewing System

Summary of each public transport route can be searched and viewed in the app. The summary will provide basic information about the route as well as related reviews of that route like rating and comments. When users are searching for reviews for a specific route, it is important to show quality reviews that actually provide valuable opinion. A search algorithm will be implemented to sort and select the best reviews. This algorithm will choose review based on multiple factors including the amount of upvote and downvote, review date and view number.

4. Schedule and Milestones

Period	Work Description
Sep - Oct	- Confirm project topic and scope - Detailed project plan - Create Project Website
Oct - Nov	- System design - Test and analyze feasibility of each app function - Implement basic functions
Nov - Dec	- Implement important functions (Location Tracking & Text Recognition) - Design interface for Mobile application
Dec - Jan	- Continue implementation of important functions - Implement UI interface - Prepare interim report
Jan - Mar	- Complete Implementation of the app - Deploy for testing - Testing and debugging
Mar - Apr	- Cleanup source code - Prepare final report and presentation

5. Reference

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