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TravelEase: A Comprehensive Android Tourist Companion

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***Abstract*: An innovative android application designed to make your travel experiences more seamless and enjoyable. This comprehensive tourism guide offers a range of features that cater to all your travel needs. From route and time estimation, suggesting tourist places and local attractions, and traffic analysis, to providing fare information for taxis and buses, this app has got you covered. The application also features a review and blog portal where the users can share their experiences and give their valuable insights to other travelers as well. The safety alert feature would ensure that you are always aware of any potential hazards, while the complaint and report portal provide a platform for users to voice any concerns they may have. All these features and more are easily accessible through the user dashboard, making our app a one stop shop for all your travel needs.**

***Keywords*: android application, tourism, guide, route estimation tourist places, local attractions, traffic analysis fare information, review portal, blog portal, safety alert.**

1. Introduction

The purpose of this application is to help travelers explore a new city by providing information on local attractions, restaurants, and accommodations, guide through the city and also look after their safety. The app also includes a review and blog portal where users can share their experiences and valuable insights with other travelers. The safety alert feature ensures that users are always aware of potential hazards, and the complaint and report portal provide a platform for users to voice any concerns.

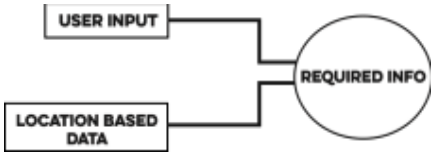

Fig. 1. Basic process

A. Objectives

The objective of this project is to provide basic requirements on some commonly faced problems by tourist. Besides the app aims to simplify the travel planning process by providing features such as estimating travel routes and times, suggesting popular tourist places and local attractions, analyzing traffic, and providing fare information for taxis and buses.

B. Scope

Our project's target audience is primarily tourists in India. Additionally, Indian citizens, especially those who are recent arrivals in a city, can use the application to find out the route and expense of various transportation options from source to destination. At this time, our project only covers the Panvel region, so people traveling Panvel can only use the application to learn about the transportation options in this area.

C. Outline

The number of people interested in tourism is increasing day by day. They travel to India for different purposes such as visiting, religious, job, business and so on.

India is estimated to contribute 250 Bn USD GDP from Tourism, 137 Mn jobs in the Tourism sector, $56 Bn in Foreign Exchange Earnings and 25 Mn foreign arrivals are expected to

Table 1
Comparison table

Features	Trivago	Hopper	TripAdvisor	Our App
In-app translation functionality	No	No	No	Yes
Travel itinerary generator	No	No	Yes	Yes
User ratings and trip reviews	Yes (only for hotels and restaurants)	Yes (only for hotels, flights and restaurants)	Yes	Yes
Blog Section	No	No	Yes	Yes
Easy transport order	Yes	Yes	No	No
Weather forecasting	No	No	No	Yes
Emergency services	No	Yes	Yes	Yes
Social media integration	Yes	Yes	No	Yes
Offline Service	No	No	No	Yes
Local Info about transport fare	No	No	No	Yes
Find Travel Group	No	No	No	Yes
Report Section	Yes	Yes	Yes	Yes

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be achieved by 2030 [1].

2. Literature Survey

A. Literature Review

Travel apps are very popular and are among the top downloaded business apps, with 60% of travelers using them [2]. When selecting a travel destination, various indicators such as transportation, accommodation, food, and tourism activities are considered. While many studies have found that using mobile apps can improve the travel experience, there is a lack of research on their weaknesses and limitations during a tour.

1) Static Map Approach

Static map which is just an image added to the webpage with simple HTML. It is not interactive, which means no panning, zooming or changing map layers.

2) Presenting data into Pictorial or Textual format

In this method the required data is represented by colors or numbers to show the importance of the variable. For example, if user search most visit place in a certain area then the result will be containing a table where the place which has highest number of visitors in the data will appear first and the next place according to data in a table format, in pictorial representation the highest visited place can be show using shades of any color on a static map. This technique is used by [3].

3) Dynamic Maps Approach

A dynamic map approach can greatly enhance the user experience of the Tourist Guide app by providing real-time information and interactive features.

4) Service Based on Location using Google Maps API

Integration of Google Maps API: Google Maps API can be used to provide interactive maps with features such as directions, traffic updates, and street views. This can help users plan their routes and navigate to their destinations more easily.

5) Location-based recommendations

The app can use the user's location to suggest nearby tourist attractions, restaurants, and other points of interest. This can be achieved using the Google Places API, which provides information on businesses and points of interest in a specific location.

6) Custom map markers and overlays

Custom map markers and overlays can be used to highlight popular tourist attractions and provide additional information such as opening hours, reviews, and ratings.

7) Offline maps

The app can provide offline maps for users who may not have access to a reliable internet connection. This can be achieved using the Google Maps SDK for Android, which allows developers to cache and display map tiles and markers offline

8) Interactive user-generated content

The app can allow users to add their own reviews, photos, and comments to the map. This can provide valuable insights and recommendations for other users

9) Wolverine for traffic analysis

Wolverine - a non-intrusive method that uses sensors present on smartphones. This extends a prior study [5] to improve the algorithm based on using accelerometer, GPS and magnetometer sensor readings for traffic and road conditions detection. This technique is specifically interested in identifying braking events - frequent braking indicates congested traffic conditions - and bumps on the roads to characterize the type of road.

Fig. 2. Google Maps API technique [6]

3. Proposed System

A. Overview

The proposed system is an innovative Android application designed to make travel experiences more seamless and enjoyable. It offers a range of features that cater to all travel needs, including route and time estimation, suggesting tourist places and local attractions, and traffic analysis. The app also provides fare information for taxis and buses, a review and blog portal, safety alerts, and a complaint and report portal.

B. Existing System Architecture

The existing systems for tourist guide applications are typically limited in terms of functionality and user experience. Many of these applications are standalone and do not integrate well with other services, making it difficult for users to access all the information they need in one place. Some of the existing systems may have limited search and recommendation capabilities, providing users with a limited set of options for tourist attractions and local places. The maps and navigation features may also be limited, providing basic directions without real-time updates on traffic or other obstacles. Provides fare information for taxis and buses, a review and blog portal, safety alerts, and a complaint and report portal.

C. Proposed System Architecture

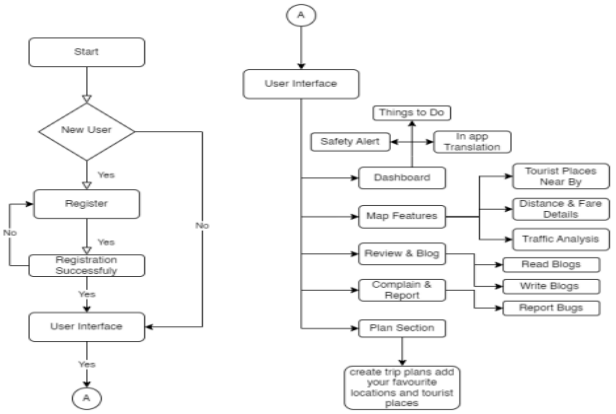

Fig. 3. Proposed system diagram

A proposed system architecture for an Advance Tour Guide using Kotlin and Jetpack Compose using MVVM architecture and could include the following components:

- Model: This layer is responsible for the abstraction of the data sources. Model and View Model work together to get and save the data.
- View: The purpose of this layer is to inform the View Model about the user's action. This layer observes the View Model and does not contain any kind of application logic.
- View Model: It exposes those data streams which are relevant to the View.

4. Design Approach

1) *User registration and login:* Users can create an account and login to the app using their email or social media accounts.
2) Home screen/dashboard: The home screen will display a dashboard with options to access various features of the app, including search, maps, reviews, and settings.
3) *Search feature:* The app will allow users to search for tourist attractions, restaurants, and other points of interest based on location, keywords, and categories.
4) *Maps feature:* The app will provide interactive maps with real-time information such as directions, traffic updates, and nearby points of interest. Users can customize the map markers and overlays to highlight their preferred locations.
5) *Reviews feature:* Users can add their own reviews, photos, and comments to the map, and view reviews from other users. The app can also integrate with social media platforms such as Facebook and Twitter to allow users to share their experiences with friends.
6) *Safety alert feature:* The app can provide safety alerts based on real-time information such as weather forecasts, traffic conditions, and security updates. Users can receive notifications and alerts for potential hazards and emergencies.
7) *Complaint and report portal:* The app can provide a platform for users to voice any concerns they may have, including complaints about services or attractions. Users can submit reports and receive feedback from the app administrators.
8) *Payment integration:* Though this feature is not in our current System Design, the app can also integrate with payment gateways such as PayPal and Stripe to allow users to make reservations and purchase tickets for tourist attractions and events.

5. Machine Learning Techniques

1) Collaborative Filtering

Collaborative Filtering is a machine learning algorithm that can be used to recommend tourist attractions and places of interest to users based on their preferences and behavior. This algorithm analyzes the user's behavior and preferences, such as the tourist attractions they have visited, and recommends similar attractions that they may be interested in.

2) Decision Trees

Decision Trees are a machine learning algorithm that can be used to provide personalized recommendations to users based on their preferences and context. This algorithm can be used to analyze the user's location, time of day, and other factors to provide personalized recommendations for nearby attractions, restaurants, and events.

3) Clustering

Clustering is a machine learning algorithm that can be used to group similar tourist attractions and places of interest together. This algorithm can be used to identify similar attractions based on various factors such as location, type, and popularity. This information can be used to provide personalized recommendations to users based on their preferences.

4) Traffic Analysis Learning Technique

Monitoring road and traffic conditions in a city is a problem widely studied. Several methods have been proposed towards addressing this problem. Several proposed techniques require dedicated hardware such as GPS devices and accelerometers in vehicles or cameras on roadside and near traffic signals. All such methods are expensive in terms of monetary cost and human effort required. Wolverine [4] - a nonintrusive method that uses sensors present on smartphones, extend a prior study to improve the algorithm based on using accelerometer, GPS and magnetometer sensor readings for traffic and road conditions detection. This technique specifically interested in identifying braking events - frequent braking indicates congested traffic conditions - and bumps on the roads to characterize the type of road.

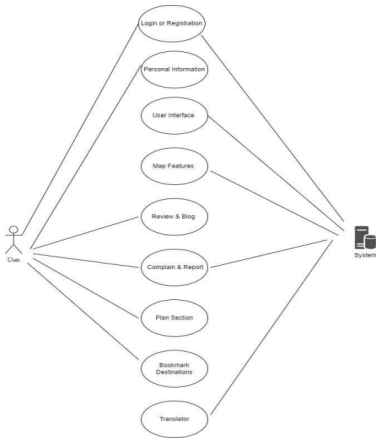

Fig. 4. Proposed use case diagram/activity diagram

6. Result

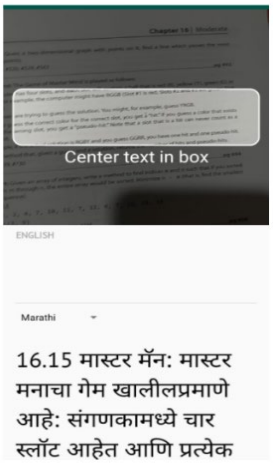

Fig. 5. Displays the translator of project

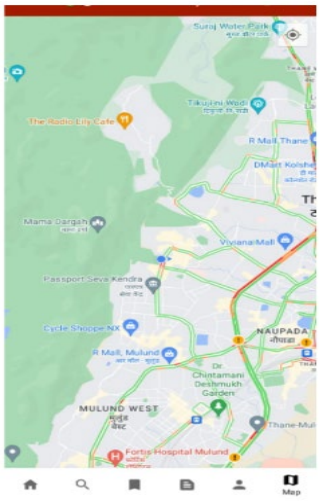

Fig. 6. Offline map feature of project

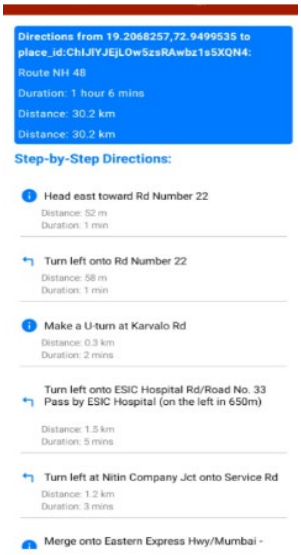

Fig. 7. Direction feature of project

Fig. 8. Displays nearby tourist destinations

7. Conclusion

The proposed project is an Advance Tour Guide system that would provide personalized recommendations to users during their trip. The system would include a mobile application written in Kotlin and built using Jetpack Compose for a modern and efficient user interface. The application would leverage cloud-based data, machine learning algorithms, and real-time data such as weather, traffic, and events to provide tailored recommendations to users. The system would also integrate with a payment gateway to allow users to make payments for bookings and other services through the app, and provide a feedback mechanism for users to rate and review services they have used during their trip.

References

[1] J. Harty, H. Zhang, L. Wei, L. Pascarella, M. Aniche and W. Shang, "Logging Practices with Mobile Analytics: An Empirical Study on Firebase", *8th IEEE/ACM International Conference on Mobile Software Engineering and Systems*, pp. 56-60, 2021.

[2] Li Yang and Dai Yongqiang, "Two-way personalized recommendation algorithm based on customer preferences", *Computer Application Research*, vol. 38, pp. 55-59, September 2021.

[3] Ardiansyah Dores, Novi Irnawati and Popy Meilina**,** "Android Based Application Using Google Maps API for Tourism Travel Guide," International Review on Computers and Software (IRECOS), vol. 15, pp. 32, December 2020.

[4] X. Liu, F. Mehraliyev, C. Liu, and M. Schuckert, "The roles of social media in tourists' choices of travel components," Tour. Stud., no. September, pp. 1–12, 2019.

[5] Cai Yongjia, Li Guanyu and Guan Haoyuan, "Personalized recommendation algorithm based on graph entropy in trusted social networks", *Journal of Computer Applications*, vol. 39, pp. 55-59, January 2019.

[6] Zheng Enrang, Han Guo Feng and Liu Chen, "Research on personalized recommendation algorithm for tourist attractions based on domain adaptation", *Journal of Shaanxi University of Science and Technology*, vol. 7, pp. 135-139, January 2019.

[7] Cheng Baomei, "Research on e-commerce personalized recommendation algorithm based on collaborative filtering", *Modern Electronic Technology*, vol. 42, pp. 47-52, 2019.

[8] Xiongbin Wu, Hongzhi Guan, Yan Han and Jiaqi Ma, "A tour route planning model for tourism experience utility maximization," Advances in Mechanical Engineering, vol. 9, pp. 1–8, 2017.

[9] Li Li, Tegawendé F. Bissyandé, Mike Papadakis, Siegfried Rasthofer, Alexandre Bartel, Damien Octeau, Jacques Klein and Yves Le Traon, "Static analysis of android apps: A systematic literature review," Information and Software Technology, vol. 88, April 2017.

[10] Fuentetaja et al. 2014, "An analysis of mobile applications classification related to tourism destinations," *Information and Communication Technologies in Tourism*, pp. 31-44, 2014.

[11] Ravi Bhoraskar, Nagamanoj Vankadhara, Purushottam Kulkarni and Bhaskaran Raman, "Wolverine: Traffic and road condition estimation using smartphone sensors," *4th International Conference on Communication Systems and Networks*, 2012.