First Trip – A Travel & Guide Community App

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***Abstract*—Tourism plays a vital role in economic development and cultural exchange; however, existing digital tourism platforms often prioritize commercial promotion over genuine community engagement and sustainability. To address this gap, First Trip introduces an AI-powered, community-based smart tourism platform designed to connect tourists, local villagers, and administrators in a unified digital ecosystem. The system integrates an AI chatbot for personalized itinerary generation, an interactive map for nearby attractions, and real-time crowd and weather analytics to ensure safe and informed travel. Local villagers can post updates, share cultural insights, and promote local attractions, thereby fostering equitable economic participation and preserving cultural authenticity. Administrators oversee content moderation and data transparency to maintain system integrity. By combining artificial intelligence, geospatial technology, and community participation, First Trip promotes sustainable, inclusive, and data-driven tourism development, enhancing both traveler experience and local empowerment.**

***Index Terms*—Community-Based Tourism, First Trip, Supabase, React Native, Community Travel App, Real-Time Chat, Geolocation Services.**

I. INTRODUCTION

Tourism is one of the fastest-growing industries worldwide, contributing significantly to cultural exchange, employment, and regional economic growth. However, conventional tourism systems often operate under top-down, profit-driven models that limit local community participation and fail to ensure equitable benefit distribution. Existing tourism applications mainly focus on destination marketing and booking services rather than authentic local engagement and sustainable development.

To overcome these limitations, the proposed system, First Trip, introduces a smart, community-driven digital tourism platform that bridges the gap between tourists, local villagers, and administrators. The application integrates AI-based itinerary generation, interactive map navigation, and real-time crowd analytics to enhance travel safety and personalization. Local villagers can share updates, promote nearby attractions, and engage directly with travellers, thereby improving economic visibility and cultural preservation.

Administrators maintain content quality and oversee platform operations to ensure transparency and data integrity. By combining artificial intelligence, geospatial intelligence, and participatory design, First Trip aims to create a sustainable tourism ecosystem that supports local empowerment, promotes responsible travel, and enriches the overall tourist experience.

II. LITERATURE REVIEW

1. Seok, W. (2018) Developed a participatory mobile tourism application that keeps regional tourism information updated through user-generated content. The study demonstrated that shifting from one-way information dissemination to participatory updates increases community engagement, enhances authenticity, and encourages repeat tourist visits.
2. Hatamifar, P., Ghaderi, Z., & Nikjoo, A. (2021) Applied the Technology Acceptance Model (TAM) to analyze factors influencing international tourists' adoption of local tourism applications. Findings showed that perceived usefulness, ease of use, trust, and security significantly impact adoption, especially in developing regions with limited infrastructure.
3. Phally, R., Kiatkanok, S., Thanvises, A., & Janruang, J. (2022) Proposed PeeChang, a mobile application supporting community-based tourism in Thailand. The system improved usability, integration, and data performance, enabling local communities to enhance sustainability and tourist engagement.

4. Hussein, S., & Ahmed, E. (2022) Developed and evaluated a tourism mobile application for Egypt with a focus on accessibility and stakeholder participation. The app's user-centered design improved satisfaction and expanded e-tourism adoption in developing markets.
5. Alamineh, G. A., Hussein, J. W., Endaweke, Y., & Taddesse, B. (2023) Investigated community perceptions of tourism's social impact in Ethiopia. The study emphasized inclusive tourism planning to balance infrastructure growth with social equality and cultural preservation.
6. Nurhandini, Triastuti, W. T., & Istanto, Y. (2023) Examined how mobile applications and social media influence post-pandemic ecotourism behavior. Results revealed that destination image mediates the effect of tourism apps on eco-conscious behavior, supporting sustainable tourism and local economic growth.
7. Gemar, G., Soler, I. P., & Moniche, L. (2023) Utilized input–output analysis to assess a €2.3 million tourism investment, showing that local initiatives generate strong economic returns and encourage strategic community participation for regional sustainability.
8. Liu, Y. L., Chiang, J. T., & Ko, P. F. (2023) Proposed a rural tourism framework evaluating economic, sociocultural, and educational outcomes. The study concluded that rural tourism can strengthen community resilience and drive post-crisis recovery when managed effectively.
9. Gao, Z., Cheah, J. H., Lim, X. J., Ng, S. I., Cham, T. H., & Yee, C. L. (2024) Explored Generation Y users' behavioral intentions toward travel applications in China. The study found that privacy assurance, engaging design, and perceived value significantly increase user engagement, highlighting user experience (UX) as critical for app success.
10. Kebab, M. (2025) Extended the Technology Acceptance Model by adding trust as a key determinant of travel app adoption in Algeria. Findings revealed that trust, usefulness, and attitude toward technology collectively explain over 50% of adoption intentions.
11. Bakalo, N., Makhovka, V., Krekoten, I., Glebova, A., & Kulakova, S. (2025) Explored sustainable tourism management's impact on financial growth in Ukraine. The study highlighted that combining innovation, marketing, and public–private collaboration strengthens tourism's economic resilience.
12. Manna, A., Chakraborty, D., Cheah, J. H., & Sigala, M. (2025) Applied machine learning to analyze user reviews of travel apps, identifying trust, service quality, and responsiveness as core factors enhancing user satisfaction and engagement, demonstrating the role of AI in tourism innovation.

III. SYSTEM ARCHITECTURE

The architecture of the First Trip Application follows a three-tier structure comprising the Frontend, Backend, and External Services. This design ensures smooth communication, scalability, and real-time data synchronization between users and the system.

3.1 Frontend (Client Layer)

The frontend, developed using React Native (Expo), serves as the user interface for Travellers, Local Guides, and Admins. It includes modules for authentication, role selection, posts, chat, nearby places, and profile management. Users can create or view posts, chat in real time, and explore nearby destinations through integrated geolocation features.

3.2 Backend (Server Layer)

The backend is powered by Supabase, which provides:

- PostgreSQL Database, Authentication, Realtime API, and Storage Services.
  It manages user data, posts, chats, and bookings while ensuring secure and reliable data flow via the Supabase SDK.

3.3 External Services

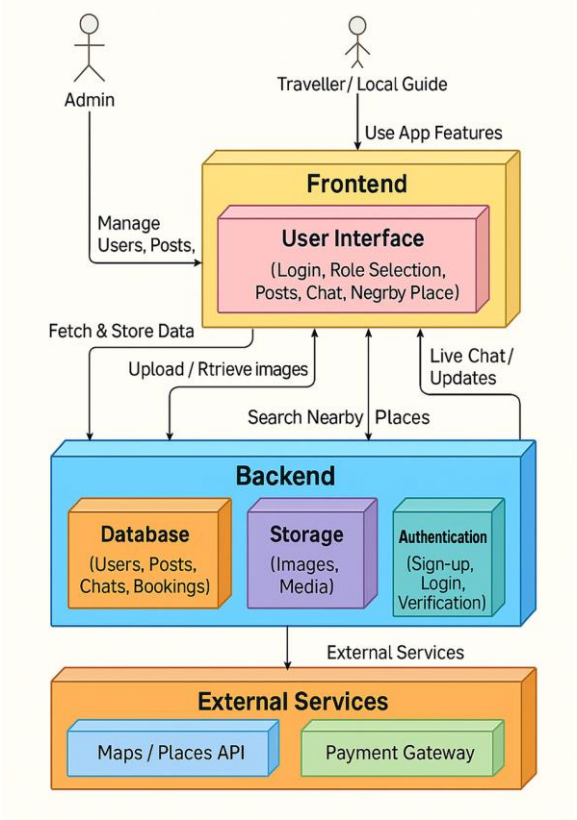
The app integrates with:

- OpenStreetMap API for location-based searches.
- Payment Gateway for secure transactions.
- Cloudinary (optional) for optimized image delivery.

3.4Data Flow Overview

User devices collect GPS data offline and sync it with the cloud when online. The backend aggregates this data to generate crowd insights, which are sent back to users as heatmaps and recommendations through the app's chatbot interface.

Figure 3.1 – First Trip System Architecture



IV. METHODOLOGY

The development methodology of First Trip follows a structured and modular approach that integrates user authentication, role-based access, post management, real-time chat, booking, and geolocation-based nearby place detection. The system ensures a seamless user experience by combining dynamic content sharing with real-time communication and cloud synchronization through Supabase.

4.1 User Registration and Role Selection

- Users begin by registering through email or Google authentication, handled via Supabase Auth.
- Upon first login, users are prompted to select a role — either Traveller or Local Guide.
- The selected role determines access privileges and available features within the app.
- User profiles and roles are stored securely in the Supabase PostgreSQL database, enabling persistent and synced access across devices.

4.2 Post Creation and Interaction

- Both travellers and local guides can create and publish posts with descriptions, locations, and images.
- Posts can be liked, shared, reviewed, or reported by other users.
- All post-related actions are recorded in the backend database for real-time updates on the home feed.

4.3 Real-Time Chat and Booking System

- Users can initiate a chat with the post owner using pre-defined prompts such as "I want to know more about this post."
- The chat module operates on Supabase Realtime, ensuring instant message delivery and synchronization.
- The conversation flow leads to a booking request, where users can confirm seats or local guide services.
- Payment confirmation updates are automatically stored in the bookings table.

4.4 Nearby Places and Geolocation Services

- The app uses the Google Maps API and device geolocation to fetch nearby attractions such as temples, beaches, and landmarks.
- Users can define a search radius (e.g., within 5 km) and select a crowd level filter (Low, Medium, High).
- The filtered results are displayed with distance and crowd density information, enhancing trip planning efficiency.

4.5 Review and Feedback Mechanism

- Users can upload reviews, ratings, and images for posts and places they've visited.
- This community-driven feedback loop improves the reliability of travel information and encourages engagement.
- Reviews are stored in the database and displayed under each post or location.

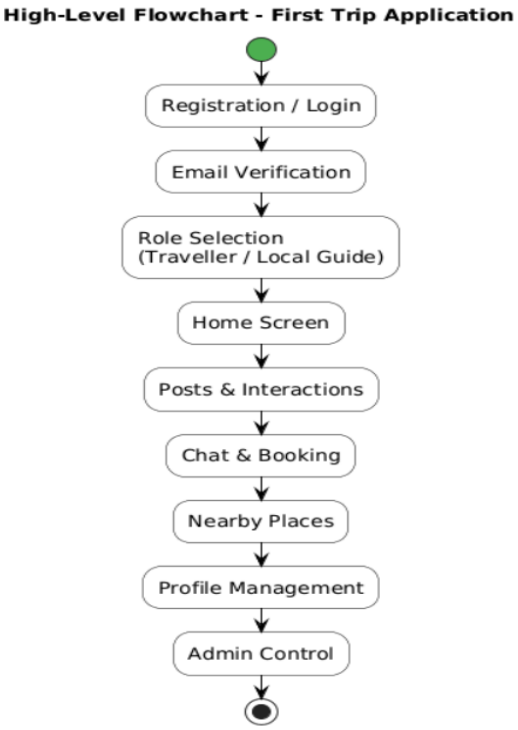
4.6 Admin Management and Monitoring

- The Admin Panel provides comprehensive control to monitor all user activities.
- Admins can approve, remove, or report user posts, manage registered users, and handle flagged content.
- This ensures the platform maintains authenticity, safety, and a community-driven environment.

4.7 Data Storage and Synchronization

- All user data, posts, chats, and bookings are managed in Supabase's cloud database.
- Uploaded images and media are stored using Supabase Storage, ensuring fast retrieval and secure access.
- Data is automatically synchronized across devices, ensuring consistent and up-to-date user experiences.

Figure 4.1 – Flow of System



V. SYSTEM SCREENS

First Trip features a clean, intuitive, and interactive mobile interface designed for travellers, local guides, and administrators. Each screen provides smooth navigation and clear functionality, enabling users to explore destinations, interact with guides, and plan trips efficiently.

5.1 Login Screen

Allows users to securely log in using their email or Google account via Supabase Authentication. Implements secure session management and redirects the user to the Role Selection Screen or Home Screen after successful verification.

5.2 Registration Screen

Enables new users to create an account by entering basic details such as name, email, and password. Upon registration, a verification email is sent to confirm the account. Once verified, the user profile is created in the Supabase Database for personalized access.

5.3 Role Selection Screen

Appears during the first login, allowing users to choose between Traveller and Local Guide roles. The chosen role determines feature accessibility — for example, travellers can create travel posts and bookings, while guides can add area-specific posts and offer services.

5.4 Home Screen

Displays the main feed containing all posts from travellers and guides. Users can filter posts by All, Traveller Posts, or Guide Posts, and perform actions like Like, Review, Share, or Report. The top bar includes a search feature, and the navigation bar provides quick access to Chat, Create Post, and Profile screens.

5.5 Post Details Screen

Shows detailed information about a selected post, including images, descriptions, and location. Provides options to chat with the post owner, give reviews, or report inappropriate content. Includes a booking button for travellers to confirm trips or seats through the integrated payment gateway.

5.6 Profile Screen

Displays user information including profile photo, name, and role. Contains tabs for My Posts (with edit/delete options) and Reviewed Posts (showing posts where reviews were given). Users can update personal details, manage preferences, and view trip history.

Figure 5.1 First App(Profile Screen)

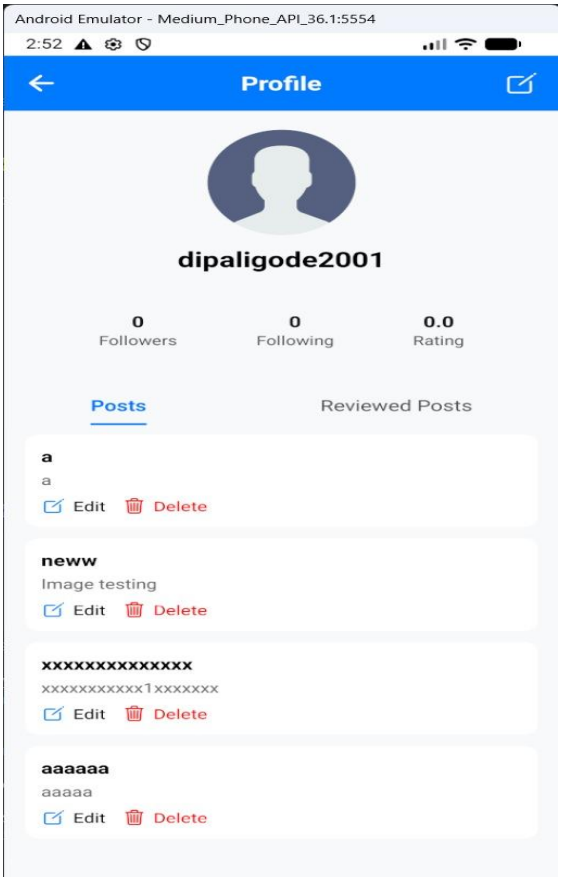
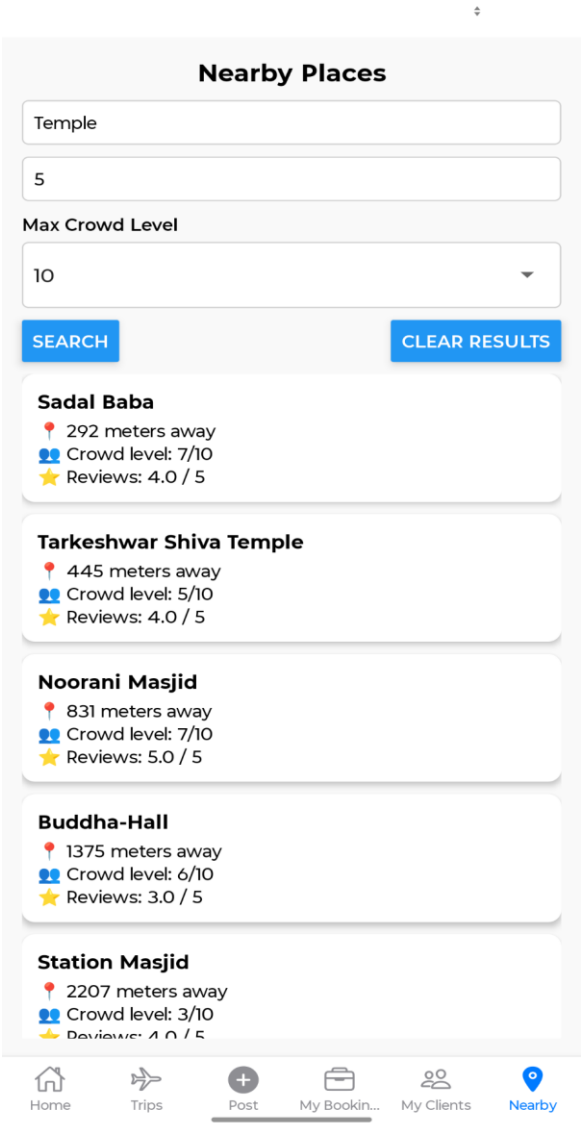


Figure 5.2 First App(Nearby Place)



5.7 Create Post Screen

Allows travellers and guides to create or schedule posts with titles, descriptions, images, and location tags. Posts are saved to the Supabase database and immediately displayed on the home feed after submission.

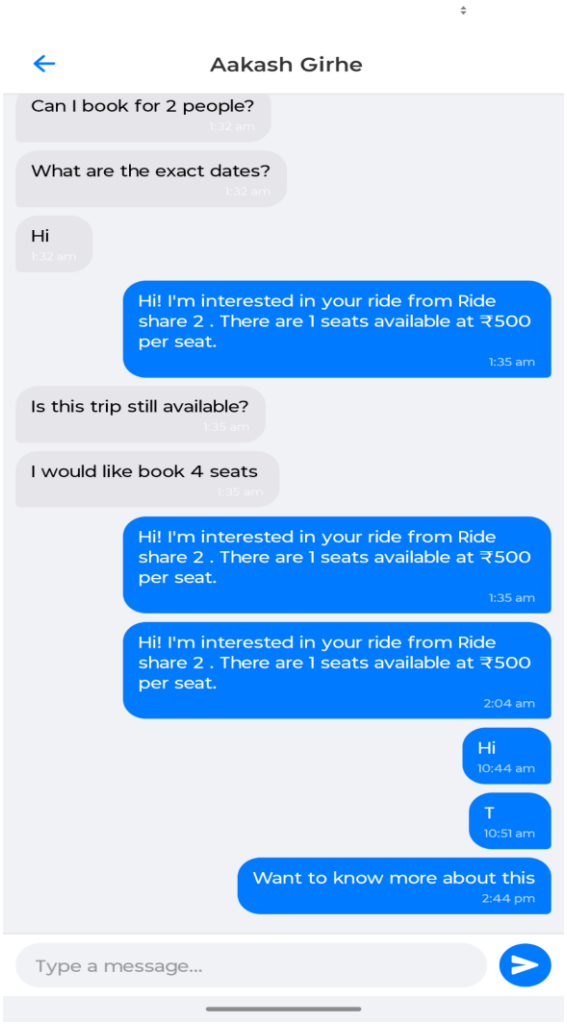
5.8 Nearby Places Screen

Enables users to search for nearby tourist spots (e.g., temples, beaches, restaurants) within a configurable distance (e.g., 5 km). Uses the Google Maps API and device location to fetch results and display crowd-level indicators. Each result shows distance, crowd density, and reviews for better travel planning.

5.9 Chat Screen

Facilitates real-time conversation between travellers and guides through Supabase Realtime. Users can start conversations with a default message such as “I want to know more about this post”, exchange details, and proceed to booking confirmation. This feature fosters direct and transparent communication within the travel community.

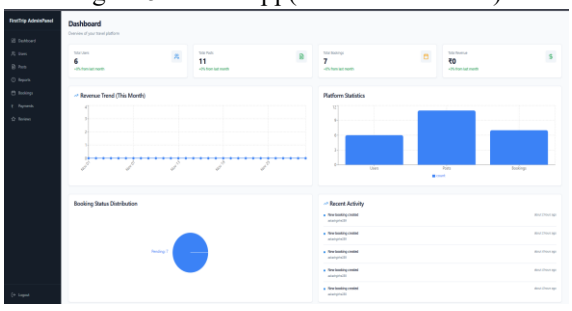
Figure 5.3 First App(Chat Screen)



5.10 Admin Dashboard

Accessible only to admins, this dashboard provides tools to monitor all user activities. Admins can manage users, posts, reports, and chat records, and review flagged content. It also provides analytics on user engagement and booking trends, ensuring a safe and well-moderated platform environment.

Figure 5.4 First App(Admin Dashboard)



VI. APPLICATIONS

The First Trip application serves as a versatile platform that connects travellers, local guides, and administrators through real-time communication, geolocation tracking, and community-based travel features. Its modular architecture and location intelligence make it applicable in several tourism and travel-related domains.

6.1 Tourism and Travel Planning

First Trip enhances the travel experience by enabling users to discover destinations, connect with local guides, and plan trips efficiently. It assists travellers in finding nearby attractions, viewing crowd levels, and booking local services, making it ideal for use in hill stations, coastal areas, heritage sites, and city tours. By combining real-time chat and crowd-aware recommendations, it improves safety and convenience for both solo and group travellers.

6.2 Community-Based Travel and Cultural Exchange

The app encourages cultural interaction by allowing local guides to share posts about their region, traditions, and local attractions. Travellers can engage, share experiences, and review destinations, creating a community-driven travel ecosystem that promotes authentic and sustainable tourism experiences.

6.3 Event and Destination Management

First Trip can be deployed during festivals, fairs, or tourism events to monitor visitor activity through geolocation data. Organizers and administrators can analyze user interactions and crowd concentration in real time to manage flow and improve safety at popular destinations, monuments, and public events.

6.4 Local Business Promotion

The app helps promote local businesses such as hotels, restaurants, and transport services through post sharing and user reviews. Local guides and business owners can post about their offerings, while travellers can discover, review, and book local experiences. This fosters regional economic growth and supports small tourism-driven enterprises.

6.5 Safety and Emergency Assistance

Using location tracking and chat features, the system can assist travellers in sharing their position or

connecting with local guides in case of emergencies. Admins can monitor reported posts or alerts to provide timely help or coordinate with authorities, ensuring safer travel experiences for users.

6.6 Tourism Analytics and Administration

Through the Admin Dashboard, authorities or system administrators can analyse user trends, booking patterns, and post activity data. This enables data-driven decision-making for tourism development, safety protocols, and infrastructure planning.

VI. ADVANTAGES

- Enables real-time chat and booking between travellers and guides.
- Supports role-based access for travellers, guides, and admins.
- Provides nearby place search with geolocation and crowd filters.
- Encourages community engagement through posts and reviews.
- Uses secure Supabase backend for authentication and data storage. Scalable, cross-platform, and easy to upgrade for future features.

VII. LIMITATIONS

• Accuracy of nearby place results depends on GPS and network availability. • Real-time chat and booking require an active internet connection. • Depends on Supabase server uptime for authentication and data synchronization.

VIII. CONCLUSION

First Trip successfully demonstrates how a community-driven travel application can enhance connectivity between travellers and local guides while improving convenience, safety, and engagement in modern tourism. By integrating Supabase for real-time authentication, data synchronization, and chat functionality, the system ensures secure communication and smooth information flow across all devices.

The incorporation of geolocation services, nearby place search, and crowd-level filtering enables users to make better travel decisions and discover attractions efficiently. Community features such as post creation, reviews, and bookings promote collaboration and trust among travellers and local experts. The admin dashboard further ensures content moderation and user management, maintaining a safe and reliable environment.

Overall, First Trip bridges the gap between tourists and local guides through an interactive digital platform that supports real-time chat, location awareness, and role-based accessibility. In the future, the system can be enhanced with AI-driven travel recommendations, AR-based navigation, and multi-language support, making it a more intelligent, scalable, and inclusive solution for smart tourism and sustainable travel experiences.

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Website links:
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