

Roamly - An AI-Powered Travel Plan Generator

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Abstract

The widespread use of mobile applications has woven them into the fabric of our daily lives, whether for personal tasks, corporate responsibilities, or just for fun. Take, for instance, "Roamly - A Travel Plan Generator". This intelligent mobile app is designed for modern users and serves as a bridge between travelers and AI intelligence, utilizing the Gemini API to create itineraries. When travelers request travel plans, the app processes their preferences—such as destination, duration, budget, and interests—using natural language, ensuring that a structured day-by-day plan is generated to meet their needs. By building on the existing "manual research" methodology, which doesn't incorporate Gen-AI, this new app opens up exciting possibilities, like integrating maps for easy view-and-save location changes and expanding its availability to other mobile operating systems beyond just Android.

Keywords - Mobile Application, Generative AI, Google Gemini, Firebase, React Native, Itinerary Generation.

INTRODUCTION

The merging of information technology and communication technology has opened up a world where we can access information and services online from just about anywhere, anytime—even while on the go. Thanks to our fingertips and mobile apps, this kind of access is easier than ever. We can categorize these mobile applications into several types: personal, perishable, transaction-oriented, location-specific, corporate, and entertainment. Imagine a platform that connects users with intelligent itinerary generation seamlessly. With just a few taps on the app, registered users can request services, and thanks to their specific preferences, an optimized schedule is quickly assigned to help out. The magic behind this is the Google Gemini API, which facilitates natural language processing to interpret user prompts. The app boasts a user-friendly interface, offers instant service, and includes features for saving and providing feedback, making it not only incredibly handy but also easy for everyone to navigate.

I. TOOLS AND TECHNOLOGIES USED

A. React Native

The React Native framework is a comprehensive programming package designed for creating mobile applications that operate on both Android and iOS

platforms. This entire kit includes development tools and necessary libraries to help you build a fully functional cross-platform mobile app. These applications are primarily developed using JavaScript/TypeScript and run on a native bridge tailored for mobile systems, which operates on top of the device kernel.

B. Visual Studio Code

Visual Studio Code is an Integrated Development Environment (IDE) that offers developers a solid platform for creating impressive applications. It encompasses various extensions that focus on different facets of software development. VS Code has been around as a primary choice for modern web and mobile developers and has played a key role in the evolution of the React ecosystem. You can run VS Code projects on a variety of machines, including Intel and Mac systems. Additionally, it supports full-stack development, enabling the creation of application frameworks, cloud functions, and a rich platform for clients.

C. Google Gemini API

Gemini is a versatile generative AI that's been a key player in various intelligence-based projects since its launch as a core component of Google's AI platform. The Gemini API takes care of converting natural language prompts into structured JSON, allowing them to run smoothly on any mobile interface, regardless of the underlying hardware architecture. Gemini is known for being secure, high-level, and robust, complete with its own reasoning environment. The word "platform" describes the combination of AI and software that

supports a program. Today, Gemini is widely used in numerous fields, including mobile devices, creative writing, coding, and enterprise applications like travel.

D. *Firestore*

Firestore is recognized as one of the most popular serverless backend management systems in the tech world. Firestore Authentication and Firestore are the backbone of Roamly. You can find the console for Firestore available under the terms established by Google, the company that owns it. If you're looking for more features, there are also enterprise versions available. You'll find Firestore powering many well-known apps that require real-time synchronization. It's a popular choice for mobile applications and is commonly utilized in cloud-based projects. Plus, the cloud functions are now accessible to developers under the pay-as-you-go license.

II. LITERATURE SURVEY

A. *Existing System*

There's this handy mobile app approach called "Manual Research" that's pretty much like the "Traditional Travel Planning for Users". It offers a ton of effort, such as reading blogs, forums, Driver on Demand, comparing hotels, and even Electrical and Plumbing Services. Need AC Maintenance, flight tickets, a Car Spa, or help with your PC & Laptop? They've got you covered! And don't forget, they also handle your Refrigerator, Microwave, Washing Machine, and Home Painting needs too!

B. *Working of Existing System*

The user is required to choose a destination from the range place, and a manual itinerary will be arranged based on the information they find. Just a quick reminder: when crafting of options available in the world. They also need to provide the date and time for when the travel should take responses, always stick to the specified language and avoid No Location Data Available using any others.

III. MODULES IN EXISTING SYSTEM

User Authentication & Security Module

This module manages secure access through **Firestore Authentication**, handling registration, login, logout, and password resets. It includes **Captcha verification** on both login and registration pages to prevent bot activity and requires **Email verification** for account activation.

Plan Generation & AI Module This module utilizes a six-step input pipeline to capture user intent:

1. **Search Place:** Defining the target destination.
2. **Select Traveler:** Identifying the group size (solo, family, friends).
3. **Select Dates:** Determining trip duration.
4. **Set Budget:** Aligning plans with financial constraints.
5. **Review Trip:** Final confirmation of user parameters.
6. **Generate Trip:** Executing the **Gemini API** call for itinerary creation.

IV. FLAWS IN THE EXISTING SYSTEM

In conventional systems, the user must manually gather data from multiple fragmented platforms like blogs, forums, and booking sites. This manual verification of information and scheduling leads to decision fatigue and significant time consumption. Existing applications often fail to provide personalized recommendations or adaptive planning, forcing users to start from scratch if their preferences or budgets change during the research phase.

VI. PROPOSED SOLUTION

The limitations of manual research are addressed by introducing an **AI-Powered Generative Platform**. By integrating **React Native**, **Firestore**, and **Google Gemini**, Roamly automates the end-to-end planning process. When a user enters travel preferences across the six-stage search pipeline, the system generates a structured, day-wise itinerary instantly.

The following process illustrates how Roamly communicates with generative intelligence to produce a plan:

Step 1: Fetch destination, budget, and traveler details from the six-page UI pipeline.

Step 2: Store user preferences and authentication tokens securely in the Firestore database.

Step 3: Pass structured prompts to the Gemini API via a secure Firestore Cloud Function.

Step 4: Render the day-wise itinerary with route visualization on the user's mobile interface

VII. IMPLEMENTATION

By examining the inherent shortcomings and fragmented nature of current manual travel research processes, which often lead to decision fatigue and confusion, we have developed a comprehensive, real-time mobile application aptly named “Roamly—An AI-Powered Travel Plan Generator”. This cross-platform solution, built using the **React Native** framework, addresses the lack of unified, user-centric designs for end-to-end itinerary generation by centralizing destination research and logistics into a single, intelligent interface. By integrating the **Google Gemini API** for generative intelligence and **Firestore** for a secure, serverless backend, Roamly transforms a tedious research task into a smart, automated experience that creates actionable plans in seconds. The application features a structured six-stage UI pipeline—encompassing destination search, traveler selection, date setting, and budget allocation—to ensure that every generated itinerary is highly personalized and context-aware. Below, you will find a curated selection of key snapshots and interface walkthroughs showcasing the application we designed to provide a seamless, high-performance mobile experience for both Android and iOS users.

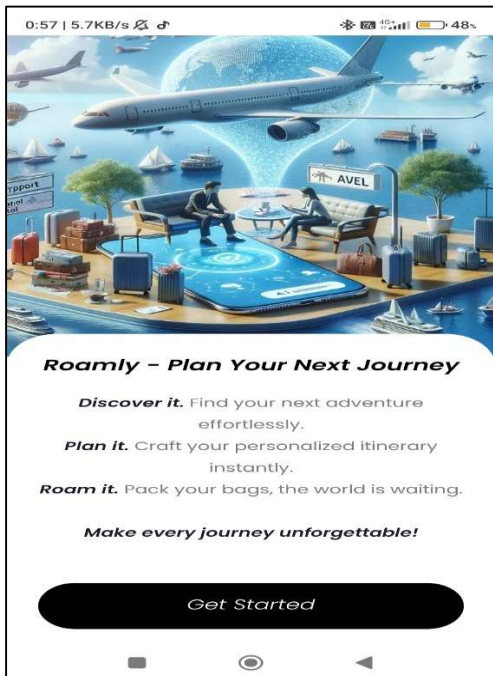


Fig. 1: Welcome Page

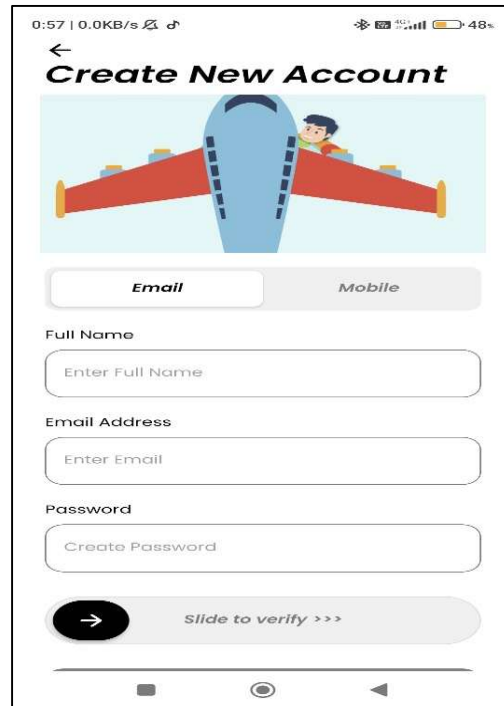


Fig. 2: User Registration Page

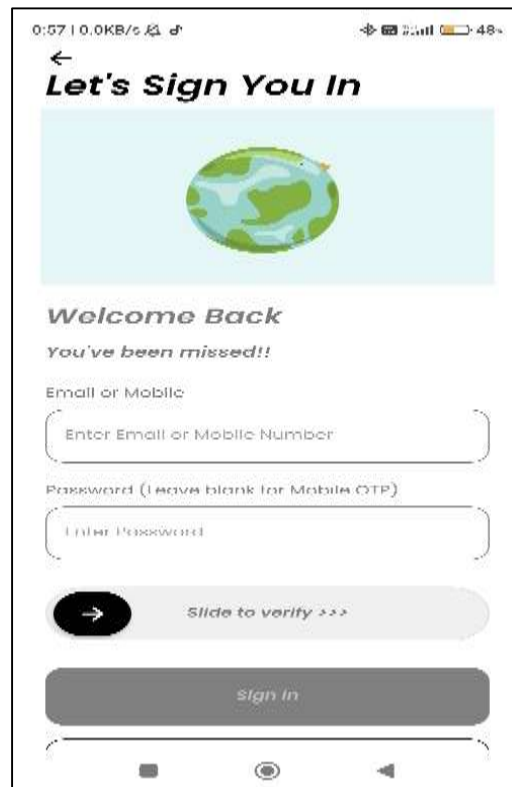


Fig. 3: Login Page

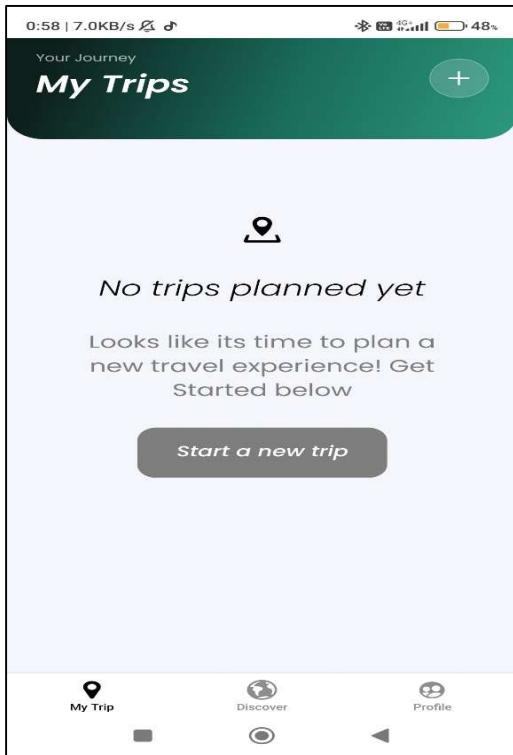


Fig. 4: User Trip Display

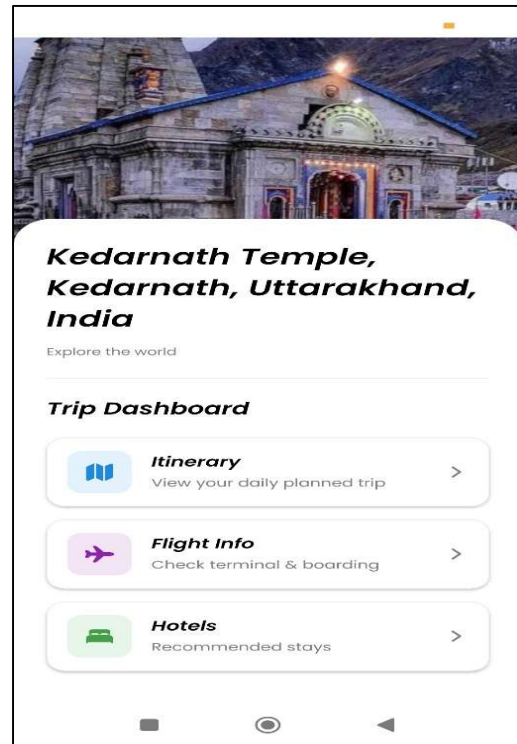


Fig. 6: Generated Trip



Fig. 5: Trip Generation

VIII. CONCLUSIONS

The “Roamly - A Travel Plan Generator” is a tailored mobile app that leverages cutting-edge technologies like the React Native, Firebase, and Gemini for mobile app development. This app is designed to offer a variety of travel plans, including adventure work, relaxing, and sightseeing. What sets it apart from the existing “Manual Search” app is its use of AI to pinpoint users’ interests and connect them with the nearest travel activity in real-time. As a result, this application is not only more dynamic but also more effective and efficient compared to the current system.

IX. ACKNOWLEDGMENT

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