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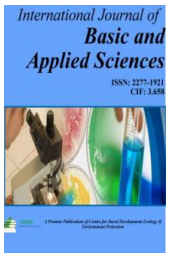

Research Paper

Built a Smart Ai Trip Planner for Effortless and Personalized Travel

Ravikant Raj, Sameer Khan, Ankit Kumar, Kanahaiya Jee, Mohd Murshleen[1]
PG Scholar, Department of Computer Application Tula's Institute, Dehradun
[1]-Assistant Professor, Department of Computer Application Tula's Institute, Dehradun

ARTICLE DETAILS

Corresponding Author:
Mohd Murshleen

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ABSTRACT

This paper is a full-stack web application and AI-powered trip planner made in React. The application delivers travel itineraries with the user's personalized recommendations. The application also tracks users' input in real-time of their destination of choice, which is assisted with Google Places Autocomplete, leverages smart trip itinerary recommendations through Google's Gemini AI functionality, uses Google OAuth login for user account credentials, and persists data through Firebase Firestore. The latest framework for delivering the styling that the user interface uses is Tailwind CSS and ShadCN UI. Finally, regarding user navigability and routing, it makes use of React Router Dom version 6.12. The app was deployed on Vercel, with a custom domain established, configuring the routes, continuous deployment from GitHub for usability, and is still functional to allow each individual user to be fully productive.

1. Introduction

Trip planning can be an enjoyable experience, but let's face it, it is also annoying and often stressful. Fortunately, this AI-based travel trip planner website is taking the intelligence and speed of planning travel to another level. Built using React, this project has you creating a well-thought-out travel plan, personalized to you, in just a few simple steps. Instead of wasting your valuable time working out where to go, where to stay, or what to do, you can simply choose a destination, flight dates, budget, and number of travelers, and the app will take care of the rest. The app uses the Gemini AI model from Google to create complete travel packages for you, such as where to stay, a day 1 itinerary, and useful links to book your travel package. The app also has Google Places Autocomplete, so you can pick your destination easily, Google OAuth to securely log in with your Google account, and all your trip information is saved in Firebase Firestore, so you can retrieve or edit it at any time. The user interface has been created using Tailwind CSS and the ShadCN UI component library and is responsive. The task of organizing a trip provides a lot of uncertainty and stress for users, as they do not know what places, hotels, and activities they want to do and must do the searching manually. This project solves the uncertainty and stress of planning a trip by providing a trip planner that leverages AI to generate a tailored travel plan in seconds. Features like Google Places Autocomplete, Gemini AI, Google sign-in, and data storage in Firebase all provide the user with a smart, fast, and easy way to plan their trip. The application can help reduce the drudgery of planning a trip and has the potential to provide a quick, easy-to-use interface with fast suggestions and secure access to their data.

2. Methodology

Vite was selected for the front-end development as it has rapid setup time and instant hot-reloading, which allows the rapid iteration of your React app. The user interface is built with Tailwind CSS along with the ShadCN UI library to provide a modern and fully responsive aesthetic experience. React Router Dom manages all of the dynamic and nested routes, providing an intuitive and fast multi-page browsing experience. The app successfully integrates the Google Places Autocomplete service, which suggests destinations while the user is typing, thereby limiting user error and improving the usability of the interface. The Google Gemini AI API is the centerpiece of the project. In this case, the user will input their travel destination, budget, and travel party size. The Google Gemini AI uses these user inputs to generate a trip plan with hotels, itineraries, and booking links that are powered by AI. User access is secured with Google OAuth, resulting in a

[1]Corresponding Author can be contacted at *Department of Computer Application Tula's Institute, Dehradun*
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straightforward login that is entirely safe. The user's trip data is stored using Firebase Firestore to allow for easy real-time syncing of data and access to the user's data during their sessions.
Finally, the app is deployed on Vercel with a custom domain and optimized routing so that users have a seamless experience with the production-level web app.

Flowchart

3. Results

The AI Trip Planner project has produced a usable web application for travel planning, consolidating interfaces that facilitate users in entering their trip-related inputs (e.g., destination, budget, and number of travelers), and then receiving a completed personalized itinerary (including hotels, schedules, and booking links) generated by Google's Gemini AI. This planning process typically takes many hours if done manually, but this application avoids that. The implementation of Google Places Autocomplete improves the user's experience by providing fast, accurate location suggestions while reducing user input mistakes.

Furthermore, the use of secure Google OAuth authentication enables the user to safely and securely sign in to the application with Google, as well as manage their trip information across multiple sessions. By storing trip information in Firebase Firestore, users can seamlessly sync real-time trip data, allowing them to consistently access trip information and make updates at any time and from any device. Using a responsive, clean interface created by Tailwind CSS and ShadCN UI, the application performs well on varying screen sizes, improving usability. In addition, the smooth navigation through React Router Dom adds to the user experience and allows users an intuitive journey through the application. Finally, deploying the application on Vercel, with the proper routing and domain, has allowed users to access the application reliably and quickly. In summary, this project demonstrates a solid integration of AI, cloud services, and contemporary web technologies to develop and deploy a scalable and usable travel application.

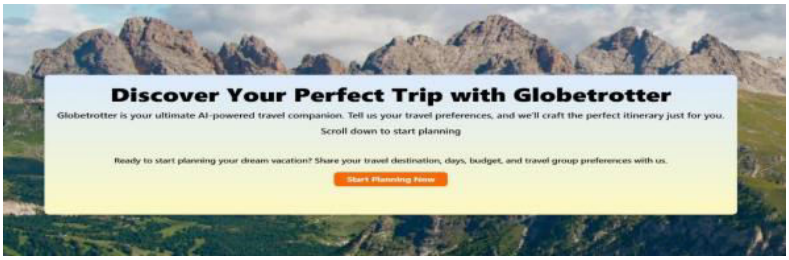

Fig.1(LandingPage)

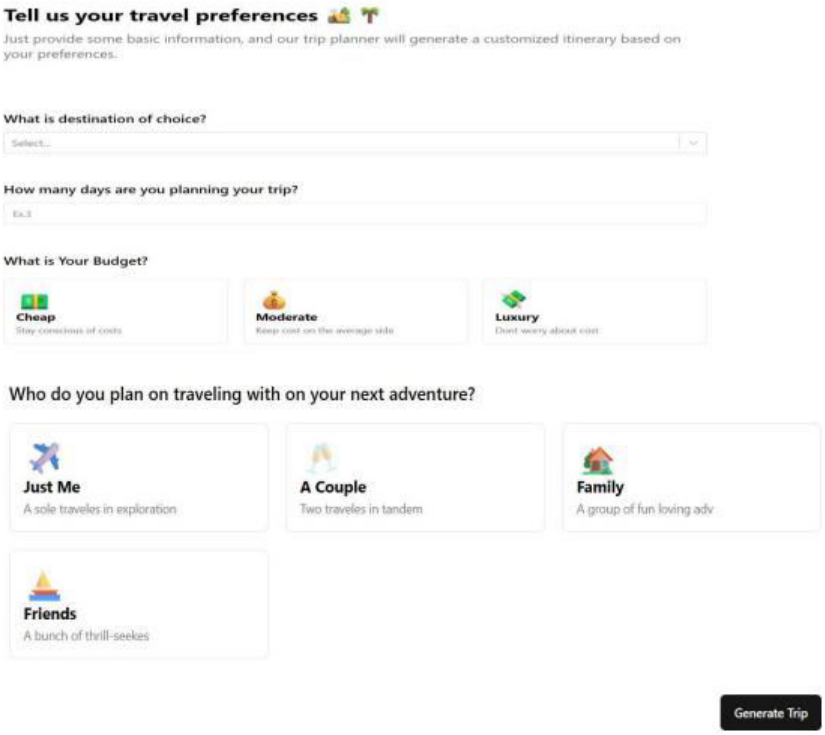

Fig.2 (UserInput)

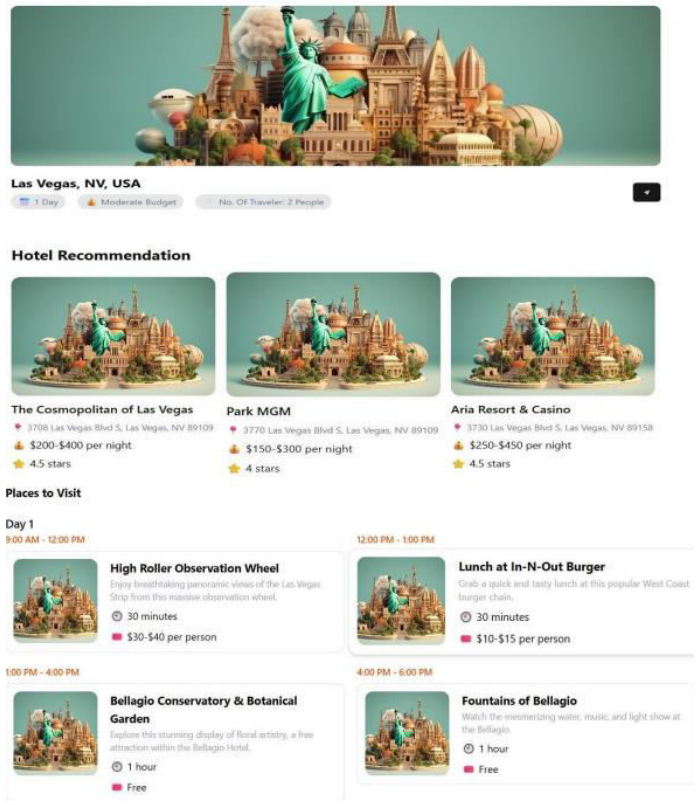

Fig 3. Final Output

4.Conclusion

This AI trip planner changes the travel planning process from tedious, time-consuming, and frustrating into a simple, fast, and enjoyable experience. With the use of smart AI to develop custom itineraries, secure Google sign-on to protect user data, and real-time storage to allow easy access, this planner solves many of the headaches travelers typically face, such as confusion, searching manually, and misplacing or losing details about the trip. With a clean design and easy navigation, anyone can plan their perfect trip without a great deal of hassle. While this tool may be appreciated by travelers everywhere in the future, it demonstrates how to address meaningful real-world problems by combining AI with digital, cloud, and intelligent design thinking.

Future Scope

The AI Trip Planner project has an excellent foundation for changing the travel planning experience, and there are many possibilities for future expansion. As artificial intelligence and cloud technologies advance, the application can be developed further to provide more intelligence and real-time personalized user travel options.

Potential enhancements for the future include:

- **Real-time weather update notifications** and **travel advisories** for selected user destinations, which will improve the decision-making process for users.
- **Multi-language and currency converters**, allowing the product to be utilized by users from around the world.
- The ability for users to **customize itinerary suggestions** by utilizing real-time crowd-sourced information or user reviews for restaurants, landmarks, and activities.
- The integration of a **budgeting tool** that tracks and manages expenses throughout the trip, with integration of **payment gateways** or **digital wallets** for seamless financial planning.
- AI development could analyze users' preferences over time and provide smarter suggestions based on users' previous on-site experiences, search history, user ratings, etc.

Additionally, long-term partnerships or bookings with potential **travel agencies**, **hotel chains**, **airline companies**, etc., can be established through the app platform.

References

Frontend (React + UI)

1. **React – Official Documentation** ReactJS Docs
   Learn components, hooks, JSX, and app structure.
2. **Vite – Fast Frontend Tooling** Vite Docs
   For setting up and running a modern React project.
3. **TailwindCSS – Styling Framework** Tailwind CSS Docs
   Documentation for utility-first CSS and responsive design.
4. **ShadCN UI – Component Library** ShadCN UI Docs
   Documentation for prebuilt, customizable UI components.
5. **React Router – Routing Library** React Router Docs
   For handling page navigation and dynamic routes.

API & AI Integration

6. **Google Gemini – AI Model (via Google AI Studio)** Google AI Studio
   Build and test prompts using Gemini AI.
7. **Google Maps Platform – Places API** Google Maps Places API
   Use Places Autocomplete and Photo API for location search and images.
8. **Google Identity (OAuth 2.0 for Web Apps)** Google Identity Docs
   Secure user authentication using Google login.

Backend (Firebase)

9. **Firebase – Web SDK Setup** Firebase Web SDK Setup
   Integrate Firebase services into your web app.
10. **Firebase Authentication** Firebase Authentication Docs
    Implement Google sign-in and manage user sessions.
11. **Cloud Firestore – Database** Cloud Firestore Docs
    Store and sync trip data in real-time.

Deployment & Hosting

12. **Vercel – React App Hosting** Vercel Docs
    Deploy React projects with GitHub integration and environment variables.
13. **vercel.json Configuration (Routing)** Vercel Routing Docs
    Fix routing issues for React Router in deployed apps.