AI Trip Planner

Meghana[1], Mahitha[2], Kinnera[3], Durga Prasad[4], Mrs. N Sannajaji[5]
[1,2,3,4,5]*Sasi Institute of Technology and Engineering, Department of Electronics and Communication*

***Abstract*—As a consequence of time, money limit and need for customisation travel planning has become a complex task. Most of the times the travel applications have information about popular places to see and reviews by other users but they don't provide a day wise plan to the user based on his preferences. This paper describes an AI enabled Trip Planner application implemented using Large Language Models, RAG & Prompt Designing technique for creating intelligent and changing travel plans. Application described here takes Destination, Trip Duration, Budget and preference of User as an input and will give out a day wise travel plan in structured way including landmarks as well as hidden gems along with Things To-Do, Cost Estimates etc. It also includes Real-time trip modifications and exports them as PDF.**

***Index Terms*—AI Trip Planner, MERN Stack, Artificial Intelligence, Travel Recommendation System, Customized itinerary, LLM (Large language model), RAG (Retrieval Augmented Generation), prompt engineer, Smart Tourism, Vector database, Travel Optimization, User experience.**

I. INTRODUCTION

Nowadays life moves quick, so arranging trips gets tougher when days fill up fast. Most sites give broad tips, falling short on custom routes tailored to you. Once someone shares where they want to go, how long, what fits their wallet, and what they enjoy - plans appear smoothly. Using smart tech behind the scenes, each detail gets weighed before shaping daily breakdowns. Hidden spots pop up alongside known ones, tied with things to do plus rough pricing. This kind of help cuts through confusion, making decisions feel lighter. Planning shifts from hassle to something calm, almost natural. A single click grabs your trip details into a portable PDF file. Changes pop through fast, refreshing every part without delay. Day after day unfolds in order, spelled out plainly. Less paperwork shows up on desks now. Each step fits where it should, cutting down busywork. Time bends easier when plans shape themselves neatly.

II. LITERATURE SURVEY

An integrated mobile application for trip planning navigation and location-based services was developed which is more than just a GPS-based travel application. Smart Travel System Based on Android (2019) by Zhan W [1]. The travel information accessibility improves but with increasing complexity of the systems these systems might not be able to use many features.

Travel Recommendation System Using Collaborative Filtering and AI (2020) by Sharma R [2] focuses on developing a personalized travel recommendation system using collaborative filtering and Artificial Intelligence. It analyses user preferences and past behaviour to suggest suitable destinations and activities. While it improves personalization, it faces challenges such as the cold start problem and scalability issues with large datasets

Mobile Applications in Smart Tourism and Smart Cities Based on Crowdsourcing (2021) by Liu A Y [3] highlights the use of user generated data to provide dynamic and real time travel information. While it enhances scalability and adaptability, it raises concerns regarding about data privacy security and inconsistency in data quality.

Design and Implementation of Smart Tourism Service Platform from the Perspective of Artificial Intelligence (2022) by Wang J [4] focuses on AI based systems that provide personalized travel recommendations using machine learning techniques. However, the system's effectiveness depends on the quality of training data and poor data may lead to inaccurate results.

Machine Learning-Based Cloud IoT Platform for Intelligent Tourism Information Services (2022) by Bi F [5] presents an intelligent tourism system using Machine Learning, Cloud Computing, and IoT to

provide real-time travel recommendations. It improves information sharing and decision-making, but its performance depends on data quality and may not handle sudden changes effectively.

An Android Smart City Traveller App Navi City (2024) by Thorat N [6] introduces a mobile application that uses GPS and mapping technologies to suggest optimal routes and nearby attractions. Continuous usage of maps may lead to drain of mobile battery.

III. PROPOSED SYSTEM

One way to start is by cutting down how much work people must do themselves when planning trips. Instead of old methods, this tool shapes each journey around what the travel says they want - places to go, how long, money limits, time off, likes and dislikes. What helps it stand out is how pieces like RAG, big language models, and smart prompt design come together behind the scenes. These parts shape answers that fit closely with what someone asks for. On the screen, things look clean thanks to React.js handling how users see and click through options. Behind that front layer, Node.js and Express.js take care of logic and tasks running in the background. All details get stored safely inside MongoDB so nothing gets lost. To add more value, live map views and up-to-the-minute forecasts appear through outside tools connected within. Each output arrives neatly arranged, ready to follow step by step. Getting a copy later becomes easier because there's always a PDF saved at the end. That quiet finish makes moving from plan to action feel natural.

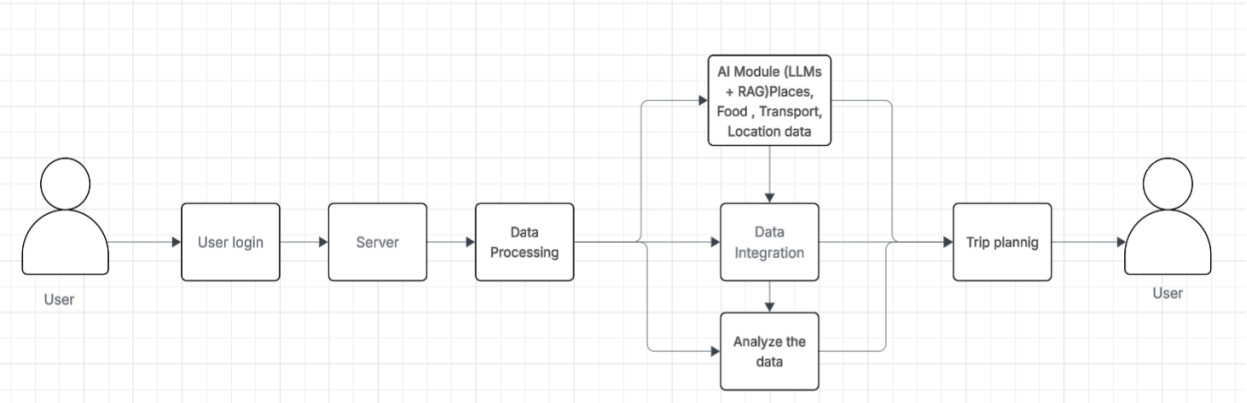


Figure 1: Block Diagram

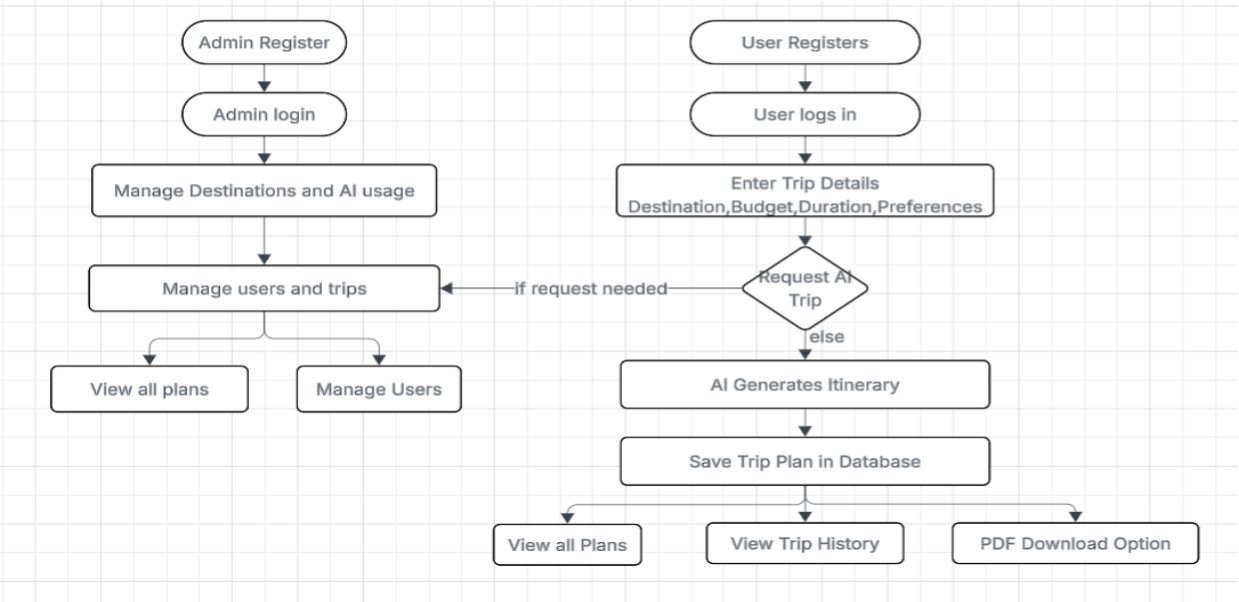


Figure 2: Flow chart of AI Trip Planner

IV. IMPLEMENTATION

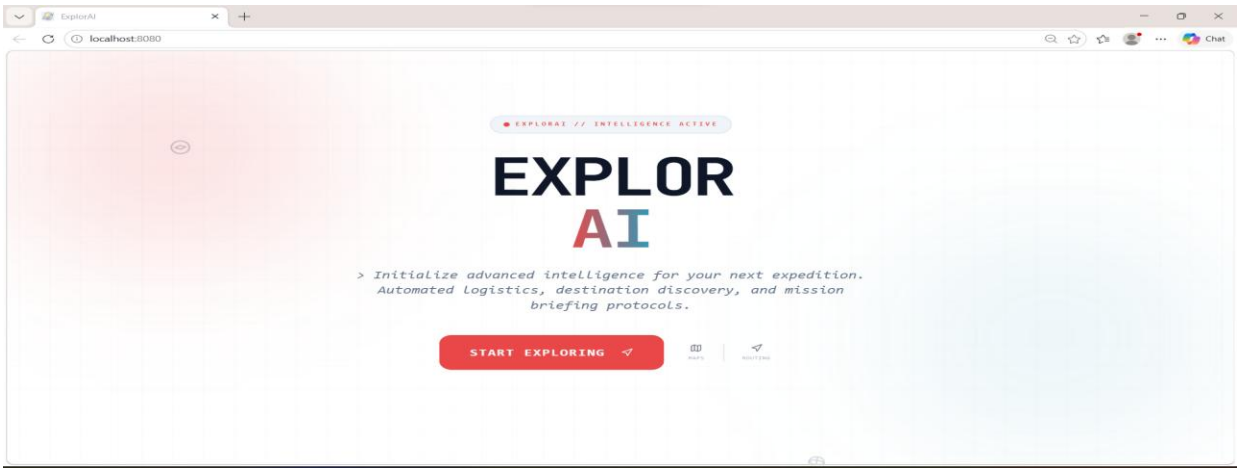


Figure 3: Login / Signup Page

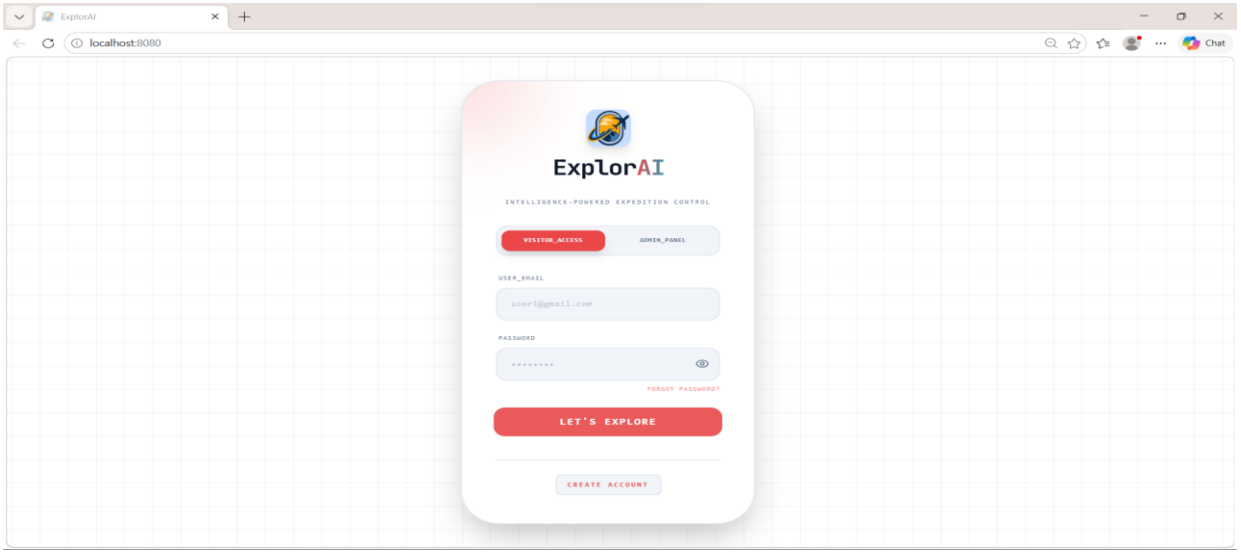


Figure 4: Signup page

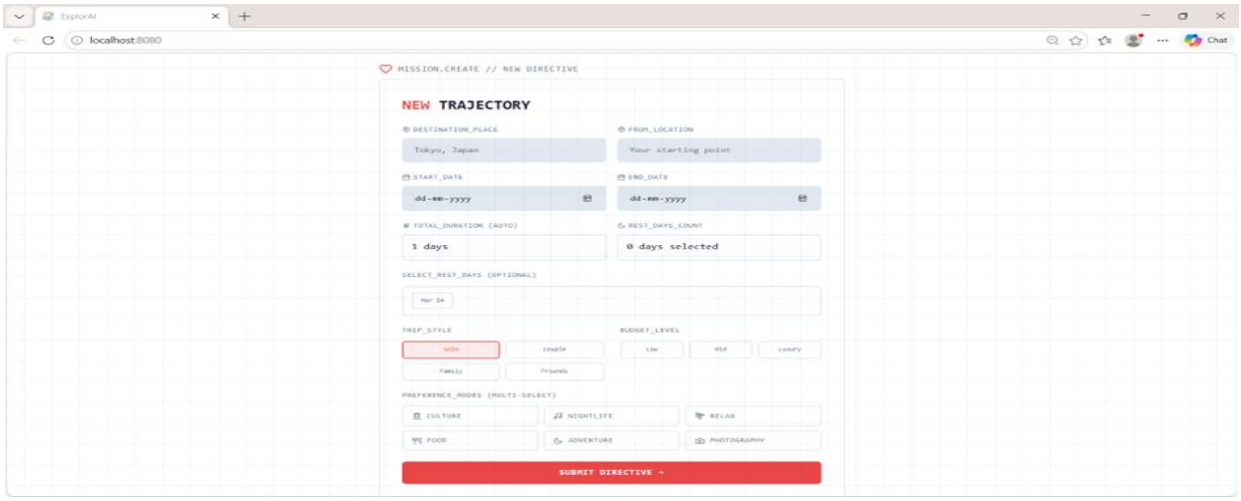


Figure 5: User input page

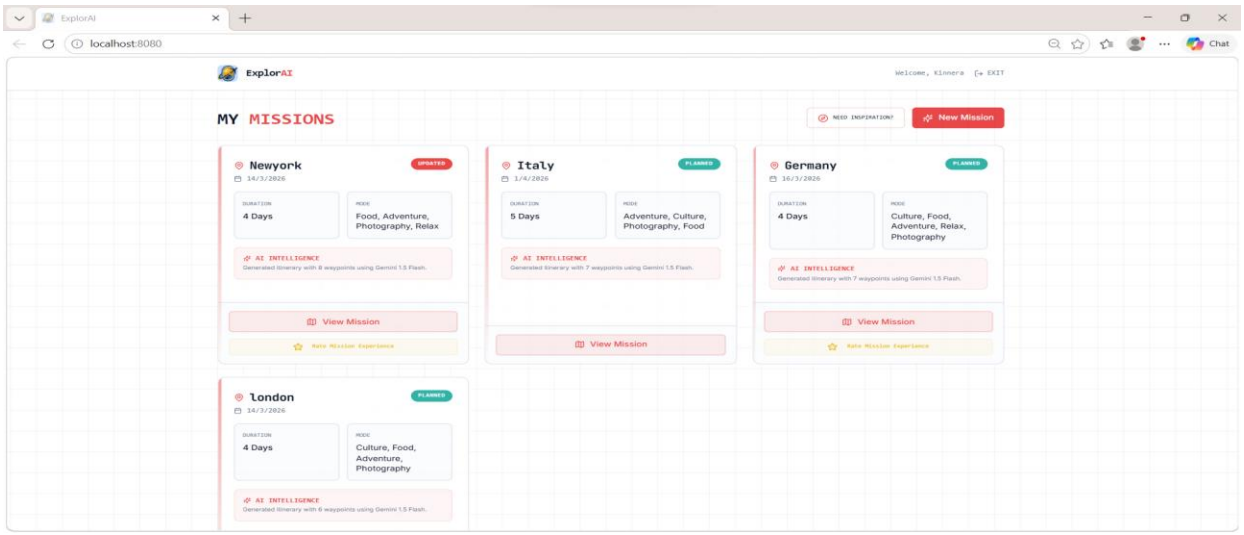
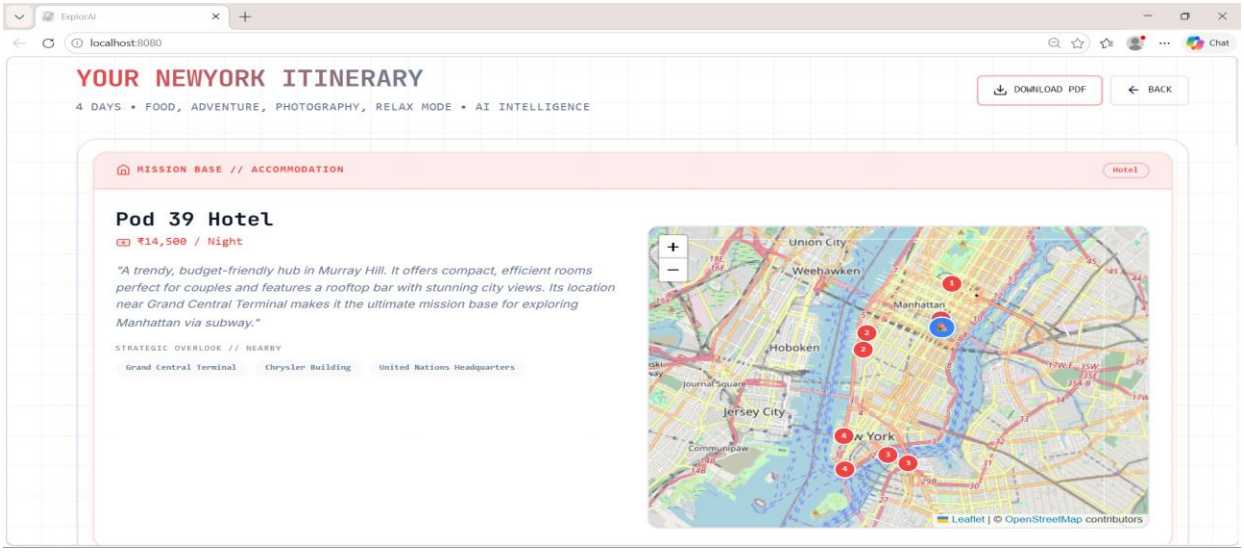
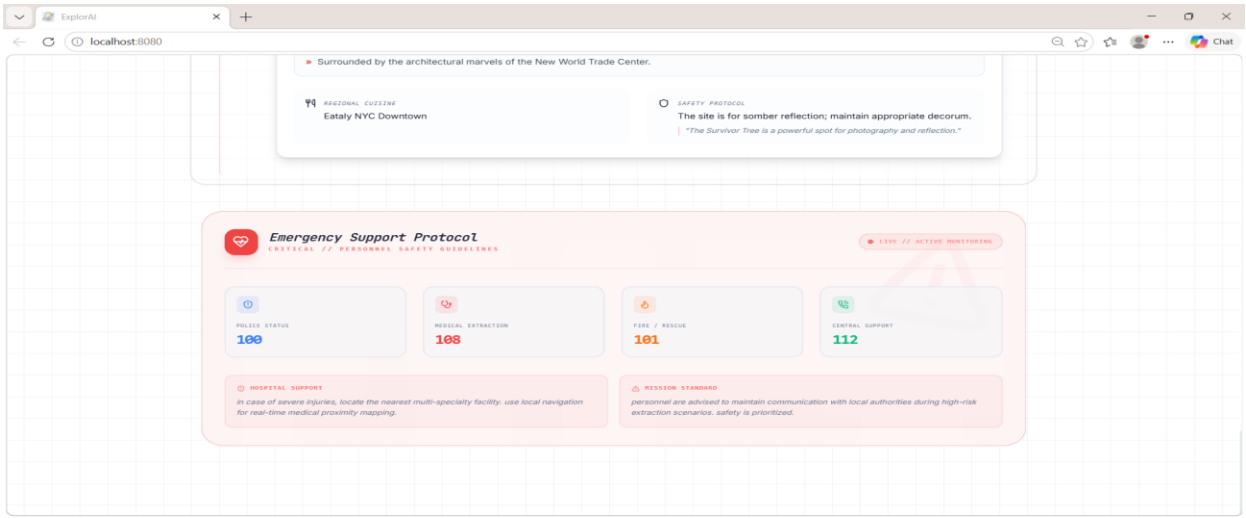


Figure 6: AI Itinerary Generation





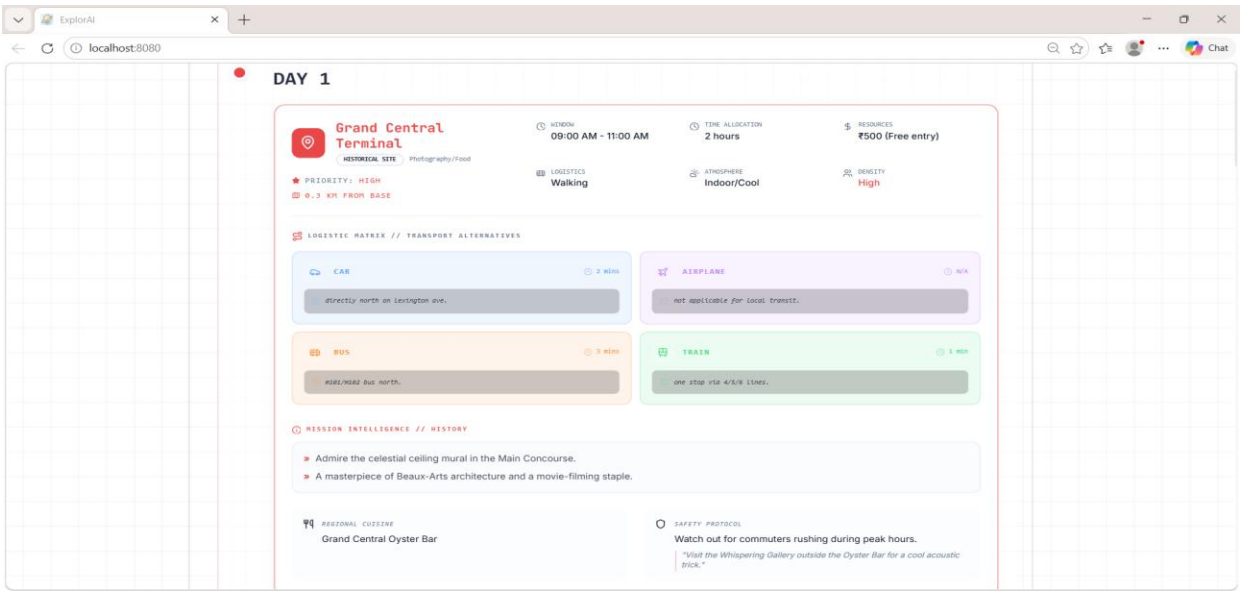


Figure 7: Itinerary Output Page

V. WORKFLOW STEPS

1. Directs the user to log in or register into the system.
2. User inputs destination, dates, budget and preferences for the trip.
3. Now that we have an understanding of what those, let us explore a bit more about the different components; The backend is where the input goes in and fetches the data for processing.
4. The system took more data from external APIs such as maps and weather services.
5. AI methods like LLMs, Prompt Engineering, and RAG analyse the data to provide recommendations.
6. It recommends appropriate accommodations, activities, and transportation.
7. A day-wise travel plan is generated with an estimated budget.
8. It presents the generated itinerary to the user in a human-readable format.
9. The itinerary can be downloaded as a PDF to view offline.
10. Input can be adjusted by users to receive updated travel plans in real-time.

VI. RESULT

The tool creates a simple travel plan based on the destinations you're interested in, how much money you have to spend and how long you'll be traveling. Rather than making educated guesses, this one pulls live data via connected services, so suggestions match each trip more accurately. Through clever approaches like large language models and retrieval-augmented generation, details emerge clearer and more useful. Consequently, what you get feels less generic, more geared to real needs.

One thing it does is reduce the amount of hands-on work and streamline stuff via tools like cost forecasts and exportable layouts that make using it feel less painful." Even so, how effective it is can depend on the quality of the info fed into it and whether external databases are accessible.

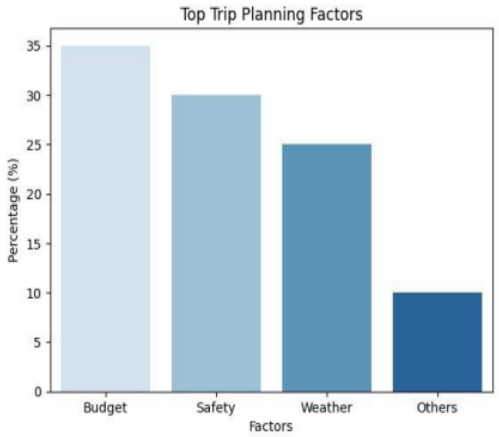


Figure 8: Graphical Representation

VII. GRAPH INTERPRETATION

The one clear takeaway from the data is that when mapping out trips, money means everything to travel. Closely behind is how to stay safe, then what the sky is doing every day. This sits neatly with the way that tool operates, since it frames suggestions about lower prices, safe places and daily forecasts. What you get is what really matters to people, without the clutter.

VIII. COMPARISON TABLE

Parameter	Traditional Trip Planner	AI-Based Trip Planner
Planning Method	Manual research and planning	AI driven automated planning
Personalization	Limited and generic	Highly personalized based on user inputs
Time Consumption	Time-consuming	Quick and efficient
Data Handling	Static information sources	Real-time data and dynamic updates
User Experience	Moderate, effort-dependent	Interactive and user-friendly

IX. FUTURE INSIGHTS

The future scope of the system can be enhanced by adding:

- An integrated link to Google Maps provides live navigation while driving. Route details adjust as conditions around you change.
- This service is responsible for booking trips and rooms. In addition to that also flights management is done.
- Alerts nearest hospital/police station in case of emergency.
- (Voice-based trip planning assistant)
- To make sight-seeing based on user reviews.
- Event listing like Festivals, Exhibition, city events

X. CONCLUSION

Planning for travel can be quite tiresome as you need to check for various hotels, beaches and other adventurous locations near where you are heading. The above AAN uses the state-of-the-art technologies such as LLMs and RAG to enhance accuracy and efficiency. While taking out a lot of manual effort, the system improves user experience with smart recommendations and dynamic updates. In general, it signifies the prospect of AI making travel planning one step less useless and manageable.

REFERENCES

[1] Zhan, W., Dai, D., Cai, Z., "Design and Implementation of Smart Travel System Based on Android", *Journal of Software*, 2019.

[2] Wang, Z., "Travel Recommendation System Using Collaborative Filtering and AI", *Applied Artificial Intelligence*, 2023

[3] Liu A Y "Mobile Applications in Smart Tourism and Smart Cities Based on Crowdsourcing", 2024.

[4] Li, Q., Zhang, Y., "Design and Implementation of Smart Tourism Service Platform from the Perspective of Artificial Intelligence", 2022.

[5] Bi, F., Liu, H., "Machine Learning-Based Cloud IoT Platform for Intelligent Tourism Information Services", *EURASIP Journal on Wireless Communications and Networking*, 2022.

[6] Thorat, N., "An Android Smart City Traveller App – Navi City", *International Journal of Advanced Research in Computer Engineering &* Technology *(IJARCET)*, 2024.

[7] Sun, X., "Smart Tourism: Design and Application of Artificial Intelligence-Assisted Tourism Service Recommendation Algorithms", *Journal of Electrical Systems*, 2024.

[8] Lu, J., "Personalized Recommendation Algorithm of Smart Tourism Based on Cross-Media Big Data and Neural Network", *Journal of Environmental and Public Health*, 2022.

[9] Esper, J. P., "+Tour: Recommending Personalized Itineraries for Smart Tourism", preprint (arXiv), 2025.

[10] Sarode, N. H., "Smart Trip Planner Web Application for Promoting Sustainable Tourism",

International Journal of Research in Interdisciplinary Studies, 2025.

[11] Zhang, Y., "Research on the Construction and Application of Smart Tourism Platforms Based on Big Data Technology", *ICBDSS 2022 Proceedings*, 2022.

[12] Madhusudan, V., "ANDROID SMART CITY TRAVELLER", *International Advanced Research Journal in Science, Engineering and Technology*, 2021