IMPLEMENTATION OF AI TRAVEL PLANNER

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Introduction:

In today's fast-paced world, planning a trip has become both easier and more complex at the same time. While there is a lot of information available online, users still spend a significant amount of time comparing different websites, checking reviews, and organizing their travel plans manually. This often leads to confusion, inefficient itineraries, and lack of personalization. With the growth of Artificial Intelligence (AI), especially in areas like Machine Learning and Natural Language Processing, it is now possible to build systems that can understand user preferences and generate customized outputs. Recently, Generative AI models have made it even easier to create human-like responses, which can be applied in travel planning. Existing systems mainly focus on recommendation based on ratings or past data, but they often fail to include real-time updates or detailed itinerary generation. Some AI models can generate plans, but without proper validation and real-time data, the output may not always be reliable. To overcome these issues, this project proposes an AI-Based Travel Planner that combines rule-based logic, generative AI, and real-time information retrieval. The system takes user inputs like destination, budget, and number of days, and generates a complete travel plan. The aim is to make travel planning faster, smarter, and more personalized while also encouraging better and more efficient travel decisions.

Objectives:

1. To collect and process user inputs such as destination,budget,and travel duration.
2. To validate inputs using rule-based logic for better accuracy.
3. To generate detailed travel itineraries using Generative AI (Gemini model)
4. To fetch real-time travel information using Tavily API.
5. To design a user-friendly web application using Flask and JavaScript.
6. To reduce manual effort involved in planning trips.

Methodology:

The project is developed using a hybrid approach that combines rule-based processing, AI based generation, and real-time data retrieval. First, the user enters details such as destination, number of days, budget, and interests through a web interface. This data is sent to the backend system built using Python and Flask. In the first step, a rule-based algorithm checks whether the inputs are valid. For example, it ensures that the destination and number

of days are provided, and it also categorizes the budget into levels like low, medium, or high. This step helps in maintaining consistency and avoiding errors. Next, the system uses the Tavily API to collect real-time information about the selected destination. This includes tourist attractions, weather conditions, transport options, and accommodation details. The data is filtered to remove unnecessary or duplicate information. After that, the processed data is passed to the Generative AI model (Google Gemini). The model analyzes the input and generates a detailed itinerary in natural language. The output includes a day-wise plan, places to visit, food suggestions, and approximate budget. The system is designed in three layers: • Frontend Layer: For user interaction using HTML, CSS, and JavaScript. • Middleware Layer: Handles logic, API calls, and AI processing. • Backend Layer: Uses Supabase for storing user data and itineraries. Finally, the generated itinerary is displayed to the user in a simple and readable format.

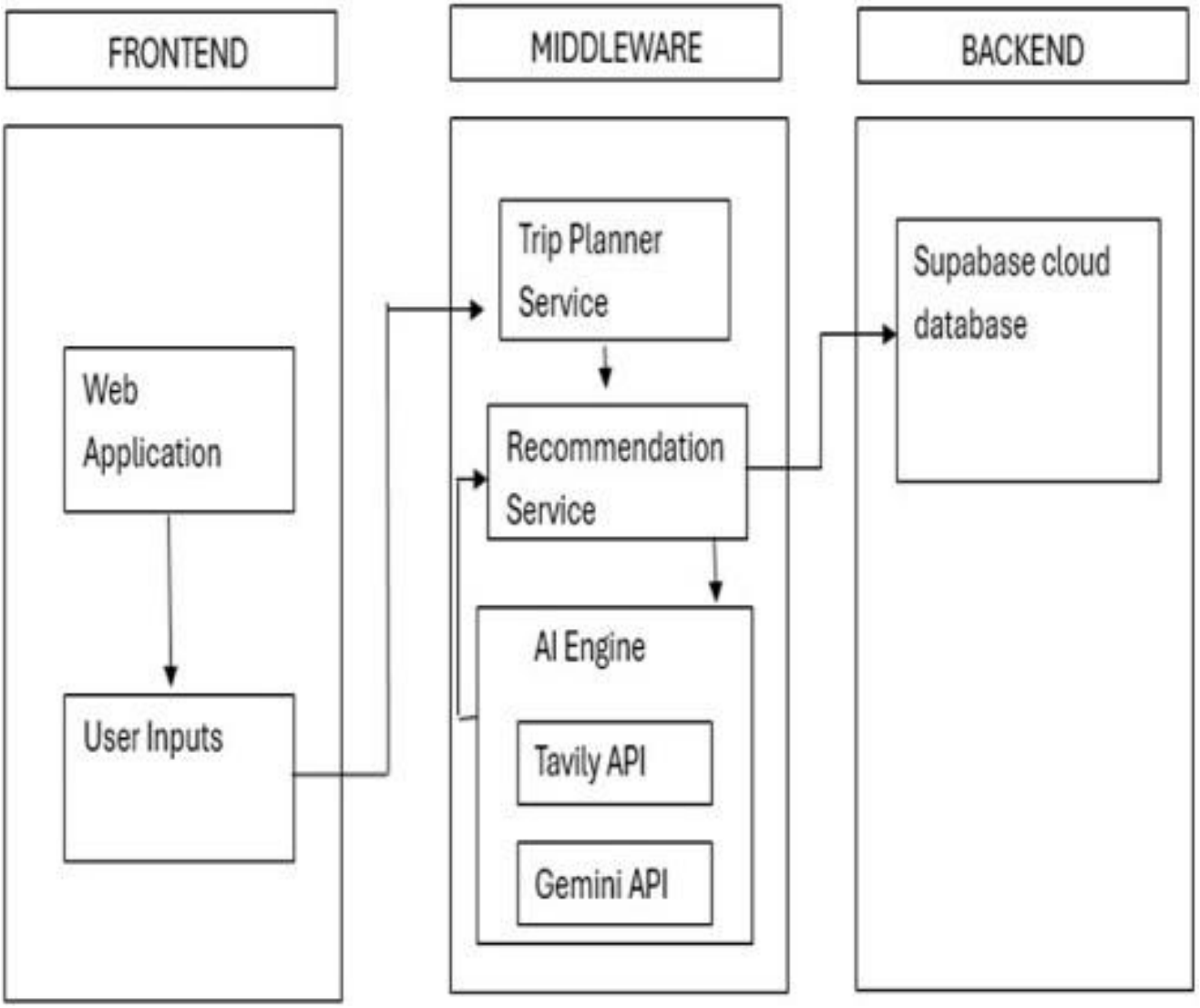

Fig1

Result and Conclusion:

The system generates personalized travel plans using user inputs by integrating rule-based logic, real-time data, and generative AI. It reduces planning time and provides structured, reliable itineraries with day-wise details. Overall, it offers an efficient and user-friendly alternative to traditional travel planning methods.

References:

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FUTURE SCOPE:

The future scope of this project includes:

1. User Feedback-Based Recommendations
2. Multi-City Travel Planning
3. AI-Based Cost Prediction and Optimization
4. Real-Time Booking Integration