CAPSTONE PROJECT

AI TRAVEL PLANNER FOR STUDENTS

Presented By:

1. Student Name- Aradhana Bopche
2. College Name- MIT Arts, Commerce and Science College Pune
3. Department - M.Sc. Data Science

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INTRODUCTION

- Planning a trip can be time-consuming and challenging for students, especially when working with limited budgets and specific travel preferences. Most existing travel applications provide generic travel suggestions, which often do not meet individual user needs.

- An itinerary refers to a detailed, day-by-day travel plan that includes information about destinations, activities, accommodation, transportation, and food options. Creating such itineraries manually requires significant time and effort.

- The AI Travel Planner for Students is a web-based application developed using Streamlit and Generative AI that automatically generates personalized travel itineraries based on user inputs such as destination, number of days, budget, travel style, accommodation type, transportation preference, food choices, and personal interests. The system helps students plan affordable, well-structured trips efficiently.

- By providing customized itineraries, currency conversion, and downloadable PDF travel plans, the application simplifies the travel planning process and offers a practical solution for students seeking organized and budget-friendly travel experiences.

PROBLEM STATEMENT

- Students often find trip planning difficult and time-consuming, especially when they have limited budgets and specific travel preferences.
- Most existing travel applications provide generic travel recommendations that do not consider individual needs such as budget limits, travel style, food preferences, or personal interests.
- Creating a detailed day-by-day itinerary manually requires significant time, research, and effort, which can be challenging for students managing studies and other responsibilities.
- Students struggle to balance cost, convenience, and experience, leading to poorly planned trips or overspending.
- Without proper planning tools, students often miss out on suitable accommodations, and budget-friendly activities.

PROPOSED SOLUTION

- Allows students to enter trip details such as destination, number of travel days, budget, and personal preferences.

- Uses Generative AI and Natural Language Processing (NLP) to understand user inputs and travel requirements

- Generates personalized, day-by-day travel itineraries instead of generic travel suggestions.

- Suggests budget-friendly accommodations, transportation options, food choices, and activities.
- Adapts recommendations based on travel style (adventure, leisure, cultural, etc.)
- Allows users to download the generated itinerary as a PDF for offline access
- Works through a simple, web-based interface developed using Streamlit

SYSTEM APPROACH

- **The system follows a client – server based approach:**
- User interacts with the travel planner through a web interface (Streamlit app).
- User inputs travel details like destination, number of days, budget, travel style, accommodation, transportation, food preferences, and interests.
- Inputs are sent to the backend server for processing.

- **The backend handles:**
- Currency conversion using an external API (USD ⟶ INR).
- Trip itinerary generation by sending user inputs as a prompt to the AI model (OpenRouter GPT-4o-mini).
- Error handling for API requests and response validation.

SYSTEM APPROACH

➢ **AI Processing:**

- The pre-trained AI model generates a day-wise travel plan including sightseeing, activities, accommodation,
  transportation, food, special interests, and estimated costs.
- It ensures that the itinerary respects the user's budget and preferences.

➢ **Output Generation:**

- Generated itinerary is displayed in the Streamlit interface as a preview text area.
- Users can download the itinerary as a PDF, generated dynamically using FPDF, preserving formatting and long text.

➢ **Security & Configuration:**

- Uses environment variables (.env) to securely store the AI API key.
- Background images, fonts, and PDF templates are loaded from server-side resources.

TOOLS & TECHNOLOGIES

- **Programming Language:** Python
- **Frontend:** Streamlit is used to create the interactive web-based user interface.
- **Backend Framework:** Streamlit manages API requests and responses.
- **AI API Platform:** OpenRouter API is used to access GPT-based models.
- **Artificial Intelligence / NLP:** GPT-Based Conversational Models (via OpenRouter API) NLP models are used to generate intelligent travel plans.
- **Prompt Engineering Techniques:** Used to structure AI prompts to generate accurate and budget-controlled itineraries.
- **PDF Generation Tool:** FPDF

TOOLS & TECHNOLOGIES

- **Version Control System:** GitHub is used for source code version control and project hosting
- **Development Environment:** Visual Studio Code (VS Code)
- **Operating System:** Windows
- **Deployment Platform:** Streamlit Cloud

LIBRARY IMPORTS AND THEIR PURPOSE

Library	Purpose
streamlit	Web UI and app logic
requests	API calls (currency & AI model)
generate_pdf	Custom PDF generation module
dotenv	Secure API key loading
os	File paths & environment variables
base64	Background image encoding
fpdf	Generate PDF documents programmatically
io	Used for input and output operations, especially for handling data in memory.
textwrap	Used to wrap long text into multiple lines

SYSTEM ARCHITECTURE & DEPLOYMENT

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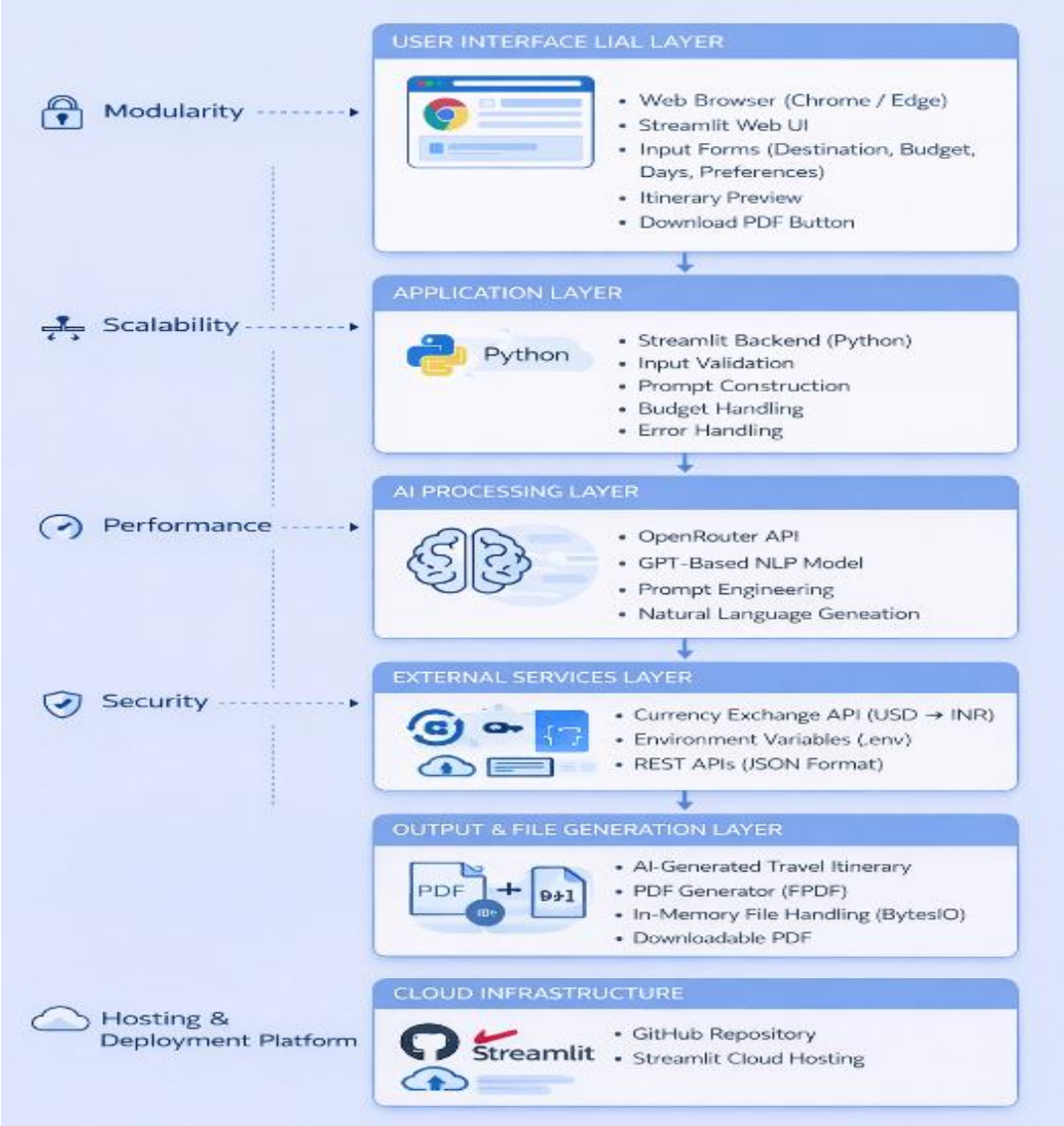

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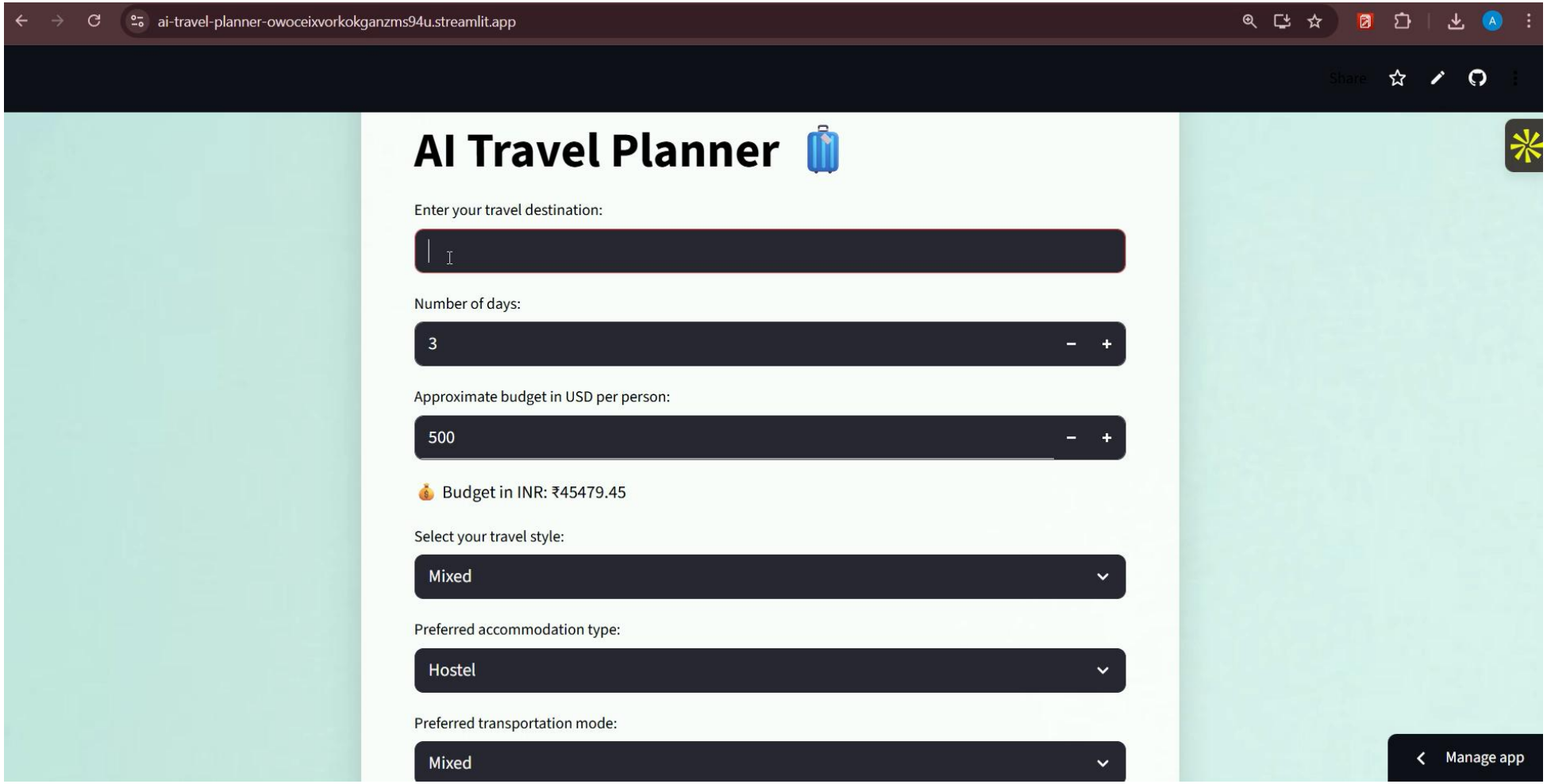
DEMONSTRATION

Video



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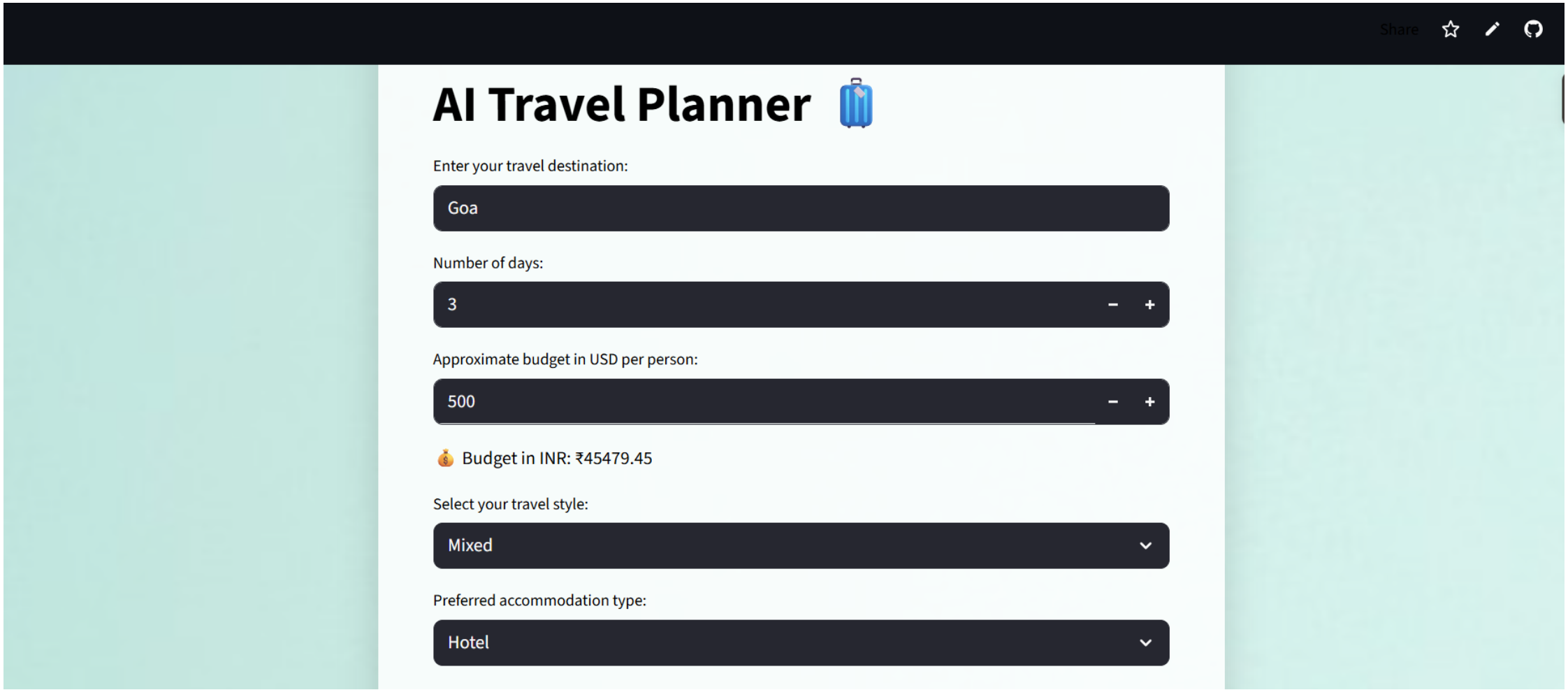
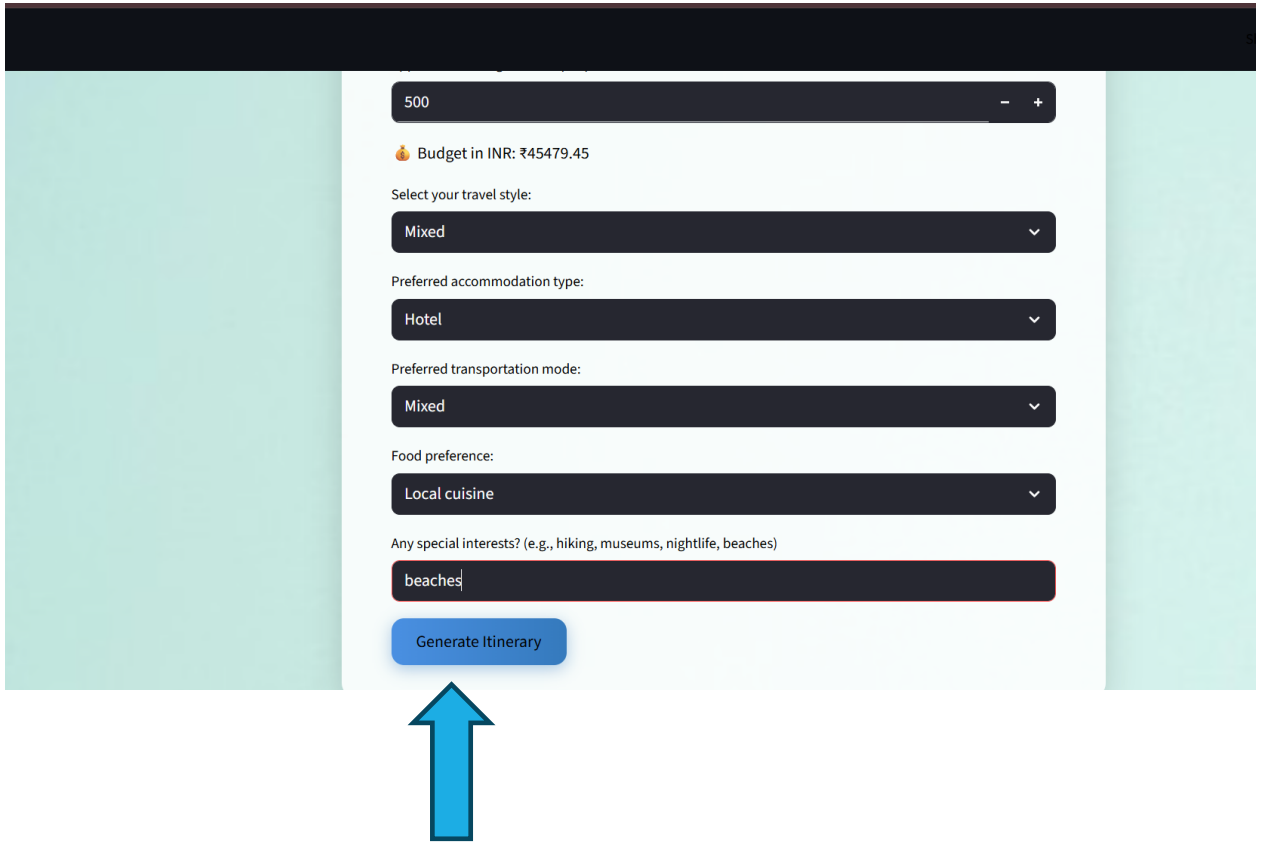
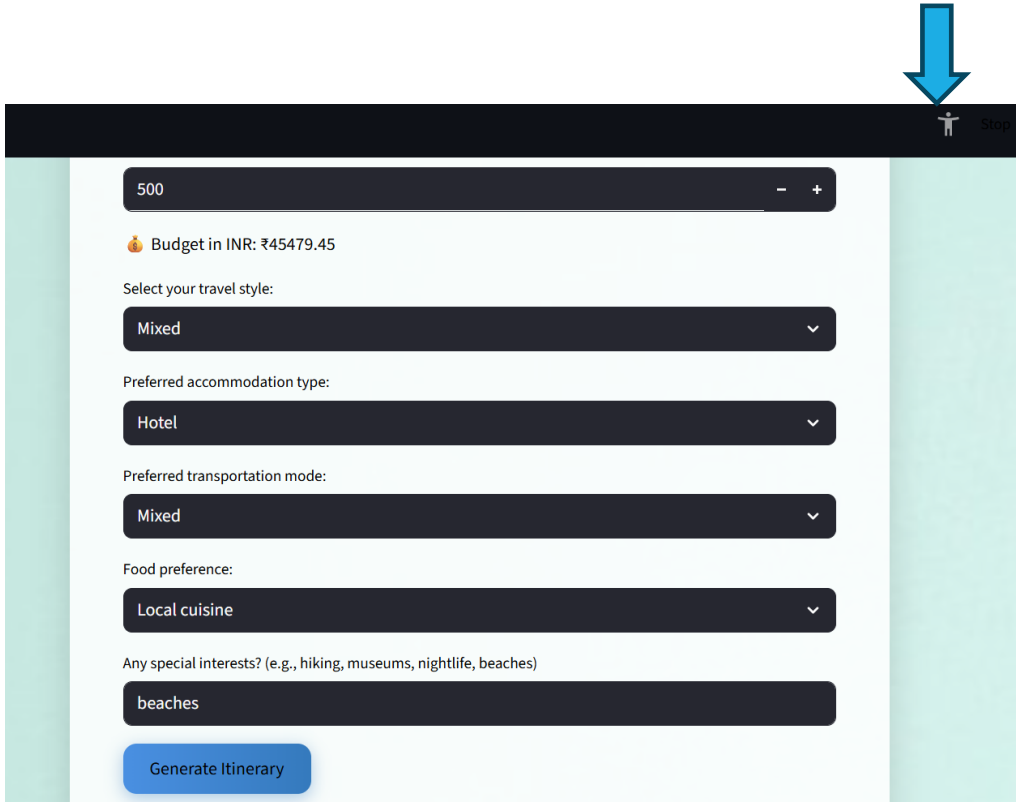
Enter the required details such as destination, budget, number of days, and travel preferences in the input fields provided on the application interface.



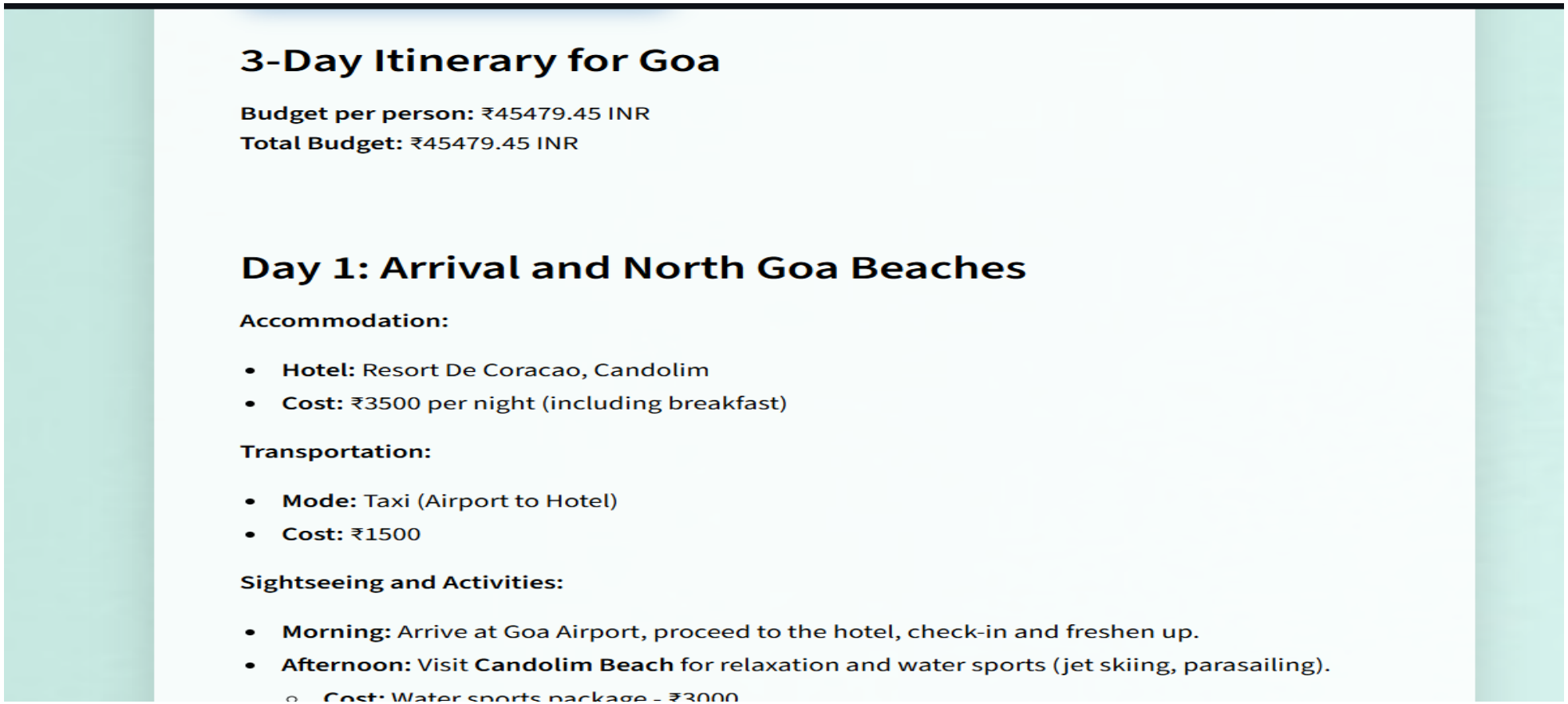
Click on the **Generate Itinerary** button.
This submits the input data to the system and triggers the AI-based processing.



After clicking the generate button, the system displays a loading indicator (moving symbol) to show that the itinerary is being generated. The user needs to wait until this indicator stops.



Once the processing is complete, the AI-generated travel plan is displayed in the output section below the input area. The user can scroll down to view the complete itinerary.



3-Day Itinerary for Goa

Budget per person: ₹45479.45 INR
Total Budget: ₹45479.45 INR

Day 1: Arrival and North Goa Beaches

Accommodation:

- **Hotel:** Resort De Coracao, Candolim
- **Cost:** ₹3500 per night (including breakfast)

Transportation:

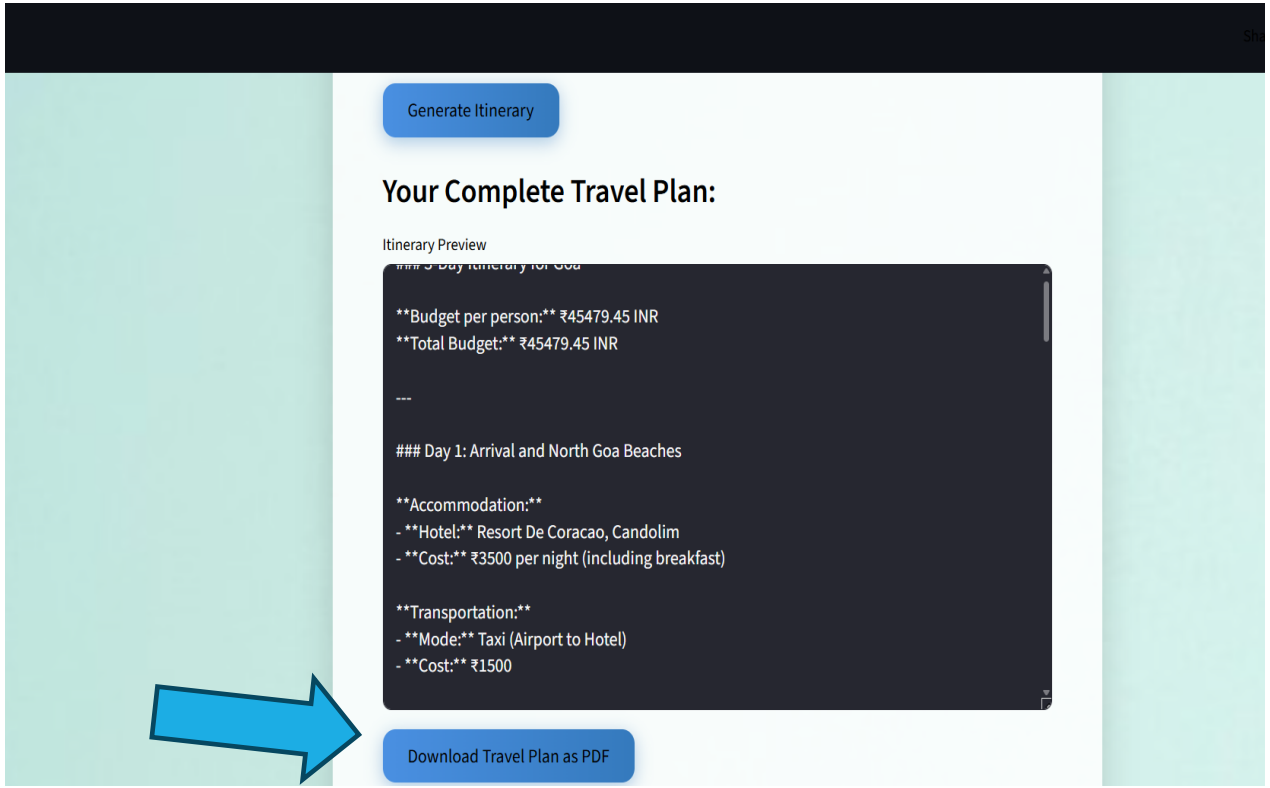
- **Mode:** Taxi (Airport to Hotel)
- **Cost:** ₹1500

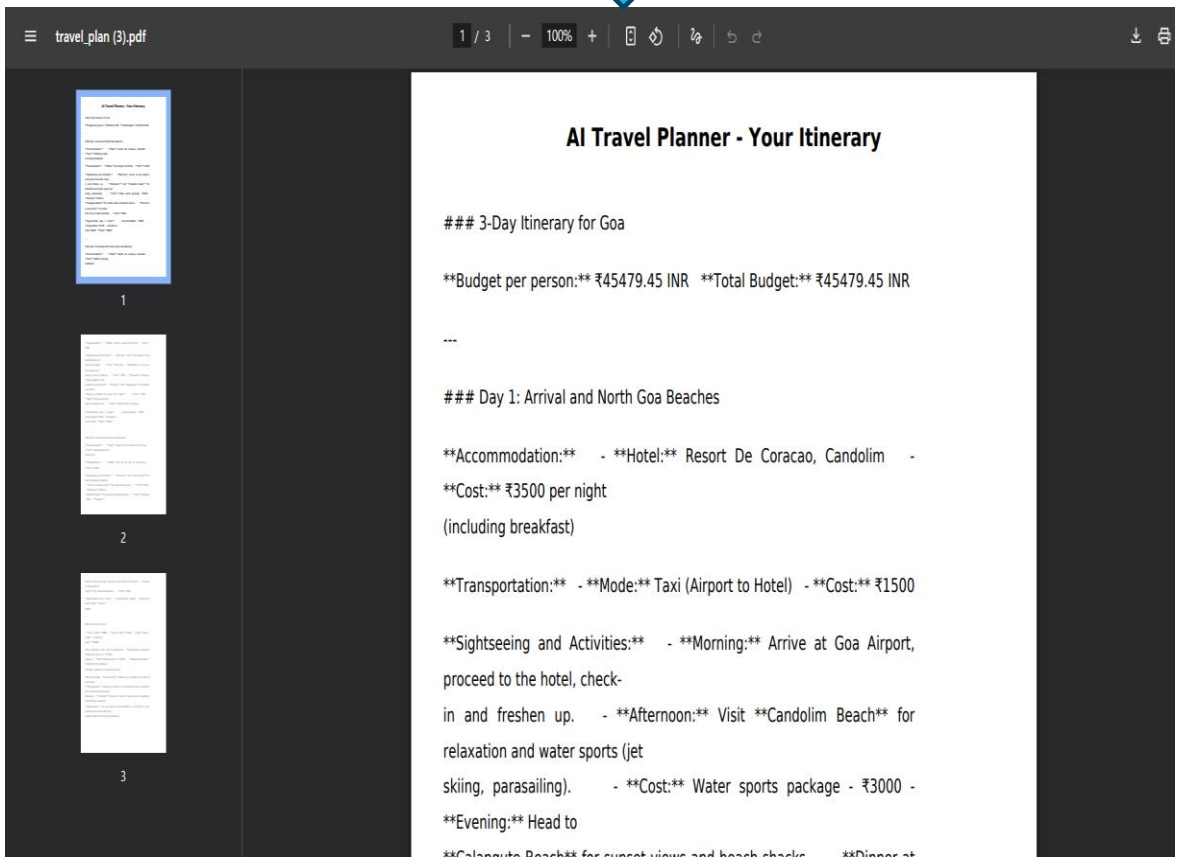
Sightseeing and Activities:

- **Morning:** Arrive at Goa Airport, proceed to the hotel, check-in and freshen up.
- **Afternoon:** Visit **Candolim Beach** for relaxation and water sports (jet skiing, parasailing).
  - **Cost:** Water sports package - ₹3000

After reviewing the generated travel plan, the user can click on the **Generate PDF** button. The system converts the generated itinerary into a PDF file, which user can download and save for offline use.

PDF





ADVANTAGES

- Saves time and effort
- Provides personalized travel plans
- Budget-friendly recommendations
- Easy to use and accessible online
- AI-powered intelligent planning
- User-Friendly Interface
- AI-Powered Recommendations
- Downloadable PDF Itinerary

RESULTS

- The system successfully accepts user inputs such as destination, number of days, budget, and travel preferences through a user-friendly web interface.
- AI-based processing generates a complete, day-wise travel itinerary tailored to the user's inputs.
- The generated itineraries respect the specified budget and provide approximate day-wise cost breakdowns.
- The generated travel plan is clearly displayed on the web interface for easy review.
- The system successfully converts the AI-generated itinerary into a downloadable PDF format.
- Cloud deployment allows the system to be accessed from any location using a web browser through provided link.

CONCLUSION

- The AI Travel Planner project successfully demonstrates how artificial intelligence and web technologies can be combined to automate the travel planning process. The system simplifies trip planning by generating personalized, budget-friendly itineraries based on user preferences.

- Through this project, practical knowledge of Python programming, API integration, prompt engineering, and cloud deployment was gained. The use of NLP-based AI models highlights the potential of artificial intelligence in delivering intelligent and user-centric solutions.

- Overall, the project proves to be an efficient, scalable, and user-friendly solution that reduces manual effort and enhances the travel planning experience. The AI Travel Planner can serve as a strong foundation for future enhancements and real-world applications.

FUTURE SCOPE

- Weather-Based Travel Recommendations
- Map and Navigation Integration
- Voice-Based Interaction
- User Authentication and Profiles
- Group Travel Planning
- Recommendation Learning System

REFERENCES

- OpenRouter API Documentation- https://openrouter.ai/docs
- YouTube – Streamlit & AI Project Tutorials
- AI Tools & Assistive Systems
- NLP Concepts and Chatbot Design Resources

LINKS

GitHub Link:

https://github.com/Aradhana-Codes/AI-Travel-Planner/tree/main

Deployed Application Link:

https://ai-travel-planner-owoceixvorkokganzms94u.streamlit.app/

THANK YOU

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