CAPSTONE PROJECT

TRAVEL PLANNER AGENT

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OUTLINE

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- Proposed System/Solution

- System Development Approach (Technology Used)

- Algorithm & Deployment

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PROBLEM STATEMENT

Travel planning often involves juggling flight bookings, accommodations, itineraries, local guides, and budget constraints, a complex and time-consuming process.
Users require real-time, personalized suggestions tailored to their preferences and location.
The challenge lies in building an intelligent system that can process these factors and simplify decision-making.

PROPOSED SOLUTION

An AI-powered Travel Planner Agent that:

- Understands user preferences, budgets, and trip constraints
- Uses IBM Granite foundation models to generate personalized itineraries
- Integrates weather, maps, and local guides via real-time data
- Suggests transport and accommodation options
- Optimizes schedules and updates users on booking changes
- Deploys entirely on IBM Cloud Lite services with no external backend

SYSTEM APPROACH

Tools & Technologies Used:

- Platform: IBM Cloud Lite
- LLM: IBM Granite via Watsonx.ai Prompt Lab
- Vector Store: IBM Watsonx Vector Database (for RAG compliance)
- Frontend (Optional): Watson Studio Notebook UI
- Deployment: Watson Deployment Space (Online deployment)

IBM Services:

- Watsonx.ai
- Prompt Lab
- Cloud Object Storage
- Watson Studio

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ALGORITHM & DEPLOYMENT

LLM Model (Granite):

- Model: granite-13b-instruct
- Prompt-based itinerary generation using trip details like location, budget, trip length, and user preferences

Vector Store Integration:

- A knowledge base containing travel data, destinations, hotel info, and local tips uploaded and embedded
- Prompt uses {{context}} grounding for RAG-based generation

Deployment:

- Prompt saved and deployed via Watson Deployment Space
- Endpoint generated for integration into apps or Watson Studio notebooks

RESULT

RESULT

CONCLUSION

- In this project, we successfully developed an AI-powered Travel Planner Agent using IBM Watsonx and Granite foundation models. The assistant intelligently generates personalized travel itineraries based on user preferences, budget, and destination, simplifying the traditionally complex process of trip planning.

- By leveraging IBM Cloud services like Prompt Lab, Vector Store, and Deployment Spaces, we built a lightweight, no-code solution that demonstrates the power of large language models in real-world applications.

- This project highlights how AI can transform user experience in the travel industry by providing contextual, budget-friendly, and highly customized recommendations — all through a seamless conversational interface.

FUTURE SCOPE

1. **Real-time Data Integration**: Incorporate APIs for live weather, local events, flight/hotel bookings, and map navigation.
2. **Multimodal Interface**: Add voice input and response using speech-to-text and text-to-speech technologies.
3. **Multi-language Support**: Enable the assistant to generate itineraries in multiple regional and international languages.
4. **User Feedback Loop**: Allow users to rate and refine generated itineraries for continual model improvement.
5. **End-to-End Booking Integration**: Extend the assistant to manage bookings for flights, hotels, and activities directly through partner APIs.

REFERENCES

IBM Watsonx.ai Documentation – https://www.ibm.com/cloud/watsonx-ai

IBM Prompt Lab Guide –
https://dataplatform.cloud.ibm.com/docs/content/wsj/prompt/prompt-lab.html

IBM Granite Models –
https://www.ibm.com/blog/announcements/granite-llm-models-watsonx

OpenAI Prompt Engineering Guide – https://platform.openai.com/docs/guides/gpt

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