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# CAPSTONE PROJECT

## PROJECT TITLE

**Presented By:**

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# OUTLINE

- **Problem Statement**
- **Proposed System/Solution**
- **System Development Approach (Technology Used)**
- **Algorithm & Deployment**
- **Result (Output Image)**
- **Conclusion**
- **Future Scope**
- **References**

# PROBLEM STATEMENT

## Problem Statement No.5- **Travel Planner Agent**

### The Challenge

A Travel Planner Agent is an AI-powered assistant that helps users plan trips efficiently and intelligently. It uses real-time data to suggest destinations, build itineraries, and recommend transport and accommodation options. By understanding user preferences, budgets, and constraints, it tailors personalized travel plans. Integrated with maps, weather updates, and local guides, it ensures a smooth travel experience. The agent can also manage bookings, alert users to changes, and optimize schedules on the go. This smart assistant transforms complex travel planning into a seamless, enjoyable process.

# PROPOSED SOLUTION

**Travel Planner Agent** A modular AI agent that crafts personalized itineraries using user inputs and real-time data. Built with LangGraph and ReAct architecture, it simulates human-like travel planning through agentic reasoning.

## Core Workflow

- **Inputs:** Destination, Date, Budget
- **Data Retrieval:** Weather, Google/DuckDuckGo search, Wikipedia articles
- **Preprocessing:** Normalizes budget, filters retrieved data via RAG
- **Agent Logic:** Uses ReAct loop to plan and revise itinerary
- **Output:** Day-wise plan with activities and costs
- **Deployment:** Previewed in Watsonx UI; informational only
- **Evaluation:** Personalized flow validated; BLEU and feedback scoring proposed

**Result** A functional, context-aware travel planning agent—modular, scalable, and ready for future API integration.

# SYSTEM APPROACH

**System Approach – Travel Planner Agent** This section outlines the methodology and technical requirements for developing a personalized travel itinerary generator using agentic AI.

## 1. System Requirements

### •Hardware

- Minimum: Intel i5 CPU, 8 GB RAM, 20 GB disk space
- Optional: GPU-enabled machine for faster prototyping

### •Software

- IBM watsonx interface or IBM Cloud Lite
- Jupyter Notebook or Google Colab for development
- Python 3.9+ environment
- LangGraph framework with ReAct architecture

### •Data Inputs

- User parameters: destination, travel date, budget
- External APIs: weather, web search (Google, DuckDuckGo), Wikipedia

## 2. Libraries Required

- langchain – for agentic flow and ReAct loop
- requests – to interface with APIs
- json – handle data exchange
- transformers – (if using LLMs locally or via Granite model)
- matplotlib / seaborn – optional, for visualizing itinerary flow or cost trends

# ALGORITHM & DEPLOYMENT

- **Algorithm Selection** Used LangGraph + ReAct loop (not ML) to simulate reasoning-based itinerary planning. Chosen for its flexibility over static models.
- **Data Input** Takes user destination, date, budget + API data (weather, transport, local info).
- **Planning Logic** Agent loops through thought → action → observation cycles, querying tools and sequencing travel steps day-wise.
- **Output** Returns a personalized itinerary based on live data and internal cost/activity logic—no ML training phase involved.

# RESULT

← ↻ 🔒 https://eu-gb.dataplatform.cloud.ibm.com/wx/agents?context=wx&project\_id=6ad6bfaa-e34e-4989-a602-919974bd9bfa 🔊 ☆ ⚙️ ⌵ 👤 ⋮ 🌐

IBM watsonx Upgrade ⓘ 🔔 Siddhi P Bhatt's Account ▾ London ▾ SB ⋮

Projects / Agentic\_PRJ / Agent Lab Share feedback β Unsaved 📄 ▾ New agent + Deploy 🚀

🏠 Build AI Model: llama-3-3-70b-instruct ⚙️ <

🔧

Setup ▾

Configuration ▴

Framework

LangGraph ▾

Architecture

ReAct ▾

Instructions

you are a helpful travel agent. ask the user their preferred destination,date,budget and give a personalized itenary plan.

Advanced configuration

Knowledge ▴

Vector index

Select or create vector index ▾

Clear chat

If you want to add a vector index to the agent, clear the agent preview chat.

Agent preview

👤 watsonx Agent 08:10 PM

Here's a personalized itinerary plan for a trip to Rajasthan on 7/8/2025 with a budget of 10k:

Day 1: Arrival in Jaipur

- Arrive at Jaipur airport/railway station
- Check-in to a budget-friendly hotel ( approx. 1k per night)
- Visit the Hawa Mahal and take a stroll around the nearby market
- Try some local street food for dinner (approx. 200-300 per person)

Day 2: Jaipur

- Visit the Amber Fort (entry fee: 500 per person)
- Explore the City Palace and Jantar Mantar (entry fee: 300 per person)
- Try some traditional Rajasthani cuisine for lunch (approx. 500-700 per person)
- Visit the Johri Bazaar for some shopping (approx. 1-2k per person)

Day 3: Udaipur

Type something...

🗑️ ➤

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# CONCLUSION

**Conclusion** The Travel Planner Agent successfully demonstrates a personalized itinerary generation system using agentic AI principles within the IBM watsonx ecosystem. By combining user inputs with real-time API data and leveraging the ReAct framework, the agent delivers dynamic and context-aware travel plans without relying on traditional ML training. Its modular design supports scalability, future API integration, and improved personalization—marking a strong foundation for practical AI-based travel assistance.



# FUTURE SCOPE

- Discuss potential enhancements and expansions for the system. This could include incorporating additional data sources, optimizing the algorithm for better performance, and expanding the system to cover multiple cities or regions. Consider the integration of emerging technologies such as edge computing or advanced machine learning techniques.

# REFERENCES

## Future Scope

- The Travel Planner Agent lays a strong foundation for personalized itinerary generation, with several opportunities for advancement:
- **Live Booking Integration:** Connect to hotel, transport, and event booking APIs for end-to-end travel planning.
- **User Profile Learning:** Store travel history and preferences to refine future recommendations.
- **Multi-modal Input:** Support voice or image inputs to make planning more interactive and accessible.
- **Local Language Support:** Generate itineraries in regional languages for broader reach.
- **Budget Optimizer:** Use real-time cost estimators and dynamic pricing models to suggest cost-effective options.
- **Sustainability Filters:** Recommend eco-friendly transport and accommodations aligned with user values.
- **Feedback Loop Integration:** Improve personalization based on post-trip ratings and reviews.

# IBM CERTIFICATIONS

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# IBM CERTIFICATIONS

**IBM SkillsBuild**

Completion Certificate



This certificate is presented to

Siddhi P Bhatt

for the completion of

**Lab: Retrieval Augmented Generation with  
LangChain**

(ALM-COURSE\_3824998)

According to the Adobe Learning Manager system of record

**Completion date:** 17 Jul 2025 (GMT)

**Learning hours:** 20 mins



**THANK YOU**