

Agentic AI Project

Travel Planner Agent

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OUTLINE :

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PROBLEM STATEMENT :

Planning a trip involves many tasks that can take a lot of time and effort. You need to choose destinations, check the weather, manage budgets, find the right transport and accommodation, and create detailed itineraries. Travelers often have a hard time getting up-to-date information from different sources. They also need to adjust their plans to fit their needs and preferences. This can cause confusion, lead to wasted time, and result in less enjoyable travel experiences.

PROPOSED SOLUTION :

We propose a smart Travel Planner Agent using IBM Watsonx that simplifies trip planning with AI. By gathering user inputs like destination, budget, and travel dates, the agent utilizes tools such as Google Search, Wikipedia, and Weather APIs to provide customized recommendations. It will generate itineraries, suggest transportation and accommodations, and offer travel tips—all in one conversation. The agent also factors in current conditions like local weather, seasonal trends, and ongoing events to improve its suggestions.

System Highlights:

- Collects and processes user preferences, including destination, dates, budget, and interests.
- Uses real-time data for real suggestions on weather, accommodation, transportation, and attractions.
- Delivers personalized, structured travel plans in an easy-to-read format.
- Allows for ongoing interaction to refine or modify plans.
- Deployed through IBM Watsonx Agentic AI with a clear and user-friendly interface.
- Scalable to various types of trips, whether for solo travelers, groups, families, or business.

Outcome:

A fast, efficient, and smart assistant that turns manual trip planning into a smooth and guided experience. It cuts down the time and effort needed for planning while improving the quality and personalization of the trip.

SYSTEM APPROACH

The system uses a layered design:

- User inputs are collected through a chat-based interface.
- Real-time data is retrieved using integrated APIs.
- The IBM Watsonx model processes queries and generates responses.
- The system adjusts suggestions based on user feedback in the same session.

System Requirements

- IBM Cloud Lite Account
- IBM Watsonx Agentic AI platform access
- Active internet connection for API access
- Web browser (Chrome, Firefox, or Edge)
- Optional: Integration with external booking APIs (e.g., flight/hotel services)

Libraries and Tools Used

- IBM Watsonx and Granite Foundation Model
- Google Search Tool (IBM integrated)
- Wikipedia Search Tool
- Weather Tool (IBM integrated)
- Python (for any future API processing logic)
- JSON (for structured response formatting)

ALGORITHM & DEPLOYMENT :

Algorithm Selection:

A conversational, instruction-based agent is created using the IBM Watsonx Granite model. This solution relies on foundation model prompting to understand and produce dynamic responses based on user inputs and real-time data.

Data Input:

User inputs include destination, travel dates, budget, preferences, and group size.

Real-time data sources are:

- Google Search Tool for destination info, travel options, and accommodations.
- Wikipedia Tool for historical and cultural context of locations.
- Weather Tool for live forecasts for the selected destination and dates.

Training Process:

The system does not require traditional training. It uses a pre-trained foundation model (Granite) along with prompt engineering. Its behavior is fine-tuned by:

- Adjusting instructions for prompt design.
- Integrating tools to provide relevant context.
- Structuring conversational logic using the LangGraph and ReAct framework

ALGORITHM & DEPLOYMENT :

Prediction Process: The agent does not do numerical predictions. Instead, it generates:

- Travel itineraries.
- Recommended activities.
- Suggestions for transportation and accommodations.

It adjusts responses based on:

- User input during the chat.
- Live conditions such as weather, location popularity, or current events.

Deployment:

Platform: IBM Watsonx Agentic AI

Framework: LangGraph with ReAct architecture

Integrated tools: Google Search, Wikipedia, Weather

Deployment Steps:

1. Create a sandbox project in IBM Watsonx.
2. Configure the model and enable tools.
3. Paste the instruction prompt.
4. Associate runtime and deploy with an API key.
5. Preview and test through IBM's interface.

RESULT :

Input : Plan a 4-day cultural trip to Jaipur in October for two people with ₹25,000 budget.

Output:



You 01:28 PM

Plan a 4-day cultural trip to Jaipur in October for two people with ₹25,000 budget.



Travel Planner Agent 01:28 PM

Based on the search results, it seems that there are several options for a 4-day cultural trip to Jaipur in October for two people with a budget of ₹25,000. Here are a few suggestions:

- Consider a 2-day Jaipur tour package that includes flights, accommodation, and sightseeing, which can cost between ₹3,500 to ₹7,000 per person.
- Look into a 4-day Golden Triangle tour that includes Jaipur, Agra, and Delhi, which can cost between ₹10,000 to ₹20,000 per person.
- Check out a 3-day Udaipur trip itinerary that includes accommodation, sightseeing, and activities, which can cost between ₹3,500 to ₹25,000 per person.
- Consider a destination wedding package in Jaipur that includes accommodation, food, and activities, which can cost between ₹25,000 to ₹50,000 per person.

RESULT :

It's also worth noting that the cost of flights, accommodation, and activities can vary depending on the time of year and availability, so it's a good idea to compare prices and book in advance to get the best deals.

Here is a possible itinerary for a 4-day cultural trip to Jaipur in October for two people with a budget of ₹25,000:

Day 1: Arrival in Jaipur and check-in to a budget hotel. Visit the City Palace and Jantar Mantar in the evening.

Day 2: Visit the Amber Fort and Hawa Mahal in the morning. Explore the local markets and try some street food in the evening.

Day 3: Visit the Jal Mahal and Nahargarh Fort in the morning. Take a cooking class and learn how to make some traditional Rajasthani dishes in the evening.


Day 4: Visit the Albert Hall Museum and Birla Mandir in the morning. Depart for the airport and fly back home in the evening.

This itinerary should give you a good taste of Jaipur's culture and history, and should fit within your budget of ₹25,000 for two people. However, please note that the cost of flights, accommodation, and activities can vary depending on the time of year and availability, so it's a good idea to compare prices and book in advance to get the best deals.


RESULT :

Input : What's the best route and hotel to visit Manali in September?

Output:

 You 02:18 PM

What's the best route and hotel to visit Manali in September?

 Travel Planner Agent 02:18 PM

Based on the search results, it seems that September is a good time to visit Manali, with pleasant weather and fewer tourists compared to the peak season. Here's a suggested itinerary for a 4-day trip to Manali:

Day 1: Arrival in Manali and check-in to a hotel. Visit the Hadimba Devi Temple and explore the local market.

Day 2: Visit the Solang Valley and take a cable car ride to the top for panoramic views of the surrounding mountains. In the evening, visit the Mall Road and try some local cuisine.

Day 3: Take a day trip to the Rohtang Pass, which is about 50 km from Manali. Enjoy the scenic views and try some adventure activities like skiing or snowboarding.

Day 4: Visit the Manikaran Sahib Gurudwara and take a dip in the hot springs. In the evening, return to Manali and explore the town.

RESULT :

Day 4: Visit the Manikaran Sahib Gurudwara and take a dip in the hot springs. In the evening, return to Manali and explore the town.

As for the best route to Manali, the most common way is to take a bus or taxi from Delhi or Chandigarh. The journey takes around 12-14 hours, depending on the traffic and road conditions.

For accommodation, there are many hotels and resorts in Manali that cater to different budgets. Some popular options include:

- Hotel Manali Inn: A budget-friendly hotel with comfortable rooms and a restaurant.
- Hotel Snowcrest: A mid-range hotel with modern amenities and a rooftop restaurant.
- The Manali Lodge: A luxury hotel with spacious rooms and a spa.

It's always a good idea to book your accommodation in advance, especially during the peak season.

I hope this helps you plan your trip to Manali! Let me know if you have any other questions.

CONCLUSION :

The Travel Planner Agent simplifies the travel planning process by using IBM Watsonx and real-time tools to create personalized itineraries based on user input. It helps save time, adjusts to preferences, and provides relevant suggestions through a conversational interface. During implementation, there were challenges like optimizing prompts, ensuring data relevance, and dealing with limited booking system integration. Future improvements could involve adding APIs for real-time bookings, syncing calendars, and offering wider international support. Overall, the project shows that AI agents can greatly improve the efficiency and user experience of trip planning.

FUTURE SCOPE :

The Travel Planner Agent can be improved in several ways to boost its capabilities and scalability. One key enhancement is integrating more data sources, like APIs from travel booking platforms, which include airlines, hotels, and public transit systems. It can also incorporate event listings and local tourism boards to provide real-time availability and pricing. We can optimize the underlying prompt logic and data retrieval process with machine learning techniques to offer better and more relevant recommendations.

By expanding the system to support multiple cities, regions, and languages, we can make it suitable for users around the world. Adding features like location-based personalization, multilingual support, and local regulations will enhance its usability and relevance in different areas.

New technologies such as edge computing could enable quicker responses by processing user queries locally. This would improve performance in areas with low connectivity. Additionally, using AI-driven sentiment analysis could assist the agent in tailoring recommendations to match a user's mood or travel goals. These upgrades will transform the system into a strong, scalable, and smart travel companion for a diverse group of users.

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GITHUB LINK: <https://github.com/trushna-s/travel-planner-agent->

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