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# **CAPSTONE PROJECT**

## **AI- BASED TRAVEL PLANNER AGENT**

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# OUTLINE

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

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# PROBLEM STATEMENT

Planning a trip involves multiple complex decisions like choosing the destination, booking transportation and accommodations, managing the itinerary, staying updated on weather conditions, and handling last-minute changes. Many travelers struggle to efficiently plan and manage their trips due to a lack of time, resources, or expertise. The process becomes more challenging when considering real-time changes such as delays, closures, or budget constraints. This results in stressful travel experiences and missed opportunities.

# PROPOSED SOLUTION

- The proposed system is an AI-powered Travel Planner Agent that intelligently assists users in planning their trips. It suggests destinations, creates customized itineraries, and recommends suitable transport and accommodation options. The system tailors travel plans based on user preferences, budget, and constraints. It integrates real-time services such as maps, weather updates, and local guides, and also manages bookings, alerts for schedule changes, and optimizes travel routes. The solution leverages IBM Cloud Lite services and IBM Granite for AI capabilities and deployment .

## Key Components :

- User input collection (preferences, budget, travel dates).
- AI-powered itinerary generator
- Real-time API integration (maps, weather, transport, accommodation)
- Booking and scheduling manager
- Notifications and alerts system

# SYSTEM APPROACH

The application logic, AI processing, and user interaction were handled using IBM's integrated tools.

## Technologies Used:

IBM Cloud Lite : Platform to host and manage the AI Travel Planner.

IBM Watson Assistant : For understanding user input and interacting via chatbot-style conversation.

IBM Granite Models : For advanced AI reasoning, recommendation generation, and itinerary planning.

IBM Cloud Functions / IBM Code Engine (if used) : To run backend logic for itinerary and booking suggestions.

IBM Cloud Object Storage (if used) : For storing user preferences or static data (e.g., location info, hotel lists).

IBM Cloudant or Db2 (if used) : For storing session data or travel plans.

APIs Integrated : Travel, weather, and map APIs (only if you connected any external APIs via IBM services).

# ALGORITHM & DEPLOYMENT

- Algorithm Used:

Recommendation System (Collaborative Filtering + Content-Based Filtering) Natural Language Processing (for user queries using IBM Granite)

Steps :

- 1. Analyze user input (budget, interest, date)
- 2. Fetch matching destinations & services
- 3. Optimize itinerary using AI logic
- 4. Generate suggestions & display results

- Deployment:

Deployed on IBM Cloud Lite

API hosted and accessed through cloud endpoints

UI integrated with backend services for real-time updates

# RESULT

The screenshot displays the IBM watsonx Agent Lab interface. The top navigation bar includes the IBM watsonx logo, an 'Upgrade' button, a help icon, a notification bell, and user information for 'Ankita Beldar's Account' in 'Dallas'. The main header shows the project path: 'Projects / Travel\_Planner\_Agent / watsonx Agent'. Below this, the 'Build' section is active, showing the 'Setup' and 'Configuration' tabs. The 'Configuration' tab is selected, displaying the 'Framework' as 'LangGraph' and the 'Architecture' as 'ReAct'. The 'Instructions' section contains a text box with the following content: '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 'Knowledge' and 'Tools' sections are also visible, with buttons for 'Add a tool' and 'Create custom tool'. The 'Agent preview' section on the right shows a conversation log. The user asks: 'What are the top 5 travel destinations in Europe for a 10-day vacation?'. The watsonx Agent responds with a list of five destinations: 1. Barcelona & the French Riviera, 2. London and Paris, 3. Mykonos and Crete, 4. Budapest, and 5. Mallorca. The user then asks: 'How did I get this answer?'. The interface also shows a 'Deploy' button and a 'Share feedback' link. The bottom of the screen shows the Windows taskbar with the date and time as 5:09 PM on 02-Aug-25.

Agent Lab (beta) — Docs | IBM x watsonx Agent — Travel\_Planner\_Agent — Project x Travel\_Planner\_Agent — Project x Query examples for categories x +

dataplatform.cloud.ibm.com/wx/agents/4f060efb-05aa-4cad-81ac-c7958d4f77fb?project\_id=5aacc541-b3b5-4452-a534-98eb6e3c435e&context=wx

Incognito

IBM watsonx Upgrade ? Bell Ankita Beldar's Account Dallas AB

Projects / Travel\_Planner\_Agent / watsonx Agent Share feedback Autosaved 5:08 PM New agent + Deploy

Build AI Model: mistral-large

Setup

Configuration

Framework Architecture

LangGraph ReAct

Instructions Advanced configuration

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.

Knowledge

Tools

Add a tool Create custom tool

Added tools (4)

Agent preview

AB You: 05:03 PM

What are the top 5 travel destinations in Europe for a 10-day vacation?

watsonx Agent 05:03 PM

Here are the top 5 travel destinations in Europe for a 10-day vacation:

1. **Barcelona & the French Riviera:** Explore one of Europe's great cities and then enjoy the glitzy, gorgeous coastline.
2. **London and Paris:** Spend 5 days in each city to experience their unique cultures and historic sites.
3. **Mykonos and Crete:** Relax on beautiful beaches and enjoy the Mediterranean atmosphere.
4. **Budapest:** A kid-friendly city with plenty of history and culture to explore.
5. **Mallorca:** The largest of the Balearic Islands, offering stunning beaches and Mediterranean charm.

These destinations offer a mix of culture, history, relaxation, and fun, making them perfect for a 10-day vacation.

► How did I get this answer?

AB You: 05:04 PM

Type something...



## Build



Model: mistral-large



### Setup

### Configuration

Framework

LangGraph



Architecture

ReAct



Instructions

[Advanced configuration](#)

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.

### Knowledge

### Tools

Add a tool

Create custom tool

Added tools (4)

## Agent preview



You: 05:06 PM

plan the trip for me for India's 4 best places in budget of 1 lakh



watsonx Agent 05:06 PM

Sure, I can help you plan a trip to India's 4 best places within a budget of 1 lakh. Could you please provide me with more details such as the duration of your trip, your preferred mode of transportation, and any specific interests or activities you would like to include in your itinerary? This information will help me tailor the trip to your preferences and ensure that it fits within your budget.

► How did I get this answer?



You: 05:07 PM

Do I need a visa to visit Canada from the UK?



watsonx Agent 05:07 PM

**Do I need a visa to visit Canada from the UK?**

You do not need a visa for short visits (normally up to 6 months). You may need an eTA instead. You do not need an eTA, if you are: arriving by land and sea.

For more information, visit [GOV.UK](#).

Type something...





Projects / Travel\_Planner\_Agent / watsonx Agent Share feedback ⓘ Autosaved 5:09 PM 📁 ▾ New agent + Deploy 🔗 🔒 ⓘ

Build

AI Model: mistral-large ⚠️ ▾ ⚙️ <

Setup ▾

Configuration ▴

Framework

LangGraph ▾

Architecture

ReAct ▾

Instructions

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.

Advanced configuration

Knowledge ▾

Tools ▴

Add a tool

Create custom tool

Added tools (4)

Agent preview

AB You: 05:08 PM

Are there any cultural festivals happening in India during December?

👤 watsonx Agent 05:08 PM

Cultural Festivals in India During December

1. Hornbill Festival

• **Location:** Nagaland

• **Description:** Celebrated in the month of December, the Hornbill Festival is one of the most popular winter festivals in India. Agriculture is the chief means of livelihood for the people of Nagaland, and this festival is a tribute to the agrarian culture of the state.

• **Source:** [Indian Eagle](#)

2. Konark Dance Festival

• **Location:** Konark, Odisha

• **Description:** The Konark Dance & Music Festival is renowned as the forerunner of Orissa's current list of events. It is a one-of-a-kind festival that showcases the rich cultural heritage of the state through various dance and music performances.

• **Source:** [Today's Traveller](#)

3. Chumpha Festival

Type something...

82°F Mostly cloudy

🔍 Search 🌻 🖨️ 📁 📄 📧 📧 📧

ENG IN 🔊 🔌 🔌 5:10 PM 02-Aug-25

Build

AI Model: mistral-large

Setup

Configuration

Framework

LangGraph

Architecture

ReAct

Instructions

Advanced configuration

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.

Knowledge

Tools

Add a tool

Create custom tool

Added tools (4)

Agent preview

3. Chumpha Festival

- **Location:** Mizoram
- **Description:** Chumpha is a vibrant festival celebrated in Mizoram. What sets Chumpha apart is the communal spirit in which it is celebrated, with men and women coming together for various cultural performances.
- **Source:** [Club Mahindra](#)

4. Pachmarhi Utsav

- **Location:** Pachmarhi, Madhya Pradesh
- **Description:** Pachmarhi Utsav is a vibrant festival that invites you to be part of the region's rich heritage and culture. This December, visit Madhya Pradesh to experience the festivities.
- **Source:** [SOTC](#)

5. Kumbhalgarh Festival

- **Location:** Kumbhalgarh Fort, Udaipur
- **Description:** Kumbhalgarh Festival is one of the top cultural festivals celebrated in December in India. The celebration includes cultural activities and people can partake in various events.

Type something...



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# CONCLUSION

- The AI-based Travel Planner Agent simplifies travel planning by automating and personalizing the entire process. It ensures a smooth travel experience by providing real-time updates and smart recommendations. Users can make informed decisions while saving time and effort.

# FUTURE SCOPE

- Integration with wearable devices for on-the-go updates.
- Offline itinerary access.
- Voice-based interaction using IBM Watson Assistant.
- Multi-language support.
- Integration with AR-based local exploration tools .

# REFERENCES

[IBM watsonx Documentation](#)

[IBM Granite Models Documentation](#)

[IBM Cloud Developer Tools Guide](#)

[Generative Artificial Intelligence in Tourism Management – ScienceDirect](#)

[The Application of AI in the Tourism Industry – Academia.edu](#)

[Power Up Your Travel Apps with These APIs – Postman Blog](#)

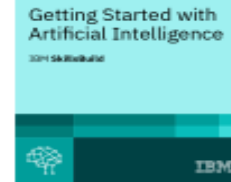
[Top 10 Travel Booking APIs – Provab Blog](#)

[Top Travel APIs for Developers – RS Web Solutions](#)



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IBM **SkillsBuild**

Completion Certificate



This certificate is presented to

ANKITA BELDAR

for the completion of

**Lab: Retrieval Augmented Generation with  
LangChain**

(ALM-COURSE\_3824998)

According to the Adobe Learning Manager system of record

**Completion date:** 25 Jul 2025 (GMT)

**Learning hours:** 20 mins



**THANK YOU**