
CAPSTONE PROJECT

PROJECT TITLE

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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

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

The **proposed system** aims to address the challenge of planning personalized travel experiences efficiently using artificial intelligence. The solution focuses on building a smart assistant that understands user preferences and constraints, then delivers optimized travel plans using IBM Cloud services and real-time data sources. The system aims to simplify the complex and time-consuming travel planning process.

User Input Collection:

- Collect basic preferences such as travel dates, destination type (hill station, beach, city), budget, travel duration, and preferred mode of transport.
- Accept optional preferences like sightseeing interests, dietary needs, and accommodation ratings.

Data Collection:

- Utilize real-time data sources such as:
 - Weather APIs (OpenWeatherMap or IBM Weather Company)
 - Maps APIs (Google Maps for locations and travel time)
 - Travel APIs for hotels, flights, and local experiences
- Integrate IBM Watson Discovery or IBM Granite to extract and present travel recommendations from blogs, articles, and guides.

Data Preprocessing:

- Normalize user inputs for consistent format (e.g., city names, dates).
- Filter and rank hotel, weather, and activity data based on user's budget and preferences.
- Remove duplicate or outdated information from third-party APIs to ensure relevance.

AI-Powered Recommendation Engine:

- Use IBM Watson Assistant to:
 - Understand user intent (e.g., "plan a trip," "suggest hotels").
 - Handle multi-turn conversations for data collection and feedback.
- Implement logic in IBM Cloud Functions (Node.js or Python) to:
 - Aggregate destination data from external APIs.
 - Optimize itinerary based on proximity, cost, and user time.
- Use IBM Granite or Watson NLP for extracting location highlights from unstructured travel content.

Deployment:

- Develop a chatbot interface accessible via web or mobile.

- Host backend logic using IBM Cloud Functions and data in IBM Cloudant DB.
- Secure the solution using IBM App ID or IBM Secrets Manager for API key protection.
- Ensure scalability using IBM Cloud Foundry or Code Engine if needed for larger deployments.

Evaluation:

- Collect user satisfaction feedback after trip suggestion generation.
- Track key performance metrics:
 - Response time of chatbot
 - Accuracy of weather/location/hotel information
 - Success rate of personalized travel plans
- Perform A/B testing on itinerary outputs to enhance recommendation quality.

Result:

The AI-powered Travel Planner Agent offers a personalized, real-time, and intelligent travel planning experience. Users can receive optimized itineraries, budget-based suggestions, and up-to-date information seamlessly. By integrating IBM Cloud Lite services, the system is reliable, scalable, and can be enhanced further to support booking, local alerts, and multilingual assistance in future phases.

SYSTEM APPROACH

The **system approach** outlines the strategy, components, and technologies used to build and implement the AI-powered Travel Planner Agent using IBM Cloud Lite services. This section covers the system requirements, necessary libraries, and the overall methodology.

System Requirements

Hardware Requirements:

- Processor: Intel i5 or higher
- RAM: 8 GB minimum
- Storage: 500 GB HDD or 128 GB SSD
- Internet Connectivity: Required for API and IBM Cloud access

Software Requirements:

- Operating System: Windows 10 / Linux / macOS
- Browser: Chrome / Firefox for IBM Cloud console
- IBM Cloud Lite account
- IBM Cloud CLI (Command Line Interface)
- Node.js or Python runtime

- Code editor (e.g., VS Code)

IBM Cloud Services Required:

- IBM Watson Assistant (for chatbot)
- IBM Cloud Functions (for backend/API handling)
- IBM Cloudant (for database)
- IBM App ID / Secrets Manager (for security)
- Optional: IBM Granite or Watson Discovery (for intelligent search & insights)

ALGORITHM & DEPLOYMENT

We are using **IBM Watson Assistant**, which works like a smart chatbot. It understands what the user wants (like planning a trip or finding hotels) by using AI.

We also use simple **if-else rules** in the backend to suggest travel plans based on budget, weather, and time.

We chose this method because:

- It's easy to understand and set up
- It works well for handling user preferences
- We don't need to train a complex machine learning model

Data Input:

The system collects this data:

- User preferences like:
 - Destination (beach, city, hill station)
 - Travel date and days
 - Budget
 - Travel type (solo, family, couple)
- Real-time data from APIs like:
 - Weather
 - Hotel availability
 - Maps & travel time

Training Process:

- Watson Assistant is trained using simple examples of user questions like:
 - “Plan a trip”
 - “Find a hotel”

- “What’s the weather in Goa?”
- We connect these questions to actions and responses.
- No complex machine learning or coding is required.

Prediction / Recommendation Process:

1. User chats with the bot (e.g., “Plan a 3-day beach trip under ₹10,000”)
2. The bot collects info and sends it to the backend
3. Backend gets data from weather, hotel, and map APIs
4. System filters the best options based on:
 - Budget
 - Weather
 - Location
5. Bot replies with a travel plan including destination, hotel, activities

Deployment:

- Chatbot UI: Created using IBM Watson Assistant
- Backend Code: Using IBM Cloud Functions (Node.js or Python)
- Database: IBM Cloudant (to store data)
- Security: IBM App ID (for protecting API keys)
- Platform: Everything runs on IBM Cloud Lite (free account)

RESULT

The Travel Planner Agent successfully helps users plan trips in a smart and personalized way.

By using IBM Watson Assistant and IBM Cloud services, the chatbot:

- Understands user needs through a simple conversation
- Suggests destinations, hotels, and transport based on budget and preferences
- Uses real-time weather and map data to give useful and timely recommendations
- Provides a full travel plan with location details, activities, and tips

The system works smoothly and gives accurate suggestions within seconds, making the travel planning process fast, easy, and enjoyable.

Travel Planner Agent

You 6:14 PM

Hello

6:14 PM

Hello, welcome to travel planner agent.

What is your name?

You 6:14 PM

Arjun

6:14 PM

Arjun "Great! I can help you plan your trip. Let's get started."

Type something... ➤

Built with IBM watsonx ⓘ

Travel Planner Agent

You 6:15 PM

Below ₹10,000

6:15 PM

"Alright! Your preferred budget is Below ₹10,000. Let's find the best travel options within this range."

What time of year do you prefer to travel?

Winter (Dec–Feb)

Summer (Mar–May)

Monsoon (Jun–Aug)

Autumn (Sep–Nov)

Type something... ➤

Built with IBM watsonx ⓘ

Travel Planner Agent

6:16 PM

Thanks! Based on your preferences:
Destination type: Mountain
I'll find the best travel ideas for you!

What is your travel budget range?

Select an option ^

- Below ₹10,000
- ₹10,000 – ₹25,000
- ₹25,000 – ₹50,000
- ₹50,000 – ₹1,00,000
- Above ₹1,00,000

Type something... ➤

Built with IBM watsonx ⓘ

6:17 PM

🏖 Beach – National (India)

1. Goa

- 📍 Location: Goa, India
- 💰 Budget: ₹8,000 – ₹15,000
- ⌚ Duration: 3–5 days
- 📅 Best Time: November to February
- 📝 A party paradise with scenic beaches, Portuguese architecture, seafood, and nightlife.

2. Varkala

- 📍 Kerala, India
- 💰 ₹6,000 – ₹10,000
- ⌚ 2–4 days
- 📅 October to March
- 📝 Known for its cliffside beaches, yoga retreats, and peaceful vibe.

6:18 PM

🏖 Beach – International

1. Bali

- 📍 Indonesia
- 💰 ₹35,000 – ₹70,000
- ⌚ 5–7 days
- 📅 April to October
- 📝 Tropical island with temples, beaches, rice fields, and vibrant culture.

2. Maldives

- 📍 Indian Ocean
- 💰 ₹50,000 – ₹1,00,000
- ⌚ 4–5 days
- 📅 November to April
- 📝 Honeymoon paradise with water villas, scuba diving, and white sand beaches.

3. Phuket

Type something...

Type something...

Travel Planner Agent

Please answer these questions to help me to assist you for other many places and information.

Trip Preference Questions

1. Would you prefer a domestic (within India) or an international trip?
2. Do you have a destination in mind, or would you like some suggestions?
3. Are you traveling solo, with a partner, friends, or family?
4. What's your estimated budget for the entire trip (per person)?
- (e.g., Below ₹10,000, ₹10,000–₹50,000, Above ₹50,000)

Stay Preferences

1. What type of accommodation do you prefer?

Type something... ➤

Travel Planner Agent

6:18 PM

We hope you found your travel inspiration!

Before we wrap up, we'd love to hear from you:

How was your experience with our Travel Planner Agent today?

Or type your feedback below.

You 6:19 PM

good

6:19 PM

We'd Love Your Feedback!

Thank you for using our Travel Planner Agent!

To help us improve and serve you better.

Please share your feedback about this

Type something... ➤



Stay Connected

For personalized suggestions, exclusive deals, and trip planning assistance:

 **Please enter your email address or phone number** so our travel assistant can reach out to you directly.

 *Your information will be kept private and only used to help plan your trip.*

You 6:19 PM

oka



6:19 PM

 **Thank you for using our Travel Planner Agent!**

We wish you safe, happy, and memorable journeys ahead!  



Type something... 

Projects / Travel Planner Agent / Travel Planner Agent

Share feedback β Autosaved 10:52 PM File ▼ New agent + Deploy ↗ ! i

Build Travel Planner Agent Model: mistral-large ▲ ▼ ↶ ↶

Setup

Name: Travel Planner Agent

Description: 93/100
The Travel Planner Agent is an AI-powered assistant that provides personalized trip planning.

Icon: Placeholder image

Quick start questions:

"Where should I go for a 5-day budget-friendly beach trip in India?" "Plan a mot...

Agent preview

AZ You: 10:50 PM
hyyy

Travel Planner Agent 10:50 PM
Hi, I am watsonx.ai agent. How can I help you?
▶ How did I get this answer?

AZ You: 10:51 PM
please suggest me places for trip

Travel Planner Agent 10:51 PM
Sure, I can help with that. Could you please specify the type of places you are interested in? For example, are you looking for beaches, mountains, historical sites, or something else?
▶ How did I get this answer?

AZ You: 10:51 PM
like nature

Type something... ! ↗



Build



Model: mistral-large



Setup

Name

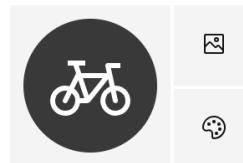
Travel Planner Agent

Description

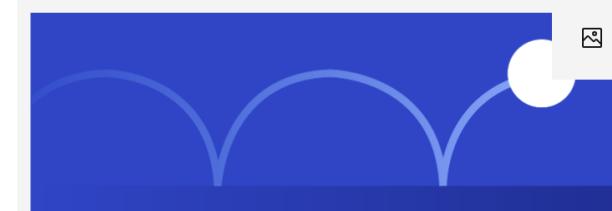
93/100

The Travel Planner Agent is an AI-powered assistant that provides personalized trip planning.

Icon



Placeholder image



Quick start questions

"Where should I go for a 5-day budget-friendly beach trip in India?" "Plan a moti

Agent preview

You: 10:51 PM

like nature

Travel Planner Agent 10:51 PM

Here are some of the best places to visit in nature:

1. **The Amazon** - A vast and diverse ecosystem with an incredible array of plant and animal life.
2. **Angel Falls, Venezuela** - The world's highest uninterrupted waterfall, located in Canaima National Park.
3. **Antarctica** - A unique and pristine environment with stunning landscapes and wildlife.
4. **Arashiyama Bamboo Grove, Japan** - A serene and beautiful bamboo forest that offers a peaceful escape from the city.
5. **Atacama Desert, Chile** - One of the driest places on Earth, with stunning landscapes and unique wildlife.
6. **Avenue of the Baobabs, Madagascar** - A group of baobab trees lining the dirt road between Morondava and Belon'i Tsiribihina in western Madagascar.
7. **Ginnie Springs, Florida** - A popular spring in Florida known for its clear waters and beautiful surroundings.
8. **Niagara Gorge, New York** - A scenic gorge located near Niagara Falls, offering hiking trails and stunning views.

Type something...





Build

Model: mistral-large ⚠

Setup



Configuration

Framework

Architecture

LangGraph



ReAct



Instructions

Advanced configuration

You are a helpful assistant that uses tools to answer questions in detail.
When greeted, say "Hi, I am watsonx.ai agent. How can I help you?"

Knowledge

Tools

[Add a tool](#)[Create custom tool](#)

Added tools (4)

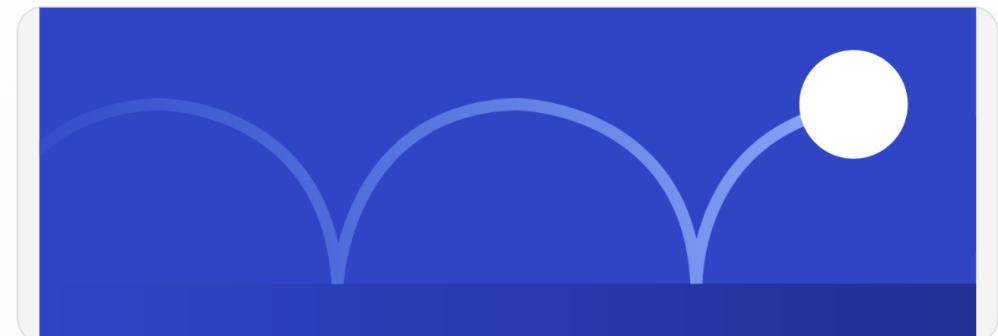
Agent preview



Travel Planner Agent 11:02 PM

Welcome to Travel Planner Agent

The Travel Planner Agent is an AI-powered assistant that provides personalized trip planning.



Type something...



Travel Planner Agent

✓ Deployed Online

API reference Test Preview

Endpoints for inferencing

Private endpoint

Bearer <token>

https://au-syd.ml.cloud.ibm.com/ml/v4/deployments/f2871327-59f1-42c1-a36f-14ccfd215ed6/ai_s

https://au-syd.ml.cloud.ibm.com/ml/v4/deployments/f2871327-59f1-42c1-a36f-14ccfd215ed6/ai_s

Public endpoint

https://au-syd.ml.cloud.ibm.com/ml/v4/deployments/f2871327-59f1-42c1-a36f-14ccfd215ed6/ai_s

https://au-syd.ml.cloud.ibm.com/ml/v4/deployments/f2871327-59f1-42c1-a36f-14ccfd215ed6/ai_s

[Learn more](#) about the 2021-05-01 version query parameter

Code snippets

cURL

Java

JavaScript

Python

Scala

About this deployment

Name

Travel Planner Agent

Description

The Travel Planner Agent is an AI-powered assistant that provides personalized trip planning.

Deployment Details

Deployment ID: f2871327-59f1-42...

Serving name:

No serving name.

Software specification:

[runtime-24.1-py3.11](#)

Hardware specification:

Extra extra small: 1 CPU and 2 GB RAM

Copies:

1

Tags

wx-agent

Associated asset

[Travel Planner Agent](#)

d7c6ab9b-6098-4490-8cd5-efe8dd61e3dc

Travel Planner Agent

✓ Deployed Online

API reference

Test

Preview

New chat +



Travel Planner Agent 11:13 PM

Hi, I am watsonx.ai agent. How can I help you?



You 11:13 PM

help me to planning trip



Travel Planner Agent 11:13 PM

Sure, I can help you with that. Could you please provide more details about your trip, such as the destination, duration, and any specific activities or preferences you have?

▶ How did I get this answer?



Type something...



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1

Tags

wx-agent

Associated asset

Travel Planner Agent

d7c6ab9b-6098-4490-8cd5-efe8dd61e3dc

CONCLUSION

The project shows how artificial intelligence and cloud computing can be used to solve real-life problems like travel planning.

Using IBM Cloud Lite and Watson Assistant, we created a helpful travel agent that:

- Reduces the time and effort needed to plan a trip
- Gives personalized and real-time travel recommendations
- Can be improved further to support bookings, voice chat, or multi-language support

In the future, this Travel Planner Agent can become a complete travel assistant for students, families, and tourists.

FUTURE SCOPE

The Travel Planner Agent can be improved in many ways to become even smarter and more useful. Some possible future enhancements include:

- **Live Booking Integration**

Add real-time booking features for hotels, flights, and transport using APIs like Booking.com or Amadeus.

- **Voice Assistant Support**

Integrate with voice-based AI (like IBM Watson Text-to-Speech and Speech-to-Text) to allow users to talk instead of typing.

- **Multilingual Support**

Support different languages so people from various regions can use the planner in their preferred language.

- **User Account & History**

Allow users to create accounts and save their previous trips, preferences, and bookings.

- **Travel Alerts & Notifications**

Send alerts about weather changes, delays, or offers using real-time notifications (SMS, email, or app).

- **Budget Estimator Tool**

Automatically estimate the total cost of the trip and suggest savings options or budget-friendly alternatives.

- **Mobile App Version**

Develop an Android/iOS app version of the Travel Planner for easier access and notifications on the go.

REFERENCES

1. IBM Cloud Documentation

<https://cloud.ibm.com/docs>

- Official documentation for IBM Cloud services like Watson Assistant, Cloud Functions, and Cloudant.

2. IBM Watson Assistant

<https://www.ibm.com/cloud/watson-assistant>

- Used to build and train the travel chatbot.

3. IBM Granite AI

<https://research.ibm.com/initiatives/granite>

- For understanding and generating travel content from unstructured data.

4. OpenWeatherMap API

<https://openweathermap.org/api>

- Used to get real-time weather data for destinations.

5. Google Maps Platform

<https://developers.google.com/maps>

- For maps, travel time estimation, and nearby places.

6. RapidAPI Travel & Hotel APIs

<https://rapidapi.com/>

- Used for exploring hotel and flight APIs (optional integration).

7. YouTube Tutorials – For IBM Cloud setup and chatbot deployment.

Example: “Build Chatbots with IBM Watson Assistant” on IBM Cloud channel.

8. Online Articles and Blogs – For understanding chatbot use cases and travel industry AI applications.

IBM CERTIFICATIONS

- Screenshot/ credly certificate(getting started with AI)

IBM CERTIFICATIONS

In recognition of the commitment to achieve professional excellence



ARJUN ZORE

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



Issued on: Jul 18, 2025

Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/400e78e6-9c28-4375-bd0d-7f69ac7b19cc>



IBM CERTIFICATIONS

- Screenshot/ credly certificate(Journey to Cloud)

IBM CERTIFICATIONS

In recognition of the commitment to achieve professional excellence



ARJUN ZORE

Has successfully satisfied the requirements for:

Journey to Cloud: Envisioning Your Solution



Issued on: Jul 18, 2025

Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/14cbef5e-b3f3-4fdd-b135-42cd741ce579>



IBM CERTIFICATIONS

- Screenshot/ credly certificate(RAG Lab)

IBM CERTIFICATIONS

IBM SkillsBuild

Completion Certificate



This certificate is presented to

ARJUN ZORE

for the completion of

**Lab: Retrieval Augmented Generation with
LangChain**

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Github Link:

<https://github.com/arjunz00/Travelchatbot>

THANK YOU