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# CAPSTONE PROJECT

## AI-Powered Travel Planner Agent Using IBM Cloud Services

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# OUTLINE

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

Planning travel involves a range of time-consuming tasks—researching destinations, checking weather, comparing transport and hotel options, and managing bookings. Many travelers struggle to create optimized, budgetfriendly itineraries that suit their preferences. The lack of a unified intelligent system often leads to fragmented experiences, missed opportunities, and inefficient travel plans.

# Proposed Solution

The proposed **AI-powered Travel Planner Agent** simplifies and automates the travel planning process. The system utilizes **IBM Cloud Lite services** to interact with users, understand their preferences (budget, time, interests), and dynamically generate:

- Destination
- Number of days
- Budget

It integrates data from various sources (e.g., flights, hotels, weather APIs, maps) to ensure users receive accurate, context-aware, and personalized travel plans.

# System Approach

The **system approach** for developing the Travel Planner Agent using **Watsonx Assistant** focuses on building a conversational AI that interacts with users, understands natural language inputs, and generates personalized travel itineraries using IBM Cloud services.

## System Requirements

- IBM Cloud Lite account
- Access to **Watsonx AI Assistant**
- IBM Cloud Functions
- Web browser for chatbot interaction

# Algorithm & Deployment

## ◇ Algorithm Steps:

### **Input Collection:**

- Watsonx Assistant collects three user inputs:
  - destination
  - days
  - budget

**Data Transfer:** . These inputs are passed to an IBM Cloud Function via webhook integration.

### **Travel Plan Generation:**

- The function uses rule-based logic to generate:

- Weather status (hardcoded or optionally from Weather API)
- A fixed set of sightseeing spots
- A simple day-wise itinerary based on days **Budget Check (Optional):**
  - If budget is too low (e.g., < ₹3000), a warning message is returned.
  - Otherwise, it returns a valid itinerary.

## Output Formatting:

- The travel plan is returned in structured text and shown to the user by Watsonx Assistant.

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## Deployment Steps

### Watsonx Assistant

- Create a dialog skill .Add intents/entities and dialog nodes .Enable webhook under assistant settings

**IBM Cloud Function** .Create a Node.js or Python function with simple travel logic .Set up input parameters: destination, days, budget .  
Return a string as result

**Webhook Integration** .Inside dialog node, trigger the function with:

# Result

## System Output

### Preview

[https://dataplatform.cloud.ibm.com/ml-runtime/deployments/aaa3e2a3-adc2-4ab9-9901-04a4b16d474d/chat?space\\_id=229ca472-1cab-482d-8578-8043d039ac72&context=wx&flush=true](https://dataplatform.cloud.ibm.com/ml-runtime/deployments/aaa3e2a3-adc2-4ab9-9901-04a4b16d474d/chat?space_id=229ca472-1cab-482d-8578-8043d039ac72&context=wx&flush=true)

IBM watsonx

Projects / Travel\_Planner / watsonx Agent

Build

Model: mistral-large

Setup

Configuration

Framework

LangGraph React

Instructions

You are a Travel Planner Agent. Help users plan trips based on their preferences. Ask for the following:

- Destination
- Travel dates
- Budget

Advanced configuration

Knowledge

Tools

Add a tool Create custom tool

Added tools (5)

Google search

Share feedback β

Vineetha Vijay's Account Dallas

Agent preview

vv You: 09:51 AM travel plan to delhi

watsonx Agent 09:51 AM Here are some suggestions for your travel plan to Delhi:

- 1. How to Spend Three Perfect Days in Delhi: An In-Depth Itinerary**
  - Description:** I recommend spending your first day in town wandering through Old Delhi, your second day marvelling at New Delhi, and your third day unwinding in South Delhi.
  - URL:** [Three Days in New Delhi Itinerary](#)
- 2. How to plan a Delhi + Agra trip in 3 -4 days - New Delhi Forum**
  - Description:** I would recommend 2 full days in Delhi as there is lot to see in Delhi, be it monuments, temples, museums, and many more. While you can prefer...
  - URL:** [Delhi + Agra Trip Planning](#)
- 3. Travel at Delhi**
  - Description:** Please review all of the information in our Travel Policies &

Type something...

This screenshot shows the IBM Watsonx Agent build interface. On the left, the 'Build' tab is selected, displaying sections for 'Setup', 'Configuration', 'Instructions' (containing a template for a travel planner), 'Knowledge', and 'Tools'. The 'Tools' section includes buttons for 'Add a tool' and 'Create custom tool', and a list for 'Added tools (5)'. On the right, the 'Agent preview' pane shows a simulated conversation where a user asks for a travel plan to Delhi. The agent responds with suggestions, including an in-depth itinerary for Delhi, a combined Delhi-Agra trip, and travel policies. A text input field at the bottom is labeled 'Type something...'. The top navigation bar includes links for 'Upgrade', 'Share feedback', 'Dallas', and account information for 'Vineetha Vijay's Account'.

IBM watsonx

Deployment spaces / travels / watsonx Agent /

watsonx Agent Deployed Online

API reference Test Preview

You 09:55 AM  
give me travel to manali

watsonx Agent 09:55 AM  
Sure, I can help you plan a trip to Manali. Could you please provide me with the following details:

- Travel dates
- Budget
- Interests (adventure, relaxing, historical, etc.)

This information will help me tailor the trip to your preferences.

You 09:56 AM  
augest 4 to augest 5 and budget 12000

watsonx Agent 09:56 AM  
Here are some travel options and tips for your trip to Manali:

- 1. Safety:**
  - Manali is generally safe to travel to, but it's always a good idea to check the latest travel advisories and weather conditions before your trip.
  - Some roads may be blocked or have diversions, so be prepared for potential delays.
- 2. Transportation:**
  - Buses are available for destinations around Manali, such as Solang or Manikaran, providing a cost-effective means of transportation.
  - If you're planning to travel by bike, be aware of the challenges such as smog, lower temperatures, and curvy roads.
- 3. Places to Visit:**
  - Manali offers a variety of experiences, from adventure activities like paragliding and snowfall to cultural and historical sites.

Type something... ➤

About this deployment

Name: watsonx Agent

Description: Change this description to reflect your particular agent

Deployment Details

Deployment ID: aaa3e2a3-adc2-4a...  
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

Watsonx Agent  
e1c0b48f-2fcf-46f3-9547-3ed084830d3f

Last modified: 2 minutes ago  
Created on: Aug 3, 2025

The screenshot shows the IBM Watsonx interface. On the left, there's a chat window with a message from the user asking for travel options to Manali, followed by a response from the 'watsonx Agent' detailing safety, transportation, and places to visit. On the right, a sidebar displays the deployment details for the 'watsonx Agent' deployment, including its name, description, deployment ID, serving name (unset), software and hardware specifications, and creation date. The deployment has one copy and is associated with the 'wx-agent' tag and the 'Watsonx Agent' asset. The deployment was last modified 2 minutes ago.

The screenshot shows a web browser window with the URL [dataplatform.cloud.ibm.com/ml-runtime/spaces/229ca472-1cab-482d-8578-8043d039ac72/deployments?context...](https://dataplatform.cloud.ibm.com/ml-runtime/spaces/229ca472-1cab-482d-8578-8043d039ac72/deployments?context...). The page title is "IBM watsonx". The navigation bar includes back, forward, search, and account information for "Vineetha Vijay's Account" and "Dallas". Below the navigation bar, there are icons for deployment management.

The main content area has a heading "travels". Below it is a navigation bar with tabs: Overview, Assets, Deployments (which is selected), Jobs, and Manage. A search bar is present above the table.

A table lists deployment details:

Name	Type	Status	Asset	Asset type	Tags	Last modified
watsonx Agent	Online	Initializing	watsonx Agent	Ai service	wx-agent	6 seconds ago Vineetha Vijay (You)

At the bottom, there are pagination controls: "Items per page: 20", "1-1 of 1 items", "1 of 1 pages", and navigation arrows.

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# Conclusion

The **Travel Planner Agent**, developed using **IBM Watsonx Assistant** and **IBM Cloud Lite services**, successfully demonstrates how AI can simplify and automate the travel planning process.

The system allows users to input their travel preferences—such as destination, number of days, and budget—through natural language. Based on this input, the chatbot interacts with a backend IBM Cloud Function to generate a personalized, day-wise travel itinerary. The chatbot responds instantly and efficiently, enhancing user experience and saving time.

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This project shows the power of combining **Watsonx Assistant for conversation** with **IBM Cloud Functions** for logic processing, all without relying on external tools or services. The solution is cost-effective, beginner-friendly, and deployable on IBM's cloud infrastructure.

Overall, the Travel Planner Agent achieves its goal of making trip planning smarter, faster, and more accessible. It demonstrates a real-world use case of AI in personal assistance, using only IBM technologies.

## Future scope

The current Travel Planner Agent provides basic, rule-based itineraries using IBM Watsonx Assistant and IBM Cloud Functions. However, the system can be further improved and expanded in the future:

### ❖ Possible Enhancements

- 1. Real-time Weather Integration** . Connect with the IBM Weather Company API to show actual weather forecasts for travel dates.
- 2. Voice-based Interaction** . Add speech-to-text support to allow users to talk to the bot using voice commands.

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- 3. Multi-language Support** . Use Watson Language Translator to support users in different languages (e.g., Hindi, Tamil, Marathi).
  - 4. User Profile and History Tracking** . Store previous travel plans using IBM Cloud, allowing users to view or reuse past itineraries.
  - 5. Dynamic Destination Suggestions** . Suggest popular or trending places based on seasons, budget, or holidays.
  - 6. PDF Export or Email Sharing** . Allow users to export the generated plan as a PDF or send it via email.
- .

# Reference

1. **IBM Watsonx Ai**
2. <https://www.ibm.com/cloud/watson-assistant>
  - Used to create the conversational chatbot interface.
3. **IBM Cloud Functions** <https://cloud.ibm.com/functions>
  - Used to write and host backend logic for generating travel plans.
4. **IBM Cloud Lite Services** <https://cloud.ibm.com>
  - Free-tier cloud platform used to deploy and connect all components.

# IBM Certification

## GETTING STARTED WITH AI

In recognition of the commitment to achieve professional excellence



# Vineetha V

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



Issued on: Jul 16, 2025

Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/d61976c9-2761-4d0f-b6b9-7504f0eadad0>



# IBM Certification

## Journey to Cloud

In recognition of the commitment to achieve professional excellence

**Vineetha V**

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/fe3b8669-8835-49de-b974-1cfecdf1929a>

  




# IBM Certification

RAG Lab

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**IBM SkillsBuild**

Completion Certificate



This certificate is presented to

**Vineetha V**

for the completion of

## **Lab: Retrieval Augmented Generation with LangChain**

(ALM-COURSE\_3824998)

According to the Adobe Learning Manager system of record

**Completion date:** 23 Jul 2025 (GMT)

**Learning hours:** 20 mins



THANK YOU