
CAPSTONE PROJECT

TRAVEL PLANNER AGENT

Presented By:

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4. github repo-
<https://github.com/pratikshelke204/IBM-PROJECT>

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 is an intelligent **AI-based Travel Planner Agent** that helps users seamlessly plan trips by leveraging AI models and real-time APIs.

1. User Preference Input

Collects data on user preferences like budget, duration, destination types (beach, mountain, heritage, etc.), and travel dates.

Offers both manual input and voice-based interaction.

2. Dynamic Itinerary Builder

Automatically creates personalized itineraries with activities, places to visit, estimated durations, and travel mode.

Suggests alternatives for weather or crowd-related conditions.

3. Real-Time Integration

Uses real-time APIs (maps, weather, transport) to update travel conditions, ETA, and suggest optimized travel routes.

Adjusts the plan dynamically if disruptions occur (e.g., flight/train delays, weather warnings).

4. Recommendation Engine

Suggests hotels, restaurants, and local experiences based on user history and ratings.

Uses collaborative filtering or content-based recommendation techniques.

5. Budget Planner

Calculates trip costs and keeps users informed about budget constraints.

Offers cost-saving suggestions like alternate stays, transport modes, or time slots.

6. User Interface

Web or mobile app interface with intuitive design.

Displays itinerary, map route, booking options, and notifications.

7. Deployment

Hosted using cloud platforms (IBM Cloud / AWS / Firebase).

Ensures scalability, real-time access, and user session persistence.

SYSTEM APPROACH

System requirements

Hardware:

- Laptop/PC with at least 4GB RAM
- Internet connection

Software:

- **Operating System:** Windows 10
- **Cloud Platform:** IBM Cloud
- **Database:** IBM Cloudant (for storing trip data, user sessions, preferences)
- **AI Services:** IBM Watsonx (for intelligent travel recommendations, itinerary generation, NLP interactions)

APIs:

- IBM Watsonx Knowledge Studio (for customizing travel logic)
- IBM Watsonx.ai (for model deployment or inferencing)

TOOLS

- **IBM Watsonx.ai** – For building and deploying travel recommendation and itinerary models.
- **IBM Watsonx Assistant (optional)** – For creating a natural conversation interface.
- **IBM Cloud Functions** – To handle business logic like fetching live data or booking updates.
- **IBM Cloudant** – To store user profiles, trip logs, and historical planning data.
- **IBM AppID (optional)** – For secure user login and authentication.
- **IBM Object Storage (optional)** – To store travel images, maps, or document uploads. **IBM Monitoring & Logs** – For monitoring app usage, errors, and feedback.

RESULT

The screenshot displays the IBM Cloud dashboard in a web browser. The browser's address bar shows 'cloud.ibm.com'. The dashboard header includes the 'IBM Cloud' logo, a search bar, and navigation links for 'Catalog', 'Manage', and 'Pratik Shelke's Account'. The main content area is titled 'Dashboard' and features a 'For you' section with five recommended resources: 'Build', 'Track emissions with Carbon Calculator', 'Use Watson Assistant', 'Use Watson Studio', and 'Build with Watson'. Each resource card includes a brief description, a 'Recommended' or 'Popular' tag, and an estimated time to complete. The 'Build' card is highlighted with a blue background. The dashboard also includes a 'Create resource' button and a 'Select an option' dropdown. At the bottom, there are links to 'IBM Cloud status', 'Recent support cases', and 'Planned maintenance', each with a 'View all' link.

IBM Cloud

Search resources and products...

Catalog Manage Pratik Shelke's Account

Dashboard

Edit dashboard Upgrade account Create resource

For you

Select an option

Build
Explore IBM Cloud with this selection of easy starter tutorials and services.

Track emissions with Carbon Calculator
View estimated greenhouse gas emissions for your IBM Cloud account and export data for ESG reporting.
Recommended 1 min

Use Watson Assistant
Watson Assistant lets you build conversational interfaces into any application, device, or channel.
Popular 2 min

Use Watson Studio
Watson Studio provides a suite of tools and a collaborative environment for data scientists, developers and domain experts.
Popular 2 min

Build with Watson
Chatbots, insights, recognizers, and more. Explore the AI platform for business.
Popular 3 min

IBM Cloud status View all Recent support cases View all Planned maintenance View all

watsonx - IBM Cloud

cloud.ibm.com/watsonx/overview

☆ | P School

IBM Cloud

Search resources and products...

Catalog

Manage

Pratik Shelke's Account

?

watsonx

watsonx

Documentation

watsonx.ai

watsonx.governance

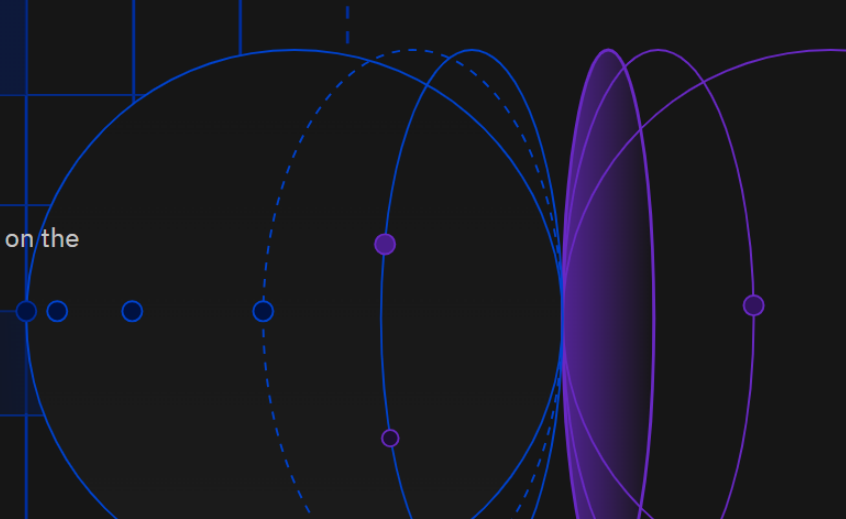
watsonx.data

watsonx.data intelligence

watsonx.data integration

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Build, evaluate, and deliver AI solutions that are informed by your enterprise knowledge.

Launch

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The only hybrid, open data lakehouse for enterprise AI and analytics.

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🔑 🔒 ☆

🔍 Incognito

⋮

☰ IBM watsonx

Upgrade ? 🔔

Pratik Shelke's Account ▾

Dallas ▾

PS

Projects / Travel_Planner_Agent

↕ ▾ 👤 Launch IDE ▾ ⓘ ⌚ 💬 ⚙

Overview

Project

⚙️ G

🔍 A

👁️ E

📊 R

⚙️ S

Tools

👤 P

Associate service

Choose an existing or add a new service to associate with your project.

1 × Default ▾

2 × Locations ▾

🔍 Find services

New service +

Name	Type	Plan	Location	Status	Group
<input checked="" type="checkbox"/> watsonx.ai Runtime-kn ⓘ	watsonx.ai Runtime	Lite	Dallas	⬮ Not associated	Default

Cancel

Associate

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← → ↺

datapatform.cloud.ibm.com/wx/agents?context=wx&project_id=606c8b3b-cc92-4a55-b31b-8ef8fe251ef9

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PS

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Share feedback β

Unsaved 📁 ▾

New agent +

Deploy 🚀

Build

AI

Model: llama-3-3-70b-instruct ▾

⚙️

<

LangGraph ▾

ReAct ▾

Instructions

Advanced configuration

I am a smart AI-powered Travel Planner Agent. m goal is to help users plan efficient and personalized trips based on their preferences such as location, budget, travel duration, and interests.

Behaviors to Follow: 📝

Knowledge ▾

Tools ▴

Add a tool

Create custom tool

Added tools (1)

Agent preview

👤 watsonx Agent 11:01 PM

Welcome to watsonx Agent

Change this description to reflect your particular agent



Type something...

🗨️ ➤

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←

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Share feedback β

Unsaved 📁 ▾

New agent +

Deploy 🚀


☐

🖨

Select a tool

×


Choose a tool to add to your agent.



Google search

Retrieve information from the internet with the Google search engine.


☒



DuckDuckGo search

Retrieve information from the internet with the DuckDuckGo search engine.


☒



Wikipedia search

Retrieve information from Wikipedia articles.


☒



Document search

Search documents with vector indexes.


☐



Tavily search

Retrieve information from the internet with the Tavily search engine.


☐




Webcrawler

Retrieve information from a website.


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dataplatform.cloud.ibm.com/wx/agents?context=wx&project_id=606c8b3b-cc92-4a55-b31b-8ef8fe251ef9

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Upgrade ⓘ 🔔

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Share feedback β Unsaved ⏴ ▾ New agent + Deploy ⚡

Build

AI Model: llama-3-3-70b-instruct ⌵ ⚙️ <

Instructions [Advanced configuration](#)

You are the Travel planner agent . Take a preference from user like location, budget, travel duration and interest.Give the specific answer to the user query.
Behaviors to Follow:

Knowledge ▾

Tools ▴

Add a tool Create custom tool

Added tools (1)

Google search ⚙️ 🗑️

Retrieve information from the internet with the Google search engine.

Agent preview

PS You: 11:16 PM

hi

🤖 watsonx Agent 11:16 PM

To get personalized travel recommendations, I would need to know more details about your preferences. Could you please provide me with the following information:

1. Location: Where are you planning to travel to?

2. Budget: What is your estimated budget for the trip?

3. Travel duration: How many days do you have for the trip?

4. Interest: What are your interests? (e.g., history, culture, food, outdoor activities, etc.)

Once I have this information, I can provide you with more tailored suggestions

Type something... ⏴ ⏵

edunet
foundation

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+

← → ↺

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Share feedback β Unsaved 📁 ▾ New agent + Deploy 🚀

Build

AI Model: llama-3-3-70b-instruct ⌵ ⚙️ ⏪

Instructions

Advanced configuration

You are the Travel planner agent . Take a preference from user like location, budget, travel duration and interest.Give the specific answer to the user query.
Behaviors to Follow:
Ask clear questions to understand the user's travel needs (e.g., preferred

Knowledge ▾

Tools ▴

Add a tool

Create custom tool

Added tools (1)

Google search

Retrieve information from the internet with the Google search engine.

⚙️ 🗑️

Agent preview

PS You: 11:19 PM
Gao,20000,5,culture

🤖 watsonx Agent 11:19 PM
Based on the search results, it seems that there are various options for a 5-day cultural trip to Gao with a budget of 20,000. Here are a few suggestions:

- Consider visiting the Wandering Earth, a cultural site with a rich history and stunning architecture. With 20,000 words in the book, you can expect a comprehensive and immersive experience.
- Look into the DOI Response to Committee on Indian Affairs on GAO Report 2011, which provides information on the cultural items and repatriations for the NAGPRA cultural items.
- Check out the 2024-Compliance-Supplement.pdf, which includes information on budget justifications and performance information for FY 2024.
- Visit the KIIS study abroad programs, which typically involve approx. 5-10 miles of walking (approx. 10,000-20,000 steps) or the like in a day, including the possibility of cultural activities and sightseeing.

Type something...

🗑️ ➤

Overview **Assets** Deployments Jobs Manage

🔍 Find assets

Import assets 🔄

New asset +

1 assets 📄

All assets

Asset types

> 📄 Agents 1

All assets 🔄

Name	Last modified	
📄 watsonx Agent Agent	Now Modified by Deactivated user	⋮

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watsonx Agent — Travel_Planne

+

← → ↻

dataplatfom.cloud.ibm.com/wx/agents/91328db3-53d0-49c7-8e4b-9ebef2c7188c?project_id=606c8b3b-cc92-4a55-b31b-8ef8fe251e...

☆

🔍

Incognito

⋮

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Dallas ▾

PS

Projects / Travel_Planner_Agent / watsonx Agent

Share feedback β

Autosave on

New agent +

Deploy

🔒 ⓘ

Deploy as an AI service

×

Create an online deployment. If you want to edit code in notebook format before deploying, save as a deployment notebook. [Learn more.](#)

Deployment name

watsonx Agent

Target deployment space

New deployment space +

Reload ↺

Why don't I see all of my deployment spaces? ⓘ

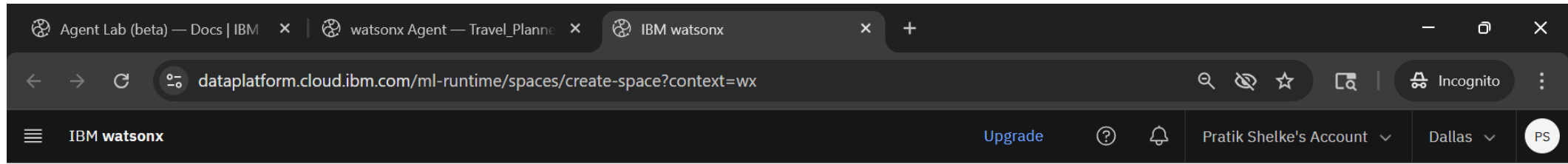
Description (optional)

Change this description to reflect your particular agent

Cancel

Deploy ▶

https://dataplatfom.cloud.ibm.com/ml-runtime/spaces/create-space?context=wx



Create a deployment space

Use a space to collect assets in one place to create, run, and manage deployments

Find or create tags

▼

Add tags to make assets easier to find

Storage

Cloud Object Storage-gw

▼

Space will include integration with [Cloud Object Storage](#) for storing space assets.

watsonx.ai Runtime (optional)

watsonx.ai Runtime-kn

▼

Advanced Settings

▼

Cancel

Create

[Deployment spaces](#) /

Travel_Planner_Agent

Overview

Assets

Deployments

Jobs

Manage

Jump back in

Assets that you promote or add to the space show here.



[View all](#)

Deployments

All ▾

✔ Deployed

0

✖ Failed

0

[View deployments](#)

Job runs

🔄 Active

0

✖ Failed last 24 hours ▾

0

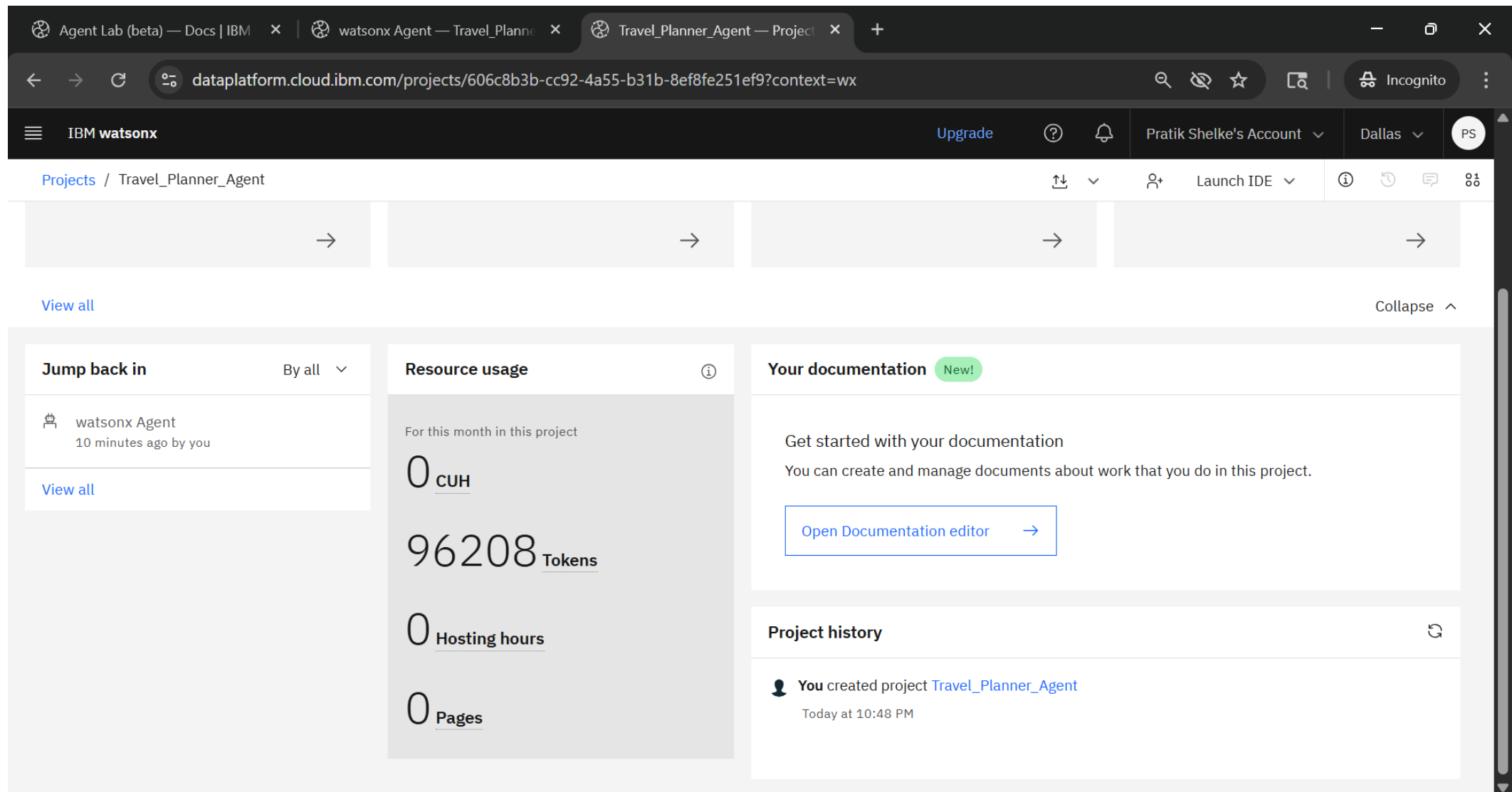
[View jobs](#)

Space history



ⓘ No notifications

You will see your most recent notifications here.



[Deployment spaces](#) /

📄 ⚙️ ⌛ 💬 🏠

Travel_Planner_Agent

Overview

Assets

Deployments

Jobs

Manage

🔍 Search



Name	Type	Status	Asset	Asset type	Tags	Last modified	↓
watsonx Agent	Online	Initializing	watsonx Agent	Ai service	wx-agent	16 seconds ago Pratik Shelke (You)	⋮

Items per page: 20

1–1 of 1 items

1 of 1 pages





[Deployment spaces](#) /

📄 ▾ ⓘ 🔧 ⌚ 💬 ⚙

Travel_Planner_Agent

Overview Assets **Deployments** Jobs Manage

🔍 Search 🔁

Name	Type	Status	Asset	Asset type	Tags	Last modified	↓
 watsonx Agent	Online	✅ Deployed	watsonx Agent	Ai service	wx-agent 	42 seconds ago Pratik Shelke (You)	⋮

Items per page: 20 ▾ 1–1 of 1 items 1 of 1 pages ⏪ ⏩

Deployment spaces / Travel_Planner_Agent / watsonx Agent /

watsonx Agent 🟢 Deployed Online

API reference Test Preview

```
https://us-south.ml.cloud.ibm.com/ml/v4/deployments/d7ecca0e-83ba-4e2c-836b-5274a75c8ec8/a
https://us-south.ml.cloud.ibm.com/ml/v4/deployments/d7ecca0e-83ba-4e2c-836b-5274a75c8ec8/a
```

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

Code snippets

cURL	Java	JavaScript	Python	Scala
------	------	------------	--------	-------

```
export IAM_TOKEN=$(curl --insecure -X POST --location "https://iam.cloud.ibm.com/identity/token" \
--header "Content-Type: application/x-www-form-urlencoded" \
--header "Accept: application/json" \
--data-urlencode "grant_type=urn:ibm:params:oauth:grant-type:apikey" \
--data-urlencode "apikey=$API_KEY" | jq -r '.access_token')
```

TODO: manually define and pass values to be scored below

About this deployment

Name
watsonx Agent

Description
Change this description to reflect your particular agent

Deployment Details
Deployment ID: d7ecca0e-83ba-4e...
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

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Settings | IBM watsonx

← → ↺

dataplatfom.cloud.ibm.com/wx/agents/91328db3-53d0-49c7-8e4b-9ebef2c7188c?project_id=606c8b3b-cc92-4a55-b31b-8ef8fe251e...

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Dallas

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Share feedback

Autosaved 12:10 AM

New agent +

Deploy

Vector stores

In memory

watsonx.data Milvus

Elasticsearch

Drop data files or browse to upload

Add PPTX, DOCX, PDF, or TXT files or select from project.

Add up to 300 MB with PPTX files, 50 MB of PDF files, 50 MB of DOCX files, or 5 MB with TXT and other files.

Browse

Select from project

What are the benefits of using an AI.pdf

281.9KB

Name

What are the benefits of using an AI

Description (optional)

What's the purpose of this vector index?

Advanced settings

Cancel

Create

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Settings | IBM watsonx

dataplatform.cloud.ibm.com/wx/agents/91328db3-53d0-49c7-8e4b-9ebef2c7188c?project_id=606c8b3b-cc92-4a55-b31b-8ef8fe251e...

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Share feedback

Autosaved 12:11 AM

New agent +

Deploy

Build

AI

Model: llama-3-3-70b-instruct

Framework

LangGraph

Architecture

ReAct

Instructions

Advanced configuration

Adapt your suggestions dynamically if user preferences change.

Avoid:

Giving outdated or static recommendations without justification.

Knowledge

Vector index

Clear chat

What are the benefits of using an AI

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

Tools

Agent preview

PS

You: 12:11 AM

How does real-time weather data affect travel planning?

watsonx Agent 12:11 AM

Real-time weather data can significantly impact travel planning by providing up-to-date information on weather conditions, which can help travelers make informed decisions about their route, mode of transportation, and travel time. This information can be used to avoid bad weather, reduce delays, and improve overall travel safety. Additionally, real-time weather data can be used to optimize route planning, taking into account factors such as road closures, traffic congestion, and weather-related hazards. Overall, real-time weather data is an essential tool for travel planning, allowing travelers to make more informed decisions and stay safe on the road.

► How did I get this answer?

Type something...

CONCLUSION

- The Travel Planner Agent offers a smart and scalable solution for modern travel planning challenges. It combines AI, real-time data, and personalization to assist users in creating effective travel plans. The system's modular design ensures flexibility, and the integration with real-time APIs ensures adaptability, making it a valuable tool for both casual travelers and frequent explorers.

FUTURE SCOPE

- Group trip collaboration
- Conversational planning via Watsonx Assistant
- Budget tracking with AI insights
- Real-time location alerts
- Multilingual support with Watsonx NLP
- Travel history analytics and suggestions

REFERENCES

- Google Maps API – <https://developers.google.com/maps>
- OpenWeather API – <https://openweathermap.org/api>
- IBM Cloudant – <https://www.ibm.com/cloud/cloudant>
- IBM Watson Assistant – <https://www.ibm.com/cloud/watson-assistant>

GETTING STARTED WITH ARTIFICIAL INTELLIGENCE

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