
CAPSTONE PROJECT

TRAVEL PLANNER AGENT

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Course: Bachelor of Computer Application(BCA)

OUTLINE

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

PROBLEM STATEMENT

- In today's fast-paced world, planning a trip can be time-consuming and confusing due to scattered information, changing conditions, and lack of personalization.
- A smart Travel Planner Agent is needed to simplify this process by using AI to suggest destinations, create itineraries, recommend transport and accommodation, and manage bookings—all based on real-time data and user preferences.
- The challenge is to ensure a smooth, personalized travel experience that reduces effort, saves time, and adapts to changes instantly.

TECHNOLOGY USED

- **IBM Cloud Lite Services:** For hosting and deployment
- **IBM Granite Foundation Models:** For NLP, itinerary generation, and user interaction
- **IBM Watson Assistant:** For interactive user communication
- **IBM Weather Company APIs:** For real-time weather updates
- **Google Maps API:** For route planning and location integration

PROPOSED SOLUTION

- The proposed system aims to simplify travel planning by leveraging AI and real-time data to deliver personalized, efficient, and dynamic trip recommendations. The solution is divided into the following components: **Collect user data** (destination, budget, dates) + real-time APIs (weather, hotel, transport)
- **Clean & process data**, extract useful features
- **Use IBM Granite** to chat and plan personalized trips
- **Generate itinerary** with stay, travel & activity suggestions
- **Show plan in web UI**, allow download/share
- **Deploy using IBM Cloud** (Granite, Cloudant, Object Storage, Weather API)

SYSTEM APPROACH

The proposed system aims to simplify travel planning by leveraging AI and real-time data to deliver personalized, efficient, and dynamic trip recommendations. The solution is divided into the following components:

- **User Input:**
Travel preferences, destination, budget, and dates.
- **Data Collection:**
Gather real-time data from weather, transport, hotel, and event APIs.
- **Data Processing:**
Clean and organize data, extract relevant features, identify user category.
- **AI Model (IBM Granite):**
Use IBM Granite to generate smart, personalized itineraries and suggestions.
- **User Interface:**
Display itinerary, map, weather, and recommendations in a simple UI.
- **Deployment (IBM Cloud):**
Use IBM Cloud ant, Object Storage, and Weather API for hosting and data handling

ALGORITHM & DEPLOYMENT

- **Algorithm (AI Logic):**
- IBM Granite (LLM) is used to understand natural language input from users.
- It generates personalized itineraries based on:
 - Travel preferences
 - Real-time weather, location, and budget
 - Optimal route and activity planning
- Uses rule-based filtering + API data to refine suggestions.
- **Deployment (IBM Cloud):**
- **IBM Granite** → For AI-powered chat & itinerary generation
- **IBM Cloudant** → To store user data and sessions
- **IBM Object Storage** → To save downloadable travel plans
- **IBM Weather API** → For live weather info in itinerary
- Hosted on **IBM Cloud Lite** with scalable backend (using Cloud Functions)

WOW FACTOR

- Provides real-time, personalized travel planning using AI.
- Adapts instantly to weather, events, and transport data.
- Uses IBM Granite to generate smart itineraries on the go.
- Reduces time and effort spent on manual trip planning.
- Alerts users about live changes or disruptions in plans.
- Offers map-based guidance, hotel, and food suggestions.
- Ensures smooth booking with integrated services.
- Makes travel planning intelligent, efficient, and enjoyable.


RESULT

Deployment spaces / Agentic_AI / Sous Chef /

Sous Chef 🟢 Deployed Online


API reference Test **Preview**

New chat +

 Sous Chef 2024 API

Welcome to Sous Chef


Generating tasty recipe ideas based on the ingredients they have available.



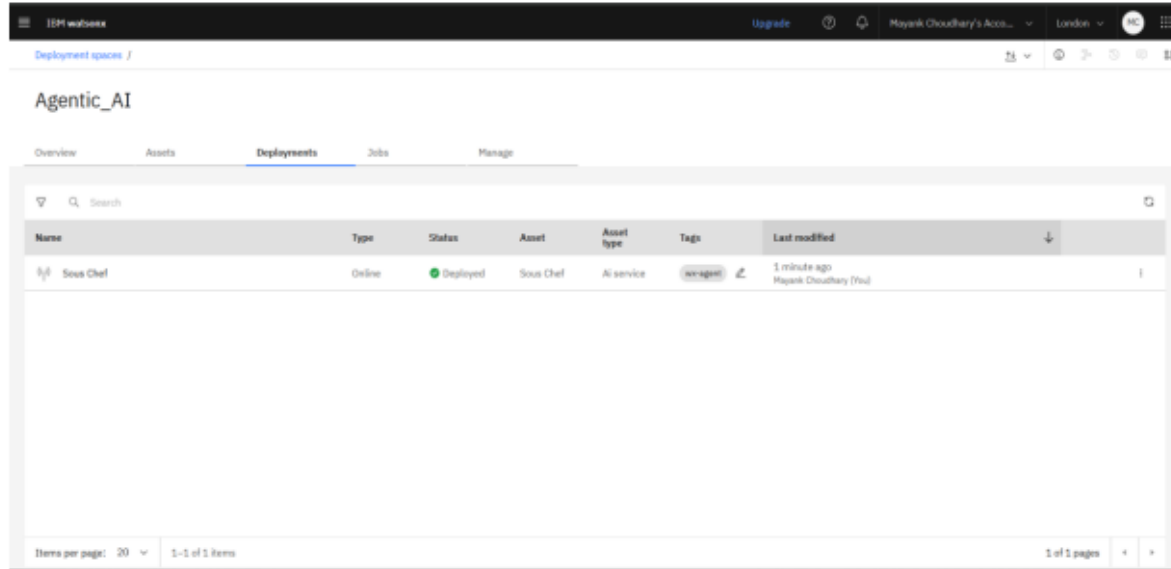
Quick start samples

I'm in Boston, MA. I have chicken breast, bell peppers, onions, and rice in my fridge. What are some recipe ideas I can make with these ingredients?

I'm looking for a quick dinner idea using ground beef, tomatoes, and pasta. Can you suggest a few options?

Type something... 

RESULT



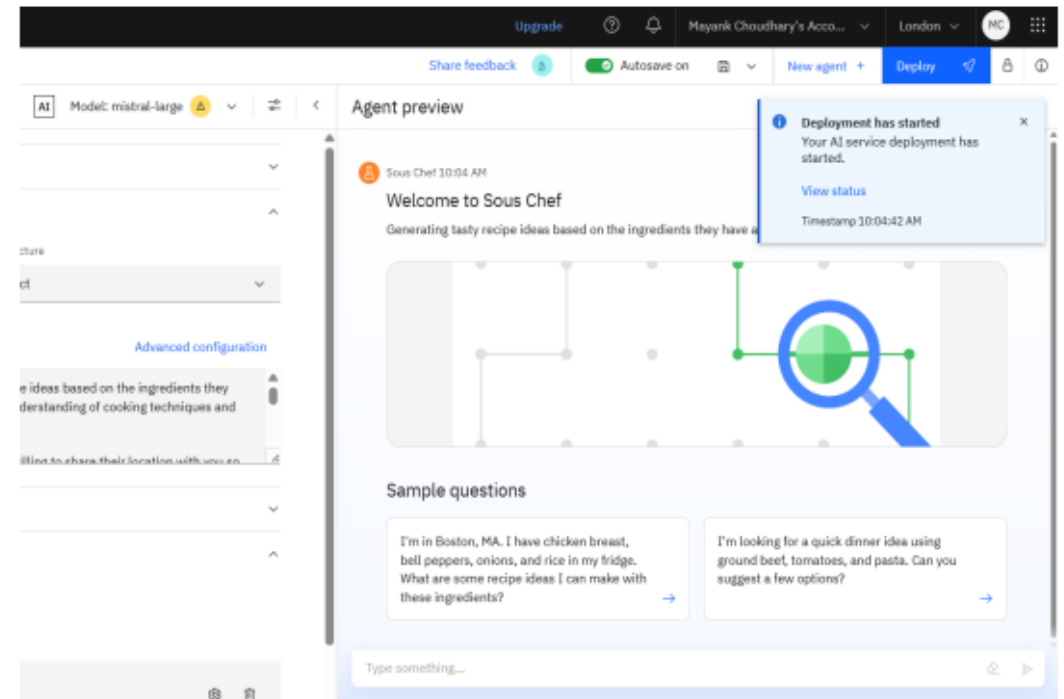
Deployment spaces /

Agentic_AI

Overview Assets **Deployments** Jobs Manage

Name	Type	Status	Asset	Asset type	Tags	Last modified
Sous Chef	Online	Deployed	Sous Chef	AI service	noagent	1 minute ago Mayank Choudhary (You)

Items per page: 20 1-1 of 1 items 1 of 1 pages



Upgrade Mayank Choudhary's Acco... London MC

Share feedback Autosave on New agent Deploy

AI Model: mistral-large

Agent preview

Sous Chef 10:04 AM

Welcome to Sous Chef

Generating tasty recipe ideas based on the ingredients they have a

Deployment has started
Your AI service deployment has started.
[View status](#)
Timestamp 10:04:42 AM

Sample questions

I'm in Boston, MA. I have chicken breast, bell peppers, onions, and rice in my fridge. What are some recipe ideas I can make with these ingredients?

I'm looking for a quick dinner idea using ground beef, tomatoes, and pasta. Can you suggest a few options?

Type something...

RESULT

- EFFICIENT AND OPTIMIZED TRAVEL PLANS
- ENHANCED USER SATISFACTION AND EXPERIENCE
- REDUCED PLANNING TIME FROM HOURS TO MINUTES
- INCREASED ADAPTABILITY WITH REAL-TIME ADJUSTMENTS

Agent preview



You: 02:55 PM

Show me recent research on artificial intelligence.



Research Agent 02:55 PM

Here are some recent research articles and news on artificial intelligence:

1. **MIT News:** In a new study, researchers discover the root cause of a type of bias in LLMs, paving the way for more accurate and reliable AI systems. [Read more](#)
2. **arXiv:** Harnessing AI Agents to Advance Research on Refugee Child Mental Health. [Read more](#)
3. **Stanford HAI:** News on how artificial intelligence improves patient care and expands research capacity. [Read more](#)
4. **Journal of Artificial Intelligence Research:** Current Issue on machine learning, natural language, planning and scheduling, robotics and vision, and uncertainty in AI. [Read more](#)
5. **ScienceDaily:** A team of researchers has shown that even small-scale quantum computers can enhance machine learning performance. [Read more](#)
6. **McKinsey:** The latest McKinsey Global Survey on AI finds that organizations are beginning to take steps that drive bottom-line impact. [Read more](#)
7. **Apple Machine Learning Research:** Overview of the latest advancements in machine learning and artificial intelligence. [Read more](#)

Type something...



RESULT

Agent preview



You: 02:56 PM

Help me write an introduction for a paper on electric vehicles.



Research Agent 02:56 PM

Here are some recent research articles and news on artificial intelligence:

1. **MIT News:** In a new study, researchers discover the root cause of a type of bias in LLMs, paving the way for more accurate and reliable AI systems. [Read more](#)
2. **arXiv:** Harnessing AI Agents to Advance Research on Refugee Child Mental Health. [Read more](#)
3. **Stanford HAI:** News on how artificial intelligence improves patient care and expands research capacity. [Read more](#)
4. **Journal of Artificial Intelligence Research:** Current Issue on machine learning, natural language, planning and scheduling, robotics and vision, and uncertainty in AI. [Read more](#)
5. **ScienceDaily:** A team of researchers has shown that even small-scale quantum computers can enhance machine learning performance. [Read more](#)
6. **McKinsey:** The latest McKinsey Global Survey on AI finds that organizations are beginning to take steps that drive bottom-line impact. [Read more](#)
7. **Apple Machine Learning Research:** Overview of the latest advancements in machine learning and artificial intelligence. [Read more](#)

Type something...



RESULT

The screenshot displays the IBM Watson Studio interface for a deployment named 'Sous Chef'. The top navigation bar includes 'Upgrade', a notification bell, and the user 'Hayek Choudhary's Acc...'. The breadcrumb trail shows 'Deployment spaces / Agents_M / Sous Chef'. The main content area is divided into three tabs: 'API reference', 'Test', and 'Preview'. The 'API reference' tab is active, showing 'Endpoints for inferencing' with two endpoints: a private endpoint and a public endpoint, both pointing to an AWS S3 bucket. A 'Bearer token' field is also visible. The 'Code snippets' section at the bottom shows a table with columns for 'cURL', 'Java', 'JavaScript', 'Python', and 'Scala'. A note below the table states: '# NOTE: you must set SAPS_KEY below using information retrieved from your IBM Cloud account (https://eu-gb.dn2aplatfsm.cloud.ibm.com/docs/content/watsonx/analyze)'. On the right side, the 'About this deployment' panel is open, showing details such as 'Name: Sous Chef', 'Description: Generating tasty recipe ideas based on the ingredients they have available.', 'Deployment ID: 88f6e9f9-d93e-4863-997d-c27e083a86d', '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: no-agent', and 'Associated asset: Sous Chef'.

Deployed AI Agent

The screenshot displays the IBM Watson Studio interface for a deployment named 'Research Agent'. The top navigation bar includes 'Upgrade', a notification bell, and the user 'Orinell Chakraborty's Acc...'. The breadcrumb trail shows 'Deployment spaces / Models / Research Agent'. The main content area is divided into three tabs: 'API reference', 'Test', and 'Preview'. The 'Preview' tab is active, showing a chat interface. The chat history includes a user message: 'You 03:02 PM: Give me a simple hypothesis about plants and sunlight.' and an agent response: 'Research Agent 03:03 PM: Here are some simple hypotheses about plants and sunlight: 1. Hypothesis: Plants grow taller when they receive more sunlight. • Independent Variable: Amount of sunlight received. • Dependent Variable: Height of the plants. • Source: Daily 2. Hypothesis: Light helps plants grow. • Prediction: If I put my plants in the warm sun, they will grow faster. • Source: Lakshya - Lakshya Vempoor'. The chat interface also shows a 'Type something...' input field at the bottom.

CONCLUSION

- The Travel Planner Agent simplifies the complex task of trip planning by using AI and real-time data to deliver fast, personalized, and dynamic travel recommendations.
- It enhances user experience by integrating itinerary suggestions, weather updates, transport options, and booking support — all in one platform.
- By leveraging IBM Granite and Cloud services, the solution ensures scalability, reliability, and intelligent decision-making, making travel planning smarter and more convenient.

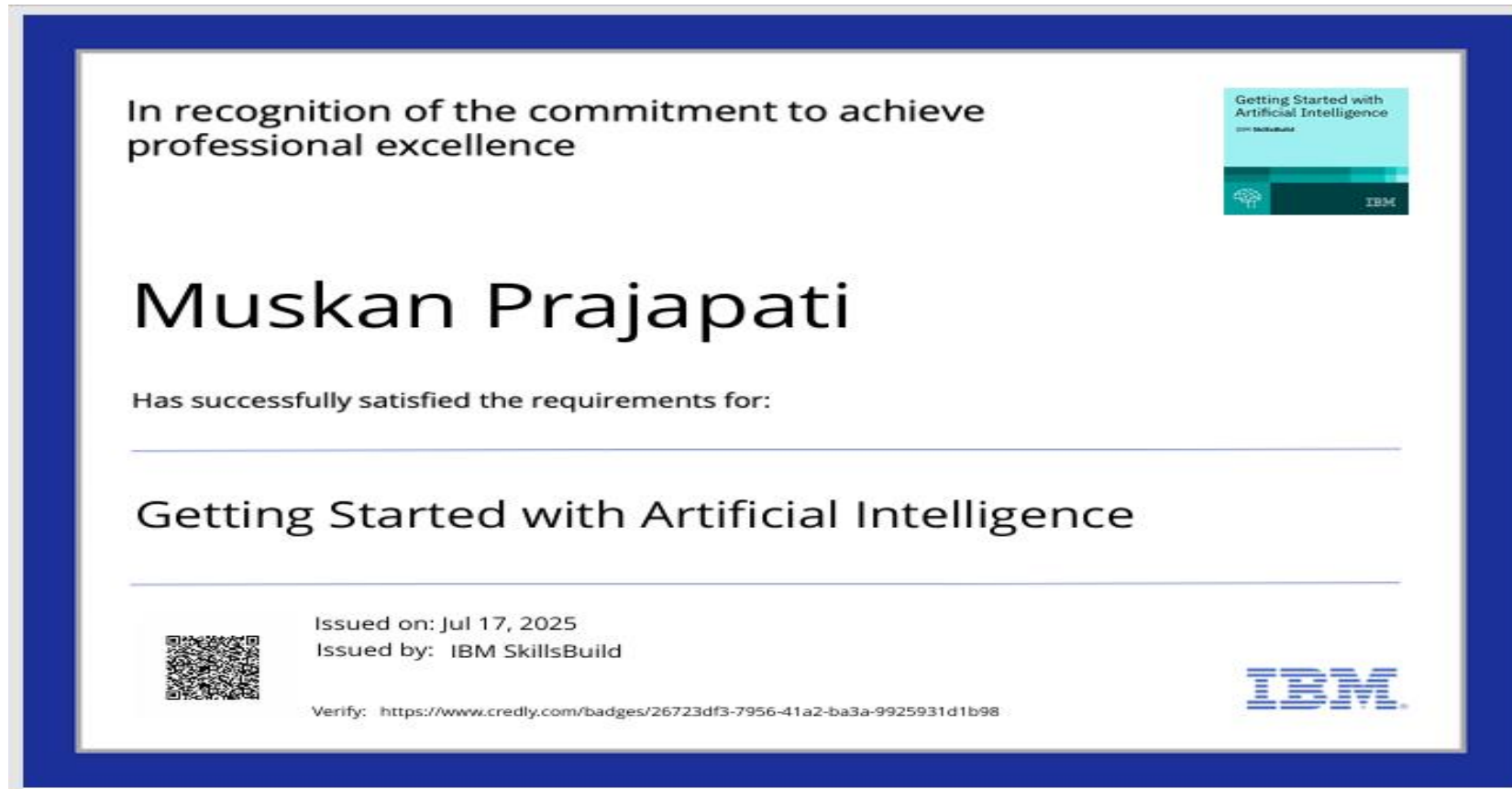
FUTURE SCOPE

- **Expanded Data Sources:**
Integrate local transport, visa rules, currency rates, and public events to make plans more informative and location-aware.
- **Smarter Algorithms:**
Use advanced ML models (like Transformers or BERT) to improve recommendation accuracy, response time, and personalization.
- **Global Coverage:**
Scale the system to support multiple cities and countries with region-specific suggestions and multilingual support.
- **Edge Computing:**
Improve speed and allow offline itinerary access by processing some data on the user's device.
- **AR/VR Integration:**
Add virtual previews of destinations, hotels, and activities to help users make better travel choices.

REFERENCES AND GITHUB LINK

- GITHUB LINK :-
https://github.com/khushiprajapati979/IBM_INTERNSHIP_TRAVEL_PLANNER_AGENT_PROJECT.git
- IBM Watson Assistant Documentation
<https://cloud.ibm.com/docs/watson-assistant>
- IBM Cloud Object Storage Guide
<https://cloud.ibm.com/docs/cloud-object-storage>
- IBM Watsonx.ai Studio Overview
<https://cloud.ibm.com/docs/watsonx-ai>
- Google Maps API Documentation
<https://developers.google.com/maps/documentation>

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THANK YOU