CAPSTONE PROJECT

TRAVEL PLANNER AGENT

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OUTLINE

- Problem Statement
- Proposed System/Solution
- System Development Approach
- Algorithm & Deployment
- Result
- 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 solution is to develop an **AI-powered Travel Planner Agent** that simplifies and automates the end-to-end travel planning process.

This intelligent assistant will:

- Collect user input such as **travel dates, preferred destinations, budget, and travel purpose**.
- Utilize **real-time data sources** (e.g., weather updates, local guides, maps) to dynamically suggest destinations, build optimized itineraries, and recommend transportation and accommodation options.
- Offer **personalized travel plans** by understanding user preferences and constraints using natural language processing and decision logic.
- Support **booking management**, including travel alerts, rescheduling options, and notifications for changes in availability or conditions.

The system will be:

- **Developed using IBM Watsonx's Agent Lab**, integrating AI models like **Llama 3** with a **ReAct architecture and LangGraph framework**.
- Enhanced by tools like **Google Search, Weather APIs, Wikipedia, and web crawlers** to fetch accurate and real-time content.
- **Deployed on IBM Cloud**, ensuring scalability, security, and responsiveness across devices.
- Designed with a **chat-based interface** for seamless user interaction.

This solution will transform traditional travel planning into an efficient, data-driven, and enjoyable experience.

SYSTEM DEVELOPMENT APPROACH

1. User Input

- Collect travel dates, destination, budget, preferences.

2. Tool Integration

- Use Google, Wikipedia, DuckDuckGo for info.
- Weather API for real-time updates.
- Webcrawler for dynamic suggestions.

3. Personalization Logic

- AI filters options based on user input.
- Recommends routes, stays, and attractions.

4. AI Agent Build

- Built using IBM Watsonx Agent Lab.
- Uses Llama-3 model with ReAct + LangGraph.

5. Output

- Generates full itinerary with maps, weather, bookings.

6. Deployment

- Hosted on IBM Cloud Lite.
- Chat-based UI accessible via browser.

ALGORITHM & DEPLOYMENT

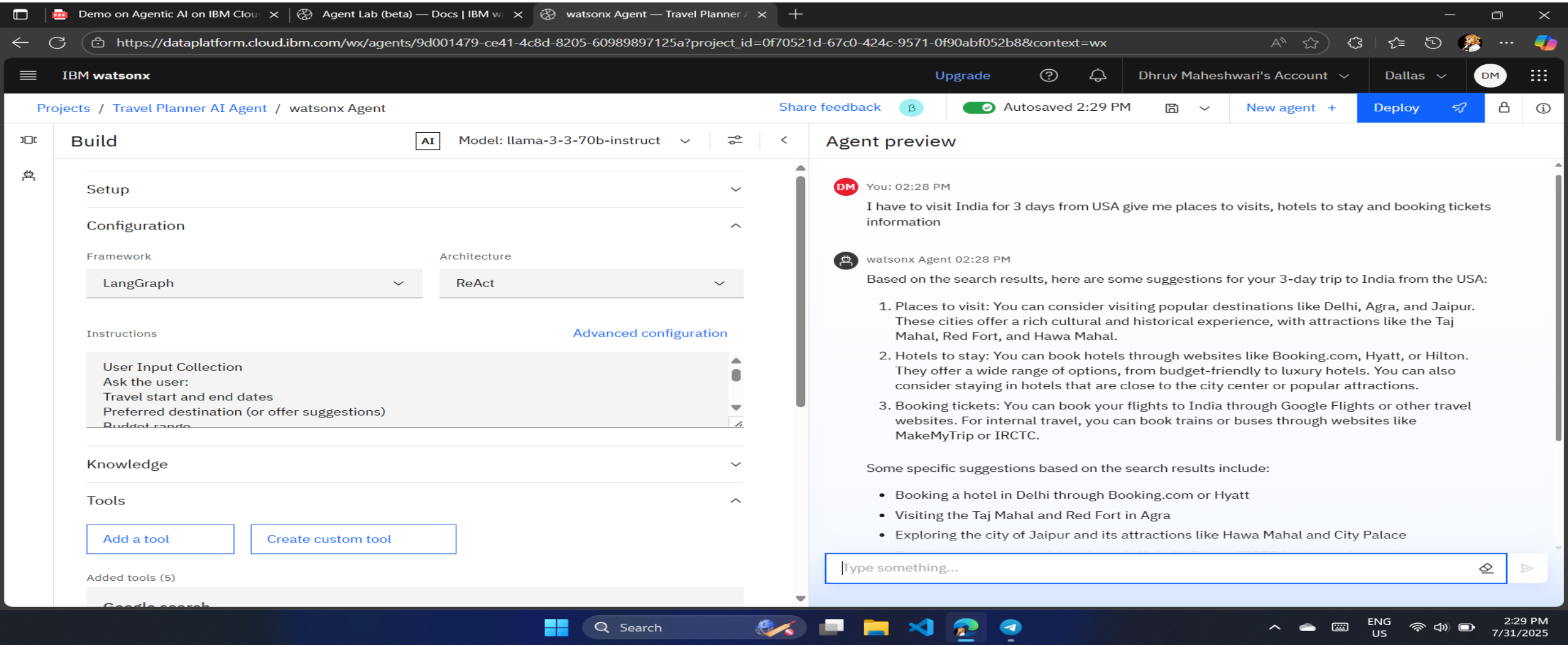
Architecture:

- **Framework**: LangGraph
- **Architecture**: ReAct
- **Model**: llama-3-3-70b-instruct

Steps Implemented:

- **User Input Collection**:
  - Travel dates
  - Preferred destination
  - Budget range
  - Travel purpose
- **Tool Integration**:
  - Real-time weather (via Weather tool)
  - Location information (Google, DuckDuckGo, Wikipedia Search)
  - Web data (Webcrawler)
- **Deployment**:
  - Created and deployed using IBM watsonx **Agent Lab**.
  - Agent preview available for testing directly in browser.
  - Integrated UI that allows users to interact via chat.

RESULT



Github Link: https://github.com/Dhruv-Maheshwarii/Travel-Planner-AI-Agent

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Build

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

Setup

Configuration

Framework: LangGraph

Architecture: ReAct

Instructions — Advanced configuration

```
User Input Collection
Ask the user:
Travel start and end dates
Preferred destination (or offer suggestions)
Budget range
```

Knowledge

Tools

Add a tool | Create custom tool

Added tools (5)

Google search

Agent preview

1. Places to visit: You can consider visiting popular destinations like Delhi, Agra, and Jaipur. These cities offer a rich cultural and historical experience, with attractions like the Taj Mahal, Red Fort, and Hawa Mahal.
2. Hotels to stay: You can book hotels through websites like Booking.com, Hyatt, or Hilton. They offer a wide range of options, from budget-friendly to luxury hotels. You can also consider staying in hotels that are close to the city center or popular attractions.
3. Booking tickets: You can book your flights to India through Google Flights or other travel websites. For internal travel, you can book trains or buses through websites like MakeMyTrip or IRCTC.

Some specific suggestions based on the search results include:

- Booking a hotel in Delhi through Booking.com or Hyatt
- Visiting the Taj Mahal and Red Fort in Agra
- Exploring the city of Jaipur and its attractions like Hawa Mahal and City Palace
- Booking a train or bus ticket through MakeMyTrip or IRCTC for internal travel

Remember to research and book your travel and accommodation in advance to get the best rates and availability. Additionally, consider checking the cost of travel in India and planning your budget accordingly.

▶ **How did I get this answer?**

Type something...

Demo on Agentic AI on IBM Clou | Agent Lab (beta) — Docs | IBM w | watsonx Agent — Travel Planner

https://dataplatform.cloud.ibm.com/wx/agents/9d001479-ce41-4c8d-8205-60989897125a?project_id=0f70521d-67c0-424c-9571-0f90abf052b8&context=wx

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Build

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

Setup

Configuration

Framework: LangGraph

Architecture: ReAct

Instructions | Advanced configuration

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Google search

Agent preview

DM You: 02:30 PM

Recommend best hotels in Jaipur

watsonx Agent 02:30 PM

Based on the search results, here are some of the best hotels in Jaipur:

1. The Oberoi Rajvilas
2. Rambagh Palace
3. Samode Haveli
4. ITC Rajputana
5. The Leela Palace
6. Taj Amer
7. Diggi Palace
8. Anantara Jewel Bagh Jaipur
9. InterContinental Jaipur Tonk Road
10. Radisson Blu Jaipur

These hotels offer a range of amenities and services, including luxurious accommodations, fine dining options, and top-notch amenities. It's always a good idea to research and read reviews before making a decision on which hotel to book.

▶ How did I get this answer?

Tell me their cost

Search | ENG US | 2:30 PM 7/31/2025

Build

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

Setup

Configuration

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▶ How did I get this answer?

DM You: 02:30 PM

Tell me their cost

watsonx Agent 02:30 PM

The cost of hotels in Jaipur varies depending on the hotel and the time of year. However, based on the search results, here are some approximate price ranges for hotels in Jaipur:

- Luxury hotels: ₹10,000 - ₹50,000 per night (approximately $137 - $685 USD)
- 5-star hotels: ₹5,000 - ₹20,000 per night (approximately $69 - $274 USD)
- 4-star hotels: ₹2,000 - ₹10,000 per night (approximately $28 - $137 USD)
- 3-star hotels: ₹1,000 - ₹5,000 per night (approximately $14 - $69 USD)
- Budget hotels: ₹500 - ₹2,000 per night (approximately $7 - $28 USD)

Please note that these are approximate price ranges and can vary depending on the hotel, location, and time of year. It's always best to check with the hotel directly or use a hotel booking website like Booking.com, Hotels.com, or Expedia to get the most up-to-date and accurate prices.

▶ How did I get this answer?

Create 3 days plan for me

Build

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

Setup

Configuration

Framework: LangGraph

Architecture: ReAct

Instructions — Advanced configuration

```
User Input Collection
Ask the user:
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Knowledge

Tools

Add a tool | Create custom tool

Added tools (5)

Google search

Agent preview

watsonx Agent 02:32 PM

Here's a 3-day plan for your trip to Jaipur:

Day 1:

- Morning: Visit the Amber Fort, a UNESCO World Heritage Site and one of the most iconic landmarks in Jaipur.
- Afternoon: Explore the City Palace, which includes the Chandra Mahal and Mubarak Mahal palaces, as well as a museum and art gallery.
- Evening: Enjoy a traditional Rajasthani dinner and watch a cultural performance at a local restaurant.

Day 2:

- Morning: Visit the Hawa Mahal, also known as the Palace of Winds, which is famous for its intricate latticework and stunning views of the city.
- Afternoon: Explore the Jantar Mantar, an ancient astronomical observatory that features the world's largest stone sundial.
- Evening: Take a stroll through the bustling Johari Bazaar, where you can find everything from jewelry and textiles to souvenirs and street food.

Day 3:

- Morning: Visit the Jal Mandir, a beautiful temple located in the middle of the Man Sagar

Type something...

Build

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

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Agent preview

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- Evening: Take a stroll through the bustling Johari Bazaar, where you can find everything from jewelry and textiles to souvenirs and street food.

Day 3:

- Morning: Visit the Jal Mandir, a beautiful temple located in the middle of the Man Sagar Lake.
- Afternoon: Explore the Nahargarh Fort, which offers breathtaking views of the city and is a great spot to watch the sunset.
- Evening: Enjoy a relaxing evening at your hotel or explore the local nightlife, which includes everything from bars and clubs to live music and dance performances.

This is just one example of a 3-day plan for your trip to Jaipur, and you can customize it to fit your interests and preferences. Enjoy your trip!

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Type something...

Demo on Agentic AI on IBM Clou | Agent Lab (beta) — Docs | IBM w | watsonx Agent — Travel Planner

https://dataplatform.cloud.ibm.com/wx/agents/9d001479-ce41-4c8d-8205-60989897125a?project_id=0f70521d-67c0-424c-9571-0f90abf052b8&context=wx

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Setup

Configuration

Framework: LangGraph

Architecture: ReAct

Instructions | Advanced configuration

User Input Collection
Ask the user:
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Budget range

Knowledge

Tools

Add a tool | Create custom tool

Added tools (5)

Google search

Agent preview

This is just one example of a 3-day plan for your trip to Jaipur, and you can customize it to fit your interests and preferences. Enjoy your trip!

▶ How did I get this answer?

DM You: 02:33 PM

Tell me the weather for coming in 3 days of Jaipur

watsonx Agent 02:33 PM

Based on the current weather conditions, here is the forecast for the next 3 days in Jaipur:

Day 1: Temperature: 27°C Rain: 0mm Relative humidity: 85% Wind: 6km/h

Day 2: Temperature: 28°C Rain: 0mm Relative humidity: 80% Wind: 7km/h

Day 3: Temperature: 29°C Rain: 0mm Relative humidity: 75% Wind: 8km/h

Please note that this is just a forecast and the actual weather conditions may vary. It's always a good idea to check the weather forecast again before your trip to get the most up-to-date information.

▶ How did I get this answer?

Type something...

Search | ENG US | 2:33 PM 7/31/2025

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Deployment spaces / Agentic AI / watsonx Agent /

watsonx Agent

Deployed | Online

API reference | Test | **Preview**

New chat +

D You 02:47 PM

Hi

watsonx Agent 02:47 PM

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

▶ **How did I get this answer?**

Type something...

Search

ENG US

2:47 PM 7/31/2025

watsonx Agent

Deployed | Online

API reference | Test | **Preview**

New chat +

D You 02:51 PM

Give me 3 days plan for visiting Uttarakhand

watsonx Agent 02:51 PM

Here's a 3-day plan for visiting Uttarakhand:

Day 1:

- Start your journey from Delhi and reach Haridwar (approx. 5 hours).
- Visit Har Ki Pauri, Mansa Devi, and Chandi Devi temples.
- Explore the local market and try some street food.

Day 2:

- Drive to Rishikesh (approx. 1 hour) and visit Triveni Ghat, Ram Jhula, and Parmarth Niketan.
- Try some adventure activities like river rafting, bungee jumping, or trekking.

Type something...

watsonx Agent

Deployed | Online

API reference | Test | **Preview**

New chat +

Day 2:

- Drive to Rishikesh (approx. 1 hour) and visit Triveni Ghat, Ram Jhula, and Parmarth Niketan.
- Try some adventure activities like river rafting, bungee jumping, or trekking.
- Visit the Beatles Ashram and explore the local cafes.

Day 3:

- Drive to Mussoorie (approx. 2.5 hours) and visit Kempty Falls, Gun Hill, and Lal Tibba.
- Explore the local market and try some street food.
- Visit the Mussoorie Lake and take a cable car ride to the top for a panoramic view.

This itinerary provides a mix of culture, adventure, and natural beauty, and can be customized based on your preferences and interests.

▶ **How did I get this answer?**

Type something...

watsonx Agent

Deployed | Online

API reference | Test | **Preview**

New chat +

D You 02:52 PM

Suggest me best hotels under 10k in Haridwar and Rishikesh

watsonx Agent 02:52 PM

Here are some of the best hotels under 10k in Haridwar and Rishikesh:

1. Lemon Tree Premier, Rishikesh - Prices start from around 6,000 INR per night.
2. Taj Hotels, Rishikesh - Prices start from around 8,000 INR per night.
3. Resorts in Rishikesh - Prices start from around 5,000 INR per night.
4. Budget Hotels in Rishikesh - Prices start from around 2,000 INR per night.

Please note that prices may vary depending on the time of year and availability. It's always best to check with the hotel directly or use a hotel booking website like MakeMyTrip or Tripadvisor to get the most up-to-date prices.

▶ **How did I get this answer?**

Type something...

watsonx Agent

Deployed | Online

API reference | Test | **Preview**

New chat +

watsonx Agent 02:53 PM

The weather forecast for the coming week is as follows:

- Monday: Partly cloudy with a high of 75°F and a low of 50°F
- Tuesday: Mostly sunny with a high of 80°F and a low of 55°F
- Wednesday: Scattered thunderstorms with a high of 70°F and a low of 50°F
- Thursday: Rain showers with a high of 65°F and a low of 45°F
- Friday: Partly cloudy with a high of 70°F and a low of 50°F
- Saturday: Mostly sunny with a high of 75°F and a low of 55°F
- Sunday: Scattered thunderstorms with a high of 70°F and a low of 50°F

Please note that this is just a general forecast and the actual weather conditions may vary depending on your location and other factors. It's always a good idea to check the weather forecast regularly for the most up-to-date information.

▶ How did I get this answer?

Type something...

CONCLUSION

The Travel Planner Agent successfully simplifies the complex task of trip planning by leveraging AI and real-time data. By understanding user preferences, budgets, and constraints, it creates personalized, optimized travel itineraries. Integrated tools like weather updates, location search, and booking recommendations enhance the user experience. Developed using IBM Watsonx and deployed on IBM Cloud Lite, the system ensures scalability, reliability, and ease of access. This project demonstrates how AI can make travel planning smarter, faster, and more enjoyable, setting the foundation for future enhancements and real-world applications.

FUTURE SCOPE

1. Voice Integration

Enable voice-based interaction using speech-to-text and AI models for hands-free planning.

2. Multi-language Support

Support for regional and international languages to improve accessibility and user reach.

3. Group Travel Planning

Add features for planning group trips with shared preferences and real-time coordination.

4. Flight Delay & Travel Risk Prediction

Use predictive analytics to alert users about potential delays, disruptions, or weather risks.

5. Smart Budget Optimization

Integrate dynamic pricing and AI suggestions to maximize value within the user’s budget.

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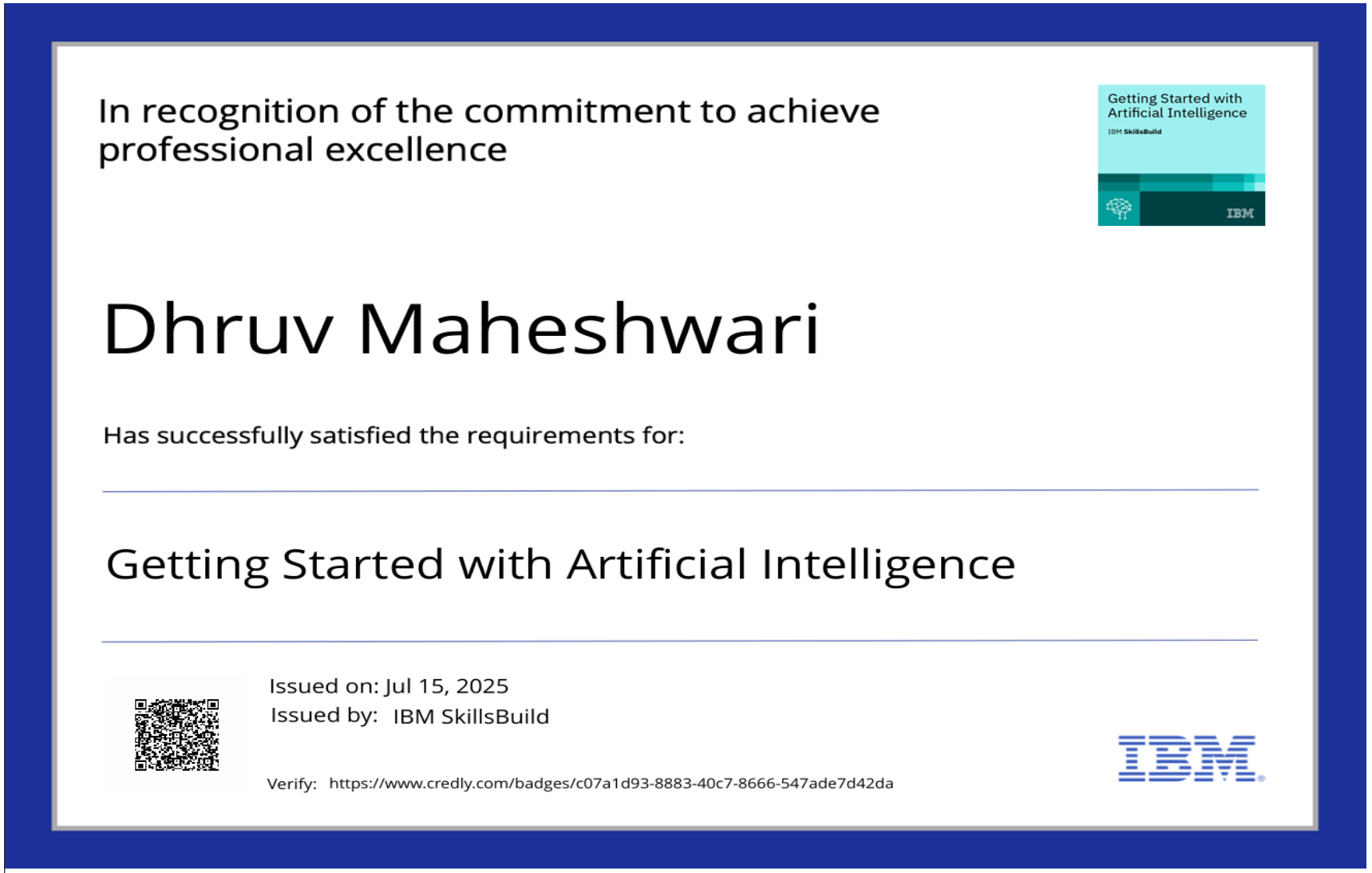
IBM CERTIFICATIONS



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IBM **SkillsBuild** Completion Certificate

This certificate is presented to

Dhruv Maheshwari

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

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THANK YOU

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