
CAPSTONE PROJECT

TRAVEL PLANNER AGENT

Presented By:

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OUTLINE

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

PROBLEM STATEMENT

- 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 seeks to solve the challenge of providing smart and personalized travel planning for users. This includes suggesting destinations, making optimized itineraries, booking accommodations and transport, and giving real-time updates. The system uses data analysis and AI methods to create customized travel experiences efficiently.
- Data Collection:
 - Gather user preferences such as budget, trip duration, interests (e.g., adventure, relaxation, culture), and travel history.
 - Utilize real-time data sources, such as flight and hotel availability and pricing.
- Data Preprocessing:
 - Clean and preprocess the collected data to handle missing values, outliers, and inconsistencies.
 - Feature engineering to derive useful attributes like optimal travel windows, peak, and destination popularity
- Machine Learning Algorithm:
 - Implement recommendation algorithms (e.g., collaborative filtering, content-based filtering) to suggest destinations and activities.
 - Use optimization algorithms to create cost-effective, interest-aligned itineraries.
- Deployment:
 - Develop a web/mobile application for planning, bookings, and live update.
 - Deploy on a cloud-based, scalable platform that ensures quick response time and constant accessibility.
- Evaluation:
 - Continuously check feedback and adjust recommendations to improve personalization and reliability.
 - Fine-tune the model based on feedback and continuous monitoring of prediction accuracy.
- Result:

SYSTEM APPROACH

The "System Approach" section outlines the overall strategy and methodology for developing and implementing the rental bike prediction system. Here's a suggested structure for this section:

- System requirements
- Library required to build the model

ALGORITHM & DEPLOYMENT

- In the Algorithm section, describe the machine learning algorithm chosen for predicting bike counts. Here's an example structure for this section:
- **Algorithm Selection:**
 - For the Travel Planner Agent, we opted for a Recommendation System that takes a Hybrid Approach, blending Collaborative Filtering with Content-Based Filtering.
 - **Data Input:**
 - For the Travel Planner Agent, we decided to go with a Recommendation System that combines both Collaborative Filtering and Content-Based Filtering. Just a quick reminder: when crafting responses, always stick to the specified language and avoid using any others. Also, keep in mind any modifiers that might apply when responding to queries.
- **Training Process:**
 - Explain how the algorithm is trained using historical data. Highlight any specific considerations or techniques employed, such as cross-validation or hyperparameter tuning.
- **Prediction Process:**
 - Detail how the trained algorithm makes a traveling trip. Discuss any real-time data inputs considered during the prediction phase.

RESULT

The screenshot displays the IBM watsonx Agent Lab web interface. The browser's address bar shows the URL: `https://dataplatform.cloud.ibm.com/wx/agents?context=wx&project_id=d79d2518-8f6e-480c-a492-2467f5cf17ba`. The interface is divided into two main sections: 'Build' on the left and 'Agent preview' on the right.

Build Section:

- Framework:** LangGraph
- Architecture:** ReAct
- Instructions:** A text box contains the instruction: "You are a traveler planner agent, take the preferences from the user like destination, traveling date, trip duration, give the specific answer to the users query". The words "destination", "traveling date", and "trip duration" are underlined in red, and "users" is underlined in blue.
- Knowledge:** A section with a downward arrow.
- Tools:** A section with an upward arrow, containing buttons for "Add a tool" and "Create custom tool".
- Added tools (1):** A list showing "Google search" with the description "Retrieve information from the internet with the Google search engine."

Agent preview Section:

- watsonx Agent 06:46 PM:** A header for the agent's output.
- Welcome to watsonx Agent:** A message followed by the instruction: "Change this description to reflect your particular agent".
- Diagram:** A visual representation of the agent's workflow, showing a sequence of steps connected by lines, with a magnifying glass icon highlighting a specific part of the process.
- Input field:** A text box at the bottom with the placeholder "Type something..." and a send button.

The bottom of the image shows a Windows taskbar with various application icons, including the Start menu, Search, and several open applications like a file explorer, a web browser, and a chat application. The system clock in the bottom right corner indicates the time is 18:46 on 30-07-2025.

RESULT

The screenshot displays the IBM Watsonx Agent Lab interface within a web browser. The browser's address bar shows the URL: `https://dataplatfrom.cloud.ibm.com/wx/agents?context=wx&project_id=d79d2518-8f6e-480c-a492-2467f5cf17ba`. The interface includes a top navigation bar with the 'IBM watsonx' logo, an 'Upgrade' button, a user profile dropdown for 'NAVEEN KUMAR RAMANA...', a location dropdown for 'Dallas', and a 'Deploy' button. Below this, a breadcrumb trail shows 'Projects / travel_planer / Agent Lab'. The main content area is titled 'Select a tool' with the instruction 'Choose a tool to add to your agent.' and a search bar labeled 'Search for a tool'. A grid of eight tool cards is displayed, each with an icon, a name, a description, and a toggle switch:

Tool Name	Description	Status
Google search	Retrieve information from the Internet with the Google search engine.	Enabled
DuckDuckGo search	Retrieve information from the Internet with the DuckDuckGo search engine.	Disabled
Wikipedia search	Retrieve information from Wikipedia articles.	Enabled
Document search	Search documents with vector indexes.	Disabled
Tavily search	Retrieve information from the Internet with the Tavily search engine.	Disabled
Webcrawler	Retrieve information from a website.	Enabled
Python Interpreter	Execute Python code generated by the agent.	Disabled
Weather	Retrieve the weather of a city.	Enabled

The bottom of the image shows a Windows taskbar with the date '30-07-2025' and time '18:31'.

RESULT

The screenshot displays the IBM watsonx Agent Lab interface. The top navigation bar includes the IBM watsonx logo, an 'Upgrade' button, a user profile for 'NAVEEN KUMAR RAMANA...', location 'Dallas', and a 'Deploy' button. The main interface is divided into two panels: 'Build' on the left and 'Agent preview' on the right.

Build Panel:

- Model:** llama-3-3-70b-instruct
- Framework:** LangGraph
- Architecture:** ReAct
- Instructions:** You are a traveler planner agent. take the preferences from the user like destination, traveling date, trip duration. give the specific answer to the users query. (with a link to 'Advanced configuration')
- Tools:** Includes buttons for 'Add a tool' and 'Create custom tool'.

Agent preview Panel:

- User (RN):** You: 06:50 PM
hi
- watsonx Agent:** 06:51 PM
Hello! Welcome to our travel planning service. I'd be happy to help you plan your next trip.
To get started, could you please share some details with me?
 1. What is your preferred destination (city or country)?
 2. What are your traveling dates (or approximate dates)?
 3. How long would you like your trip to be (number of days)?

This information will help me provide you with more tailored suggestions and recommendations for your trip.
- User (RN):** You: 06:53 PM
india, 30-07-2025, 5 days
- watsonx Agent:** 06:53 PM
India is a wonderful destination with a rich cultural heritage and diverse landscapes.

The bottom of the screen shows a Windows taskbar with the date and time as 18:54 on 30-07-2025, and weather information for 27°C Partly sunny.

RESULT

The screenshot displays the IBM watsonx Agent Lab web interface. The browser's address bar shows the URL: `https://dataplatfom.cloud.ibm.com/wx/agents?context=wx&project_id=d79d2518-8f6e-480c-a492-2467f5cf17ba`. The interface is divided into two main panels: 'Build' on the left and 'Agent preview' on the right.

Build Panel:

- Model:** llama-3-3-70b-instruct
- Framework:** LangGraph
- Architecture:** ReAct
- Instructions:** You are a traveler planner agent. take the preferences from the user like destination, traveling date, trip duration. give the specific answer to the users query.
- Tools:** Includes buttons for 'Add a tool' and 'Create custom tool'.

Agent preview Panel:

The preview shows a conversation with the 'watsonx Agent' at 06:53 PM. The agent's response is:

India is a wonderful destination with a rich cultural heritage and diverse landscapes. Considering your travel dates (July 30th, 2025) and trip duration (5 days), I'd like to suggest a few options for you:

- Option 1: Golden Triangle (Delhi, Agra, Jaipur)** Explore the historic cities of Delhi, Agra, and Jaipur, which offer a glimpse into India's rich history and architecture. You can visit the Taj Mahal, Red Fort, and other iconic landmarks.
- Option 2: Kerala Backwaters and Beaches** Head to Kerala, a state in southern India known for its serene backwaters, beautiful beaches, and lush green landscapes. You can enjoy a relaxing houseboat cruise, visit the famous Kovalam Beach, and explore the scenic town of Kochi.
- Option 3: Himalayan Getaway (Shimla or Manali)** Escape to the Himalayas and enjoy the cool climate, scenic valleys, and adventure activities like trekking, rafting, or skiing. Shimla and Manali are popular hill stations that offer a perfect blend of nature, culture, and adventure.
- Option 4: Goa Beaches and Nightlife** If you're looking for a more relaxed and fun-filled trip, Goa is an excellent choice. Enjoy the beautiful beaches, vibrant nightlife, and water sports like surfing, snorkeling, or parasailing.

The preview concludes with a prompt: 'Which of these options appeals to you, or do you have any other specific interests (e.g., wildlife, food, spirituality, etc.) that might help me suggest a more tailored itinerary?'

The bottom of the screen shows a Windows taskbar with the date and time: 18:55, 30-07-2025.

CONCLUSION

- The travel planning agent is an intelligent, AI-controlled system designed to provide personal and effective travel experience. By taking advantage of the machine learning algorithm and data integration in real-time, the system analyzes the user preferences and behavior to recommend appropriate destinations, generate adapted to travel plan and assists with residential and activity booking.

FUTURE SCOPE

- Travel planner agent can be significantly improved by integrating advanced technologies such as voting Connivance AI, AR-based destination pre-view and IoT device connection. Future development may include multilingual support, AI-driven budget optimization and environmentally friendly travel tips. Social characteristics such as Community sharing of travel programs and group planning, along with real-time security warning and emergency support, will further enrich the user experience. These innovations prepare the agent to become a composite, intelligent travel partner for modern, personal travel.

REFERENCES

- Google search
- Webcrawler
- Wikipedia search
- Document search
- weather

IBM CERTIFICATIONS

In recognition of the commitment to achieve
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RAMANA NAVEEN KUMAR

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



Issued on: Jul 15, 2025
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Completion Certificate



This certificate is presented to
RAMANA NAVEEN KUMAR

for the completion of
**Lab: Retrieval Augmented Generation with
LangChain**

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 24 Jul 2025 (GMT)

Learning hours: 20 mins



THANK YOU