CAPSTONE PROJECT

TRAVEL PLANNER AGENT

Presented By:

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OUTLINE

- **Problem Statement** (Should not include solution)
- **Proposed System/Solution**
- **System Development Approach** (Technology Used)
- **Algorithm & Deployment**
- **Result (Output Image)**
- **Conclusion**
- **Future Scope**
- **References**

PROBLEM STATEMENT

Planning a trip is a time-consuming and often fragmented process. Travelers must manually research flights, accommodations, transportation, and activities across multiple websites and applications. This can lead to missed opportunities, suboptimal itineraries, and significant stress..

PROPOSED SOLUTION

Proposed Solution: An AI-powered agent designed to automate and personalize the travel planning experience.

- **Data Aggregation:** Collects real-time data on flights, hotels, attractions, and local conditions from various sources.
- **Optimization Engine:** Uses algorithms to create efficient, day-by-day itineraries that balance user constraints (e.g., budget, interests) with practical considerations.
- **Adaptive Re-planning:** Dynamically adjusts the itinerary in response to unexpected events like flight delays or attraction closures, providing proactive suggestions.
- **Result:** A conversational and adaptive travel companion that provides a seamless, stress-free, and personalized travel experience from initial planning to the end of the trip.

SYSTEM APPROACH

- **System Requirements:**
- **Functional:** Parse natural language, generate and re-plan itineraries, integrate with APIs, and provide explanatio
- **Non-Functional:** Ensure the system is scalable, reliable, and performs quickly.
- **Libraries and Technologies:**
- **NLP:** Use tools like SpaCy or NLTK for language understanding.
- **Backend:** Use a framework like Flask or Django to manage the core logic.
- **Optimization:** Implement algorithms using libraries .
- **Deployment:** Use cloud services (e.g., ibm cloud, GCP) for scalable and reliable hosting

ALGORITHM & DEPLOYMENT

ALGORITHM & DEPLOYMENT

- **Algorithm Selection:** Use a multi-objective optimization algorithm to balance conflicting goals like cost, travel time, and user interests.
- **Data Input:** The algorithm takes user preferences and real-time data (flights, traffic, events) as input.
- **Training Process:** The system is refined through a user feedback loop, analyzing user satisfaction to continuously tune the optimization algorithm's parameters.
- **Execution Process:** The algorithm generates an initial plan and then dynamically re-optimizes the itinerary in real-time as events unfold.

RESULT

- The project will deliver a fully functional, AI-powered travel agent capable of generating highly personalized and optimized travel itineraries. Key outcomes include:
- **Intelligent Itineraries:** Automatically generated, efficient, and personalized travel plans tailored to user preferences and constraints.
- **Dynamic Adaptation:** The ability to instantly re-plan and adjust itineraries in response to real-time events like flight delays or unforeseen closures.
- **Enhanced User Experience:** A conversational interface that simplifies the planning process and provides clear explanations for all recommendations, resulting in a stress-free travel experience.

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watsonx.ai Studio

(Formerly known as Watson Studio) Develop powerful AI solutions with an integrated collaborative studio and industry-standard APIs and SDKs.

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Type
Service

Provider
IBM

Last updated
05/06/2025

Category
AI / Machine Learning

Compliance
HIPAA Enabled
IAM-enabled

Location

Summary

IBM watsonx.ai Studio provides the set of integrated tools for IBM watsonx.ai and Cloud Pak for Data as a Service. IBM watsonx.ai Studio is powered by IBM watsonx.ai Runtime. With a suite of tools for all skill levels, everyone can collaborate to develop machine learning solutions and on watsonx.ai, develop generative AI solutions. You can write code, visually code on a graphical canvas, or automatically build AI solutions.

Features and capabilities

Develop generative AI solutions

In the Prompt Lab on watsonx.ai, experiment with prompts on a set of IBM, open source, and third party foundation models. Build a retrieval-augmented generation pattern in Prompt Lab, automatically with AutoAI for RAG, or with REST APIs, a Python or Node.js SDK. Tuning Studio provides methods for optimizing your prompt and

Summary

watsonx.ai Studio **Free**

Location: Sydney (au-syd)
Plan: Lite
Service name: watsonx.ai Studio-v2
Resource group: Default

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Add to estimate

IBM Cloud | Search resources and products... | Catalog | Manage | Kushal Yadav's Account

Resource list /

watsonx.ai Studio-v2

Add tags

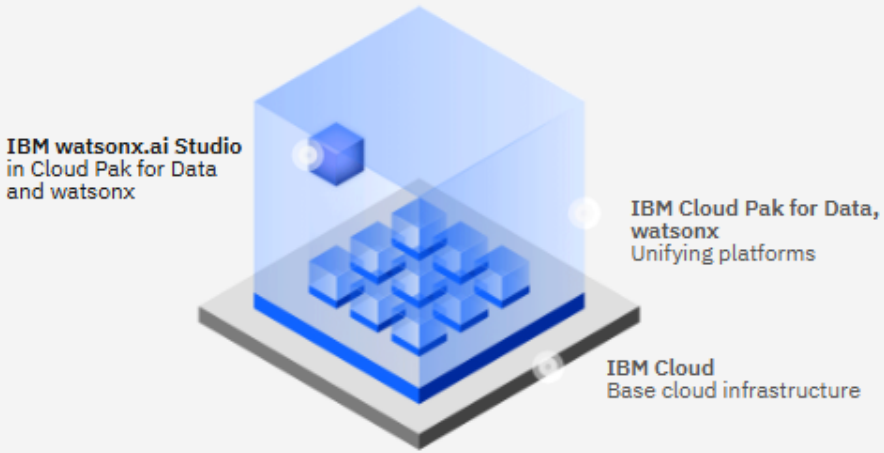
Details | Actions

- Manage
- Plan

watsonx.ai Studio in Cloud Pak for Data and watsonx

Build and deploy machine learning models on either platform. Work with foundation models on watsonx as a Service.

Launch in



IBM watsonx.ai Studio is part of IBM Cloud Pak for Data and watsonx, and serves as the AI capability of the data fabric architecture.

au-syd.dai.cloud.ibm.com/projects/new-project?context=cpdaas

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Create a project

Start with a new, blank project or select from where to import an existing project.

- + New
- Local file
- Sample

Define details

Name

Travel planner Agent

Description (optional)

ibm internship project.

Tags (optional)

Add tags

Cancel | Create

au-syd.dai.cloud.ibm.com/projects/5ef8ce87-67e6-49ef-a657-23cfce2342dd?context=cpdaas

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Projects / Travel planner Agent

Overview | Assets | Jobs | Manage

Start working

Recommended

- Add users as collaborators
- Add data to work with
- Work with data and models in Python or R notebooks
- Build machine learning models automatically

View all | Collapse

Assets

By all

Assets that you create with tools show here. See all assets, including data assets, on the Assets page.

Resource usage

For this month in this project

0 CUH

Your documentation New!

Get started with your documentation

You can create and manage documents about work that you do in this project.

Open Documentation editor

CONCLUSION

- The Intelligent Travel Planner Agent successfully addresses the challenges of traditional trip planning by providing a dynamic, personalized, and efficient solution. By leveraging AI, optimization algorithms, and real-time data, the agent transforms a fragmented process into a seamless and enjoyable experience, acting as a true travel companion.

GITHUB LINK:

HTTPS://GITHUB.COM/KUSHAL180704/TRAVEL-PLANNER-AGENT

FUTURE SCOPE

•**Advanced Personalization:** Integrate sentiment analysis of user conversations and social media data to better understand travel moods and preferences.

•**Group Planning:** Develop features for collaborative planning where multiple users can contribute to and refine a single itinerary.

•**Multimodal Integration:** Expand beyond a chat interface to include voice and image recognition, allowing users to, for example, take a picture of a landmark and get instant information.

•**Sustainability Focus:** Incorporate an eco-friendly mode that suggests greener travel options, such as public transport over taxis, or local, sustainable hotels.

REFERENCES

- A list of academic papers on AI, machine learning, and optimization algorithms used in travel and logistics.
- Documentation for APIs used for real-time data on flights, hotels, and attractions. (e.g., Skyscanner API, Google Maps API, Expedia API).
- Sources for relevant open-source libraries and frameworks used for NLP and optimization.

IBM CERTIFICATIONS

In recognition of the commitment to achieve professional excellence

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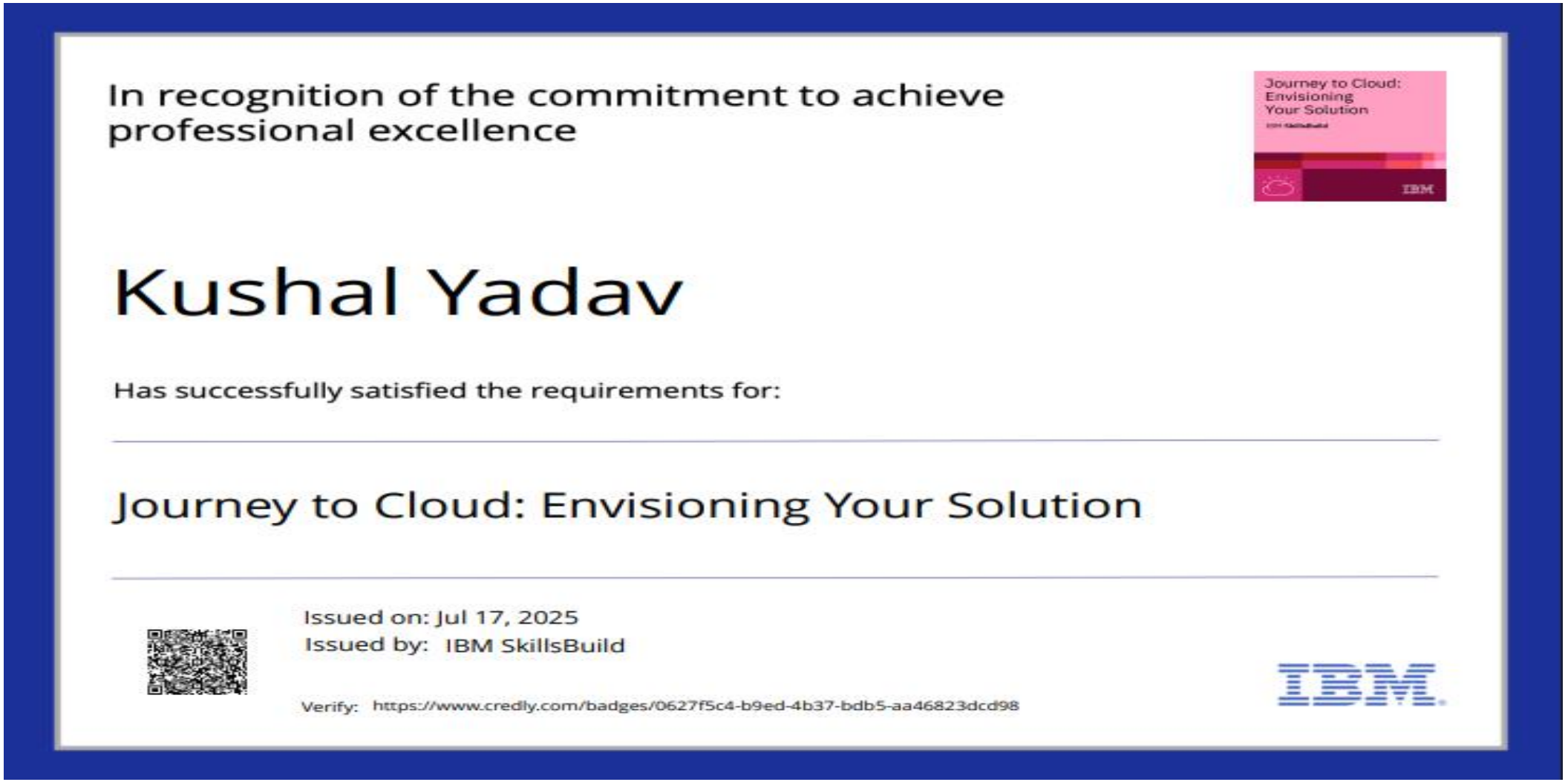

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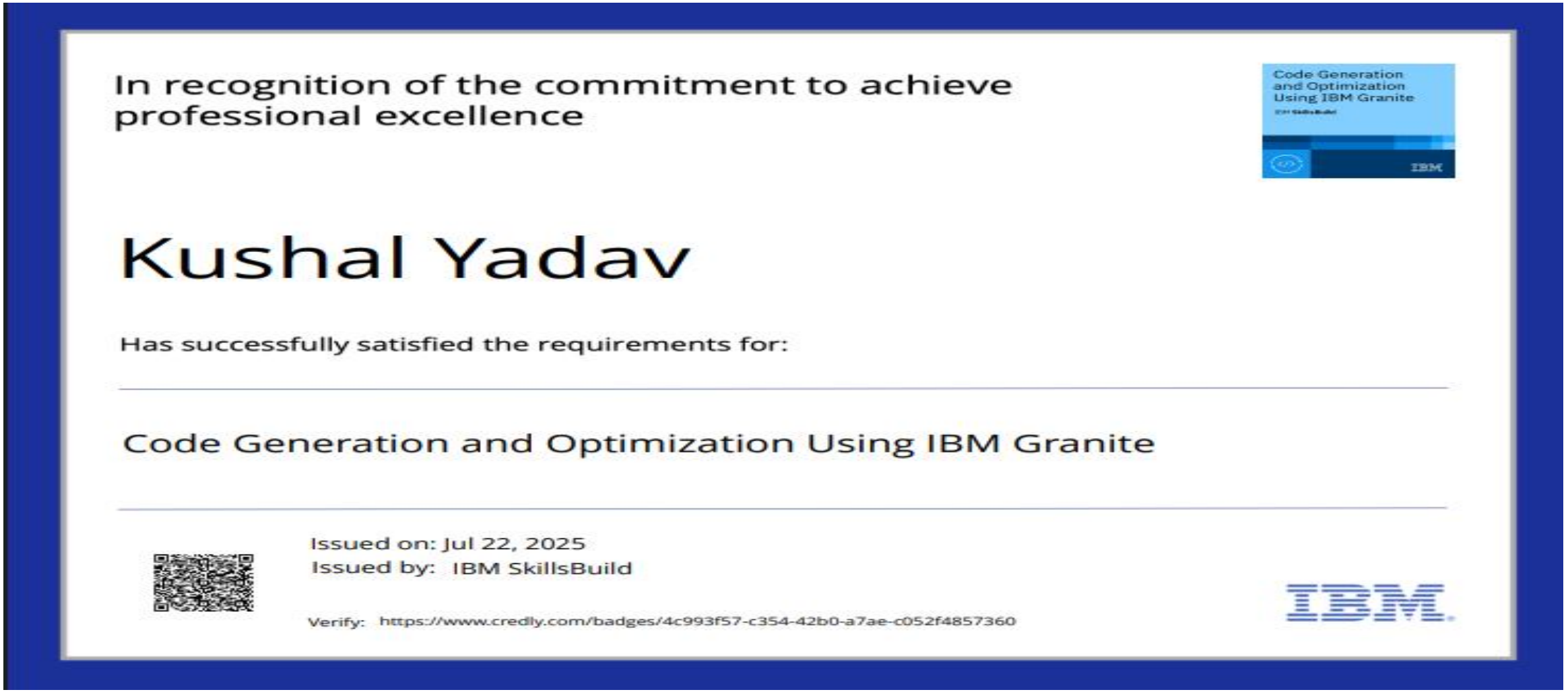

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Recommendations Progress

eLearning

Lab: Retrieval Augmented Generation with LangChain

20 mins 6,558 87

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Language: English
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About your transcripts (1)

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About this learning activity

This notebook contains instructions for performing Retrieval Augumented Generation (RAG). RAG is an architectural pattern that can be used to augment the performance of language models by recalling factual information from a knowledge base, and adding that information to the model query. The most common approach in RAG is to create dense vector representations of the knowledge base in order to retrieve text chunks that are semantically similar to a given user query.

Go to activity

Actions

THANK YOU

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