CAPSTONE PROJECT

MUSKAN'S COLLEGE ADMISSION AGENT

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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**

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PROBLEM STATEMENT

A **College Admission Agent**, powered by **RAG (Retrieval-Augmented Generation)**, streamlines the student admission process. It retrieves and summarizes admission policies, eligibility criteria, and FAQs from institutional databases and official sources. Prospective students can ask natural language questions and receive accurate, up-to-date responses instantly. The agent helps with course selection, application guidance, fee structure, and important deadlines. Using trusted, real-time data, it reduces manual inquiries and enhances applicant experience. This AI-driven assistant boosts transparency, accessibility, and efficiency in college admissions.

PROPOSED SOLUTION

- **The proposed system aims to address the challenge of guiding students through the complex college admission process by providing accurate, real-time responses to their queries. This involves leveraging Retrieval-Augmented Generation (RAG), natural language processing, and structured knowledge sources. The solution will consist of the following components:**
- **Data Collection:**
  - Gather structured and unstructured data from college websites, brochures, government education portals (e.g., AICTE, NIRF, UGC), and academic forums.
  - Utilize real-time data sources such as entrance exam results, admission notifications, deadlines, and form availability.
- **Data Preprocessing:**
  - Clean and preprocess the collected data to handle missing values, duplicates, and inconsistencies.
  - Apply feature engineering and semantic tagging (e.g., course type, eligibility, fee range) to improve information retrieval.
- **Model Training:**
  - Implement a RAG-based system combining:
    - **Retriever** (e.g., FAISS, Elasticsearch)
    - **Generator** (e.g., LLaMA-3-70B-Instruct)
  - Train the system to interpret student queries and generate accurate responses using relevant data using NLP.
- **Evaluation:**
  - Accuracy
  - Response relevance
  - User satisfaction
  - Continuously fine-tune based on user feedback and system monitoring

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SYSTEM APPROACH

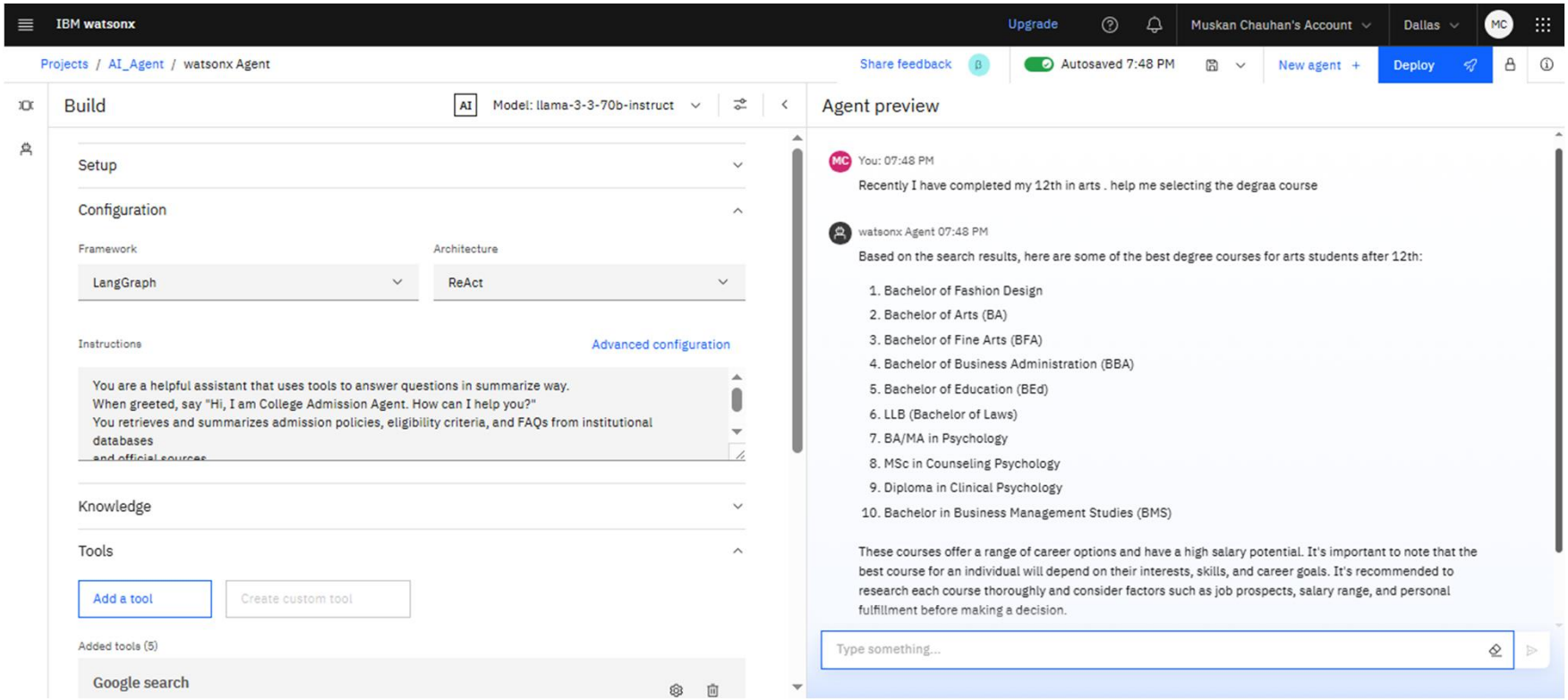
The "System Approach" section outlines the overall strategy and methodology for developing and implementing the College Admission Agent. Here's a suggested structure for this section:

- **System requirements**
  - **IBM Cloud**
  - **IBM wotsonx.Ai Studio** (For training and deploying the RAG-based model.)
  - **IBM Cloud Object Storage** (To store structured/unstructured admission-related data.)
  - **LM (e.g., LLaMA-3-70B-Instruct)** (For generating accurate and personalized answers.)

ALGORITHM & DEPLOYMENT

- **Algorithm Selection:**
  - The proposed solution employs a **Retrieval-Augmented Generation (RAG)** approach, which combines a **retriever model** (for fetching relevant documents) with a **large language model (LLM)** such as **LLaMA-3-70B-Instruct** for generating natural language responses.
- **Data Input:**
  - Inputs include user queries and structured/unstructured admission data such as course details, eligibility, fees, and deadlines.
- **Training Process:**
  - The retriever and generator are fine-tuned using admission-related QA pairs and embeddings for accurate document matching.
- **Prediction Process:**
  - On receiving a query, relevant documents are retrieved and used by the LLM to generate real-time, personalized responses.

RESULT



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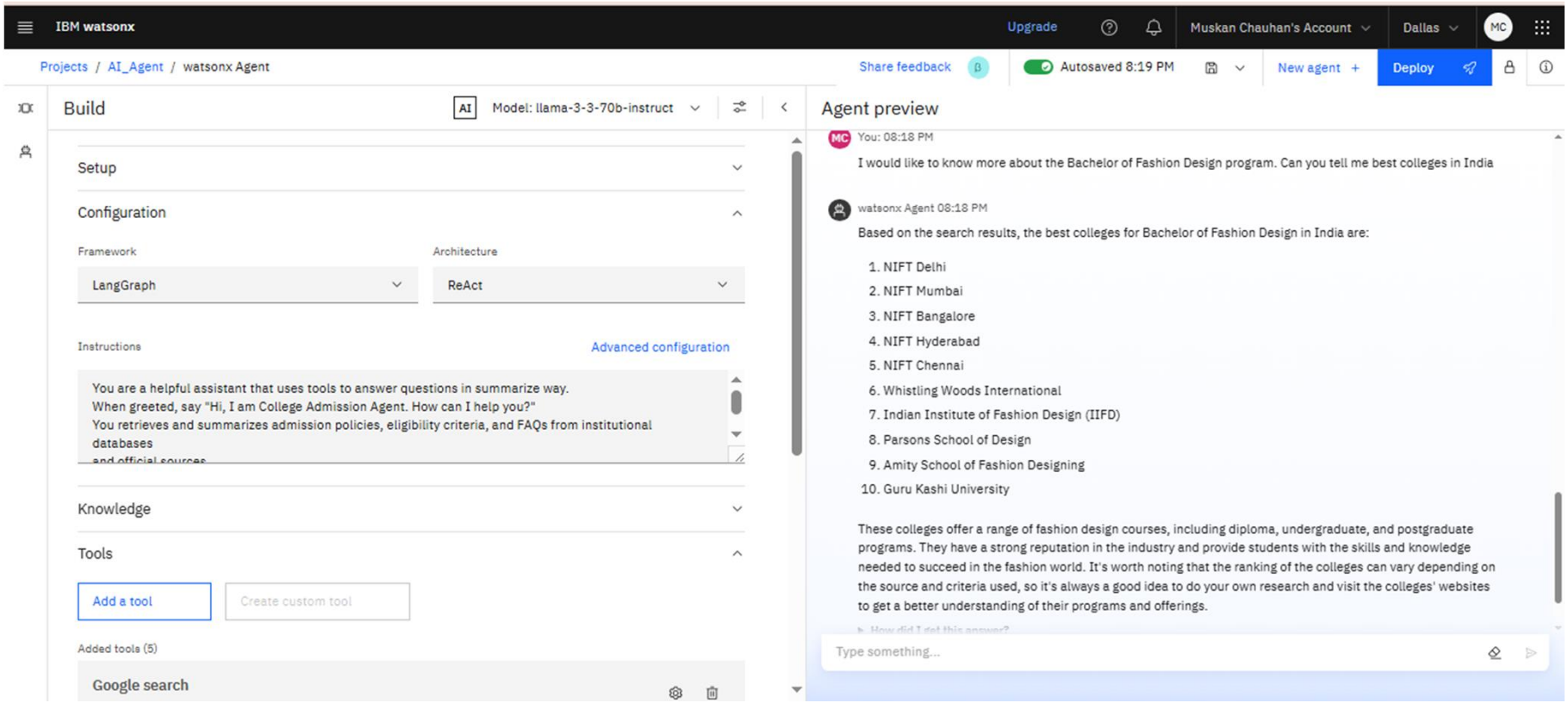
RESULT



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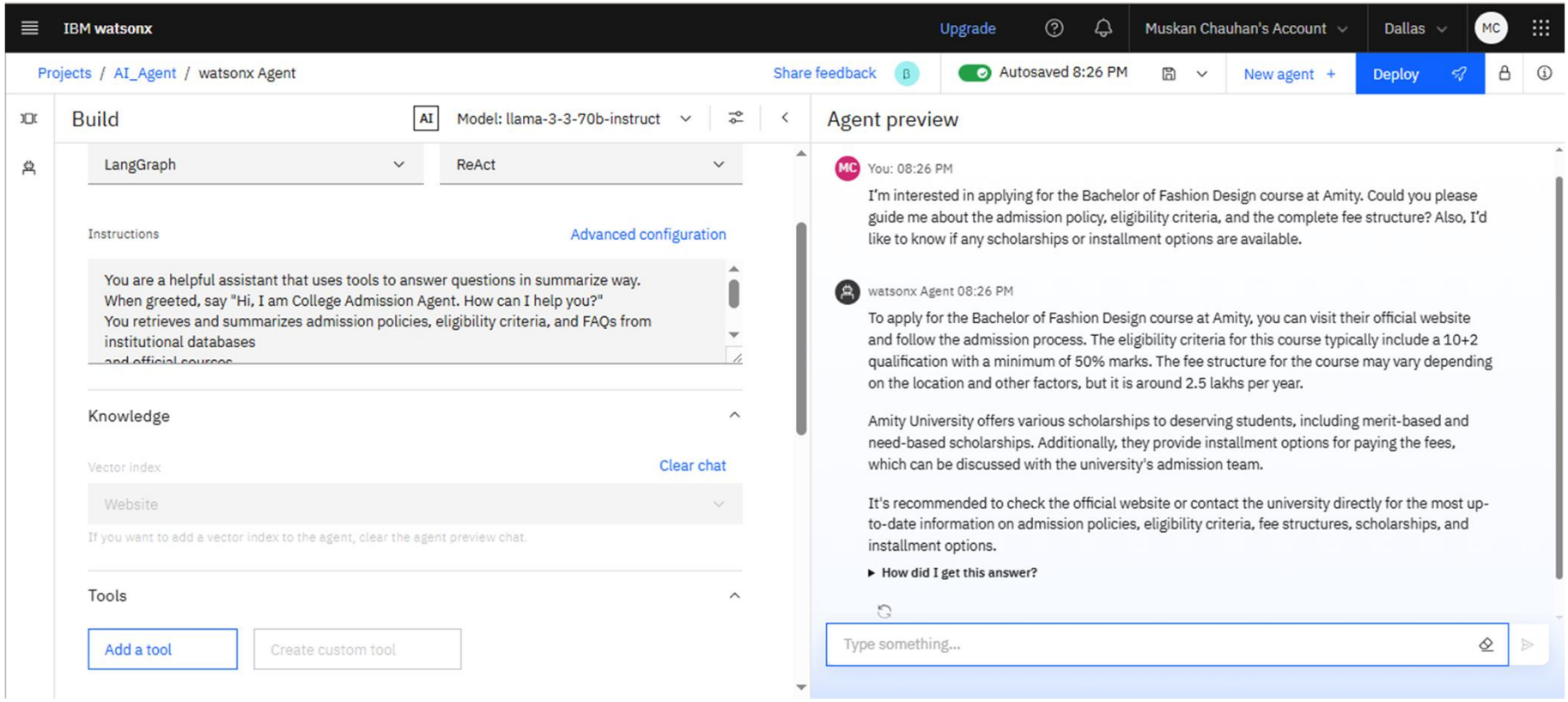
RESULT



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CONCLUSION

- The College Admission Agent, driven by Retrieval-Augmented Generation (RAG), addresses the complexities and inefficiencies of traditional admission processes. By providing instant, accurate, and personalized responses using real-time institutional data, it significantly improves the accessibility and transparency of admission-related information. This intelligent assistant not only reduces the burden on admission staff but also empowers students to make informed decisions. Ultimately, it transforms the admission experience into a streamlined, efficient, and student-centric process through the integration of AI technology.

FUTURE SCOPE

- **Geographical Expansion:**
  Adapt the system to support multiple cities, states, or countries by handling regional admission criteria and languages
- **Integrate Edge Computing:**
  Deploy the system on edge devices for efficient operation in low-bandwidth or remote areas.
- **Enhance Personalization:**
  Tailor course and college suggestions based on user preferences and behavior.
- **Optimize System Performance:**
  Enhance retrieval and response algorithms for faster, more relevant outputs.

REFERENCES

- https://cloud.ibm.com/docs/watsonx-ai
- https://www.aicte-india.org
- https://www.nirfindia.org
- https://openai.com/research/gpt-4

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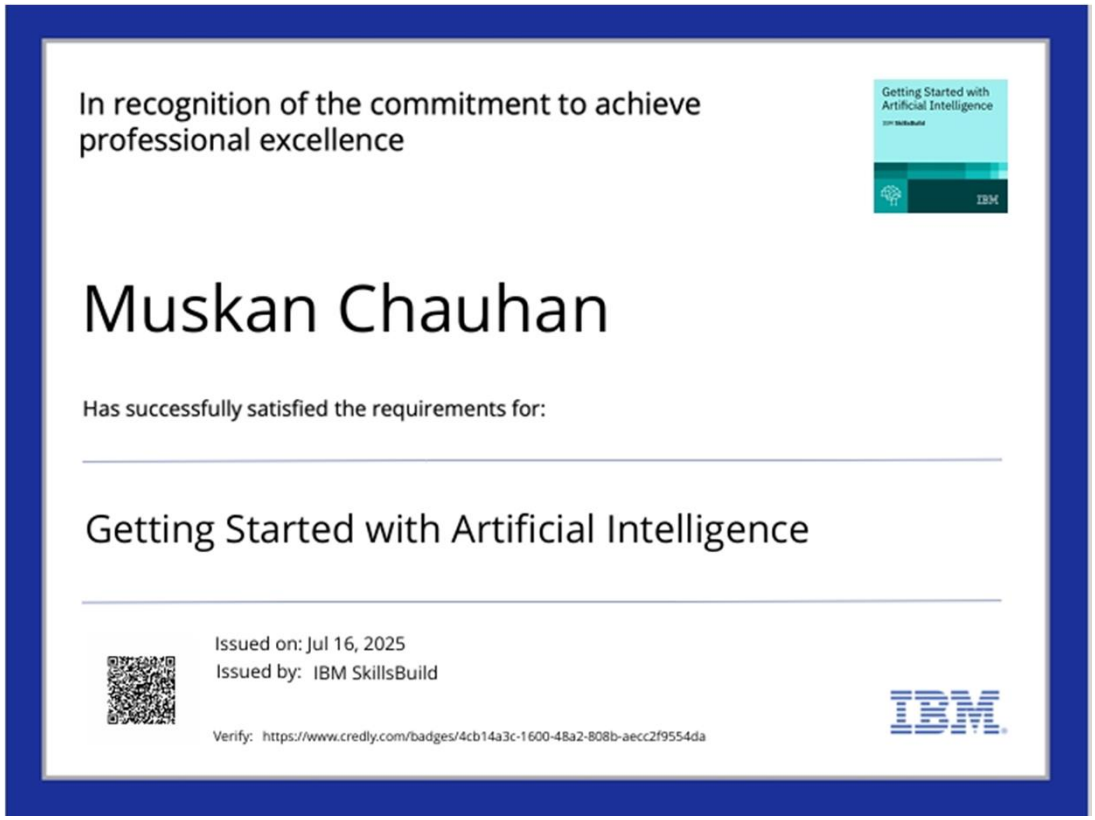
IBM CERTIFICATIONS



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IBM CERTIFICATIONS

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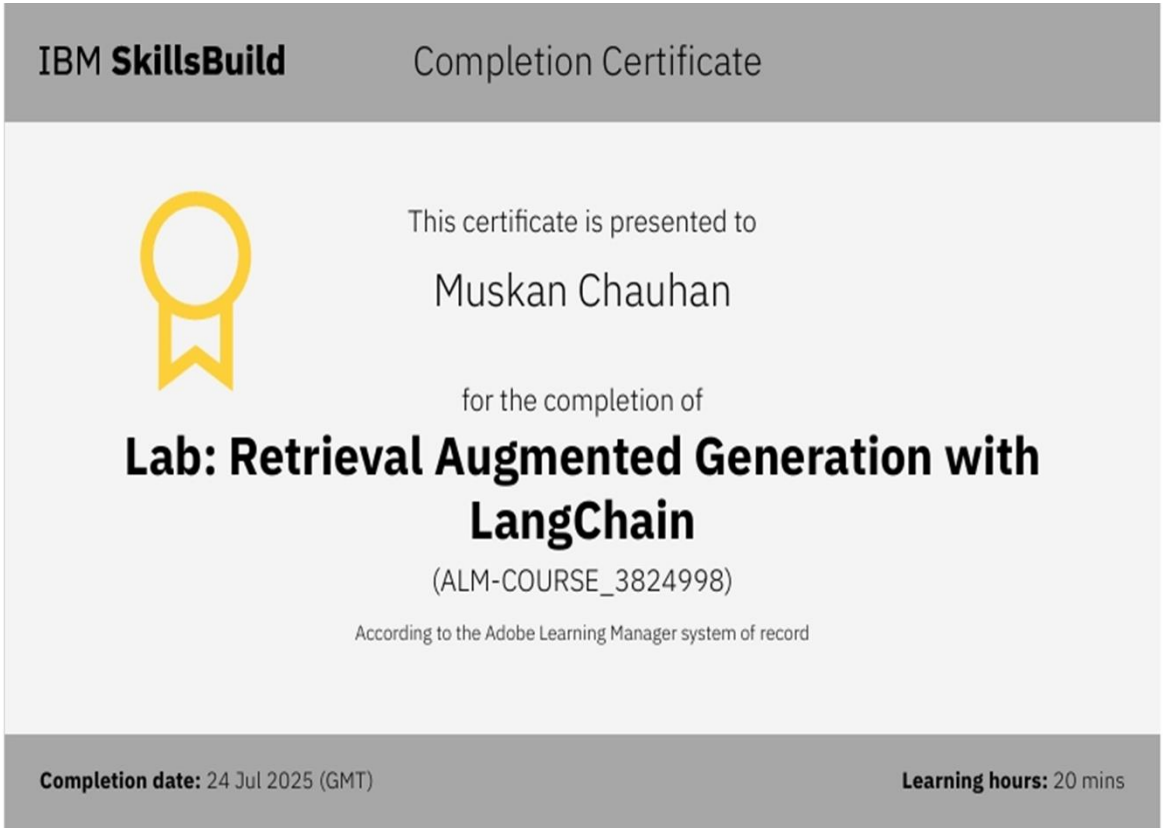

IBM **SkillsBuild** Completion Certificate

This certificate is presented to

Muskan Chauhan

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

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