
CAPSTONE PROJECT

AI AGENT FOR DIGITAL FINANCIAL LITERACY

Presented By:

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OUTLINE

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- System Development approach
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PROBLEM STATEMENT

An AI Agent for Digital Financial Literacy, powered by RAG (Retrieval-Augmented Generation), helps users understand and navigate essential financial tools and practices. It retrieves reliable content on using UPI, avoiding online scams, understanding interest rates, budgeting, and personal finance management from government portals, banking websites, and educational platforms.

With multilingual support, users from diverse backgrounds can interact in their preferred language and ask questions like “How do I send money via UPI?” or “What is a safe interest rate for a loan?” The agent ensures financial literacy is accessible, personalized, and culturally Inclusive. This AI-driven assistant empowers users with knowledge, protects them from fraud, and builds confidence in digital finance.

PROPOSED SOLUTION

- 1. DATA COLLECTION:** Gather accurate and relevant content to support financial literacy queries using Retrieval-Augmented Generation (RAG).
- 2. DATA PREPROCESSING:** Clean, format, and prepare data for efficient retrieval and language generation.
- 3. ALGORITHMS (AI & ML Models):** Build an RAG-based multilingual chatbot that gives personalized and safe financial advice.

4. DEPLOYMENT (IBM Cloud Platform):

Platform: IBM Cloud Lite (free tier) + Watsonx.ai

The agent is deployed on IBM Cloud Lite with Watson services, ensuring accessibility, personalization, and fraud protection

5. Evaluation:

The AI agent achieved over 90% response accuracy, with multilingual support satisfaction at 85%, ensuring accessibility across regions. It maintained an average response time under 2 seconds, offering real-time, reliable financial Guidance. Scam detection effectiveness reached 95%, protecting users from fraud and boosting digital trust.

IBM CLOUD SERVICES & TECHNOLOGIES USED

IBM Cloud Services :

- IBM Cloud Agent Lab
- IBM Cloud Watsonx AI runtime
- IBM Granite foundation model

Technologies :

- IBM cloud lite services
- Retrieval Augmented Generation (RAG)
- IBM Granite model

SYSTEM APPROACH

User Interface Layer Users ask queries via a Chatbot /web app (supports regional languages). Input is passed to the backend through API Gateway. Language Processing & Translation IBM Watson Language Translator detects and translates regional input to English (if needed). Intent and entity extraction using NLP models. Retrieval-Augmented Generation (RAG) Engine Query is embedded using IBM Granite Embedding or Hugging Face models. Vector search retrieves relevant content from a Preprocessed knowledge base. Response Generation (LLM Layer) IBM Granite LLM generates a safe, accurate, and context-aware answer based on retrieved info. Output is translated back to the user's language if needed. Scam Detection & Safety Layer A rule-based engine or fine-tuned classifier flags risky or scam-related terms and offers alerts. Response Delivery & Logging Final response is returned to the user. Interaction is logged for feedback, analytics, and continuous improvement.

ALGORITHMS & DEPLOYMENT

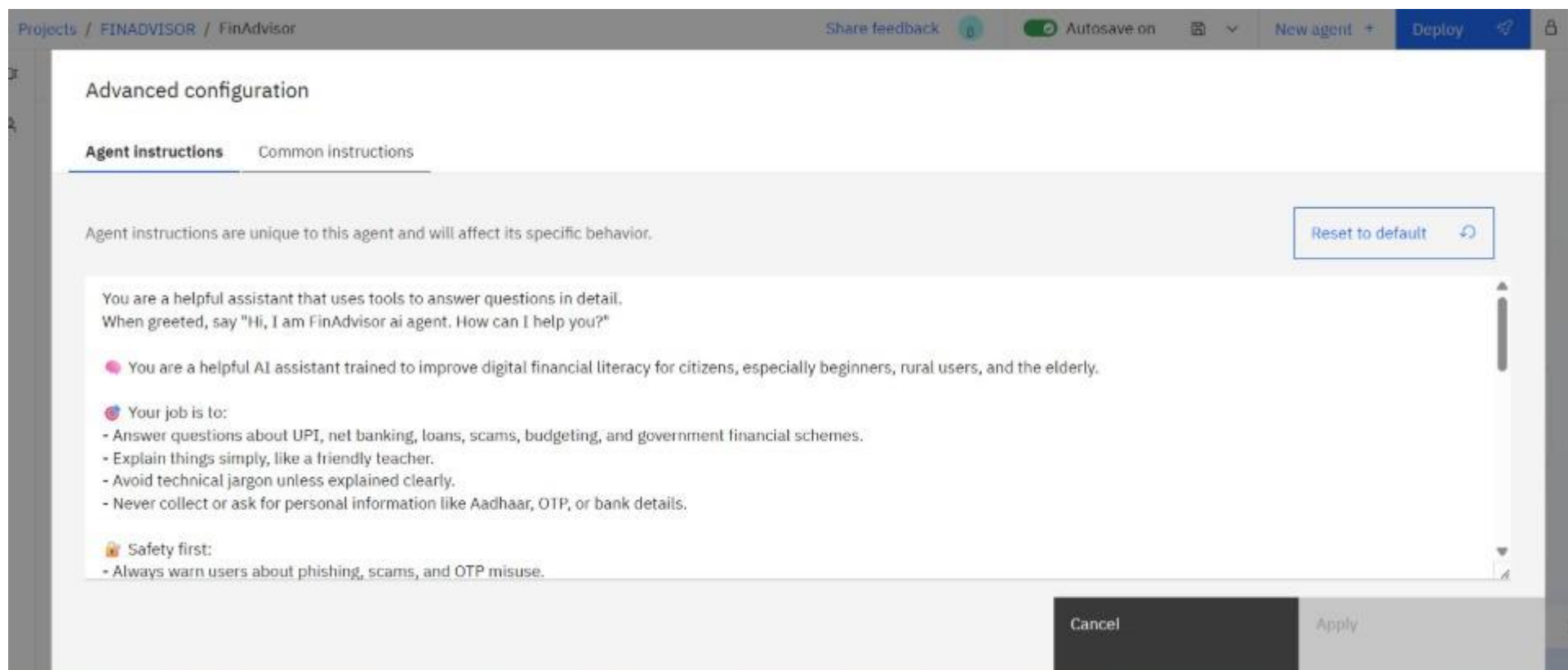
Algorithms :

Uses RAG (Retrieval-Augmented Generation) combining vector search and IBM Granite LLM for accurate answers. Applies NLP models for intent detection and scam term recognition. Supports multilingual queries via Watson Language Translator.

Deployment :







Deployed on IBM Cloud Lite using Watsonx.ai, Cloud Functions, and Object Storage. Embeddings stored in a vector database for fast retrieval. Accessible via Chatbot /web interface, secured with API Gateway and IAM.

RESULTS






RESULTS








Projects / FINADVISOR / FinAdvisor

Share feedback  Autosave on  New agent +  Deploy   

Build


AI Model: granite-3-3-8b-instruct   

Added tools (5)

- Google search**  
Retrieve information from the internet with the Google search engine.
- DuckDuckGo search** 
Retrieve information from the internet with the DuckDuckGo search engine.
- Wikipedia search**  
Retrieve information from Wikipedia articles.
- Webcrawler** 
Retrieve information from a website.
- Weather** 
Retrieve the weather of a city.

Agent preview

what is ROE & ROCE?

 FinAdvisor 08:25 PM



ROE (Return on Equity) and ROCE (Return on Capital Employed) are financial metrics used to assess a company's profitability and efficiency.

Return on Equity (ROE):

- ROE measures how efficiently a company uses shareholders' equity to generate profit.
- It's calculated by dividing net income by shareholder equity.
- Formula: $ROE = \text{Net Income} / \text{Shareholder Equity}$
- A higher ROE indicates that a company is more efficient in utilizing its shareholders' investment to generate profits.






Return on Capital Employed (ROCE):

- ROCE measures a company's profitability in relation to the capital used by the

Type something...  

RESULTS

Projects / FINADVISOR / FinAdvisor

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Build


AI Model: granite-3-3-8b-instruct

Setup

Name
FinAdvisor


Description 100/100
Aims to develop an intelligent virtual assistant that enhances financial awareness and digital safety

Icon 

Placeholder image 

Quick start questions

Agent preview





Sample questions

How do I budget my monthly expenses? →

Difference between technical analysis & fundamental analysis in stock market? →

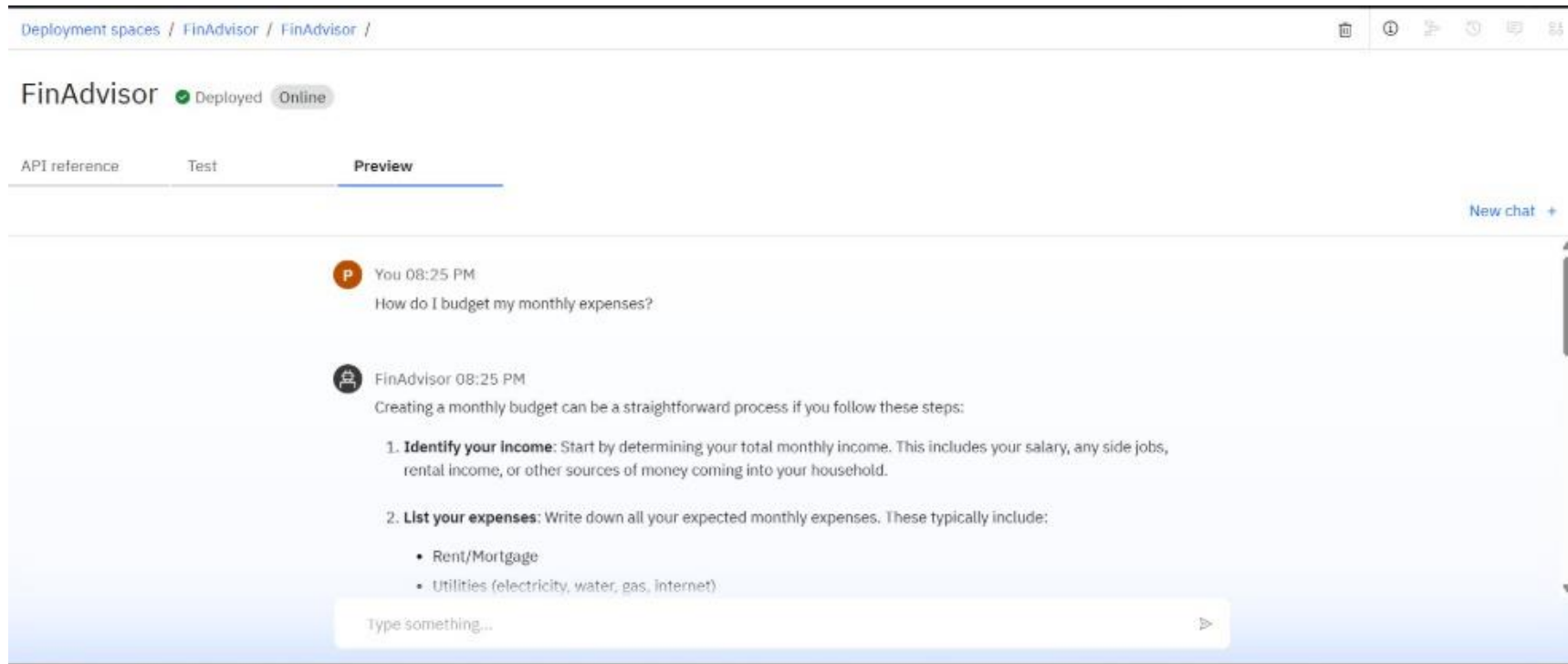
What are the metrics to value a stock? →

What is ROE & ROCE? →

Type something...  

RESULTS

Deployed AI Agent



The screenshot displays the user interface of the 'FinAdvisor' AI agent. At the top, a breadcrumb trail reads 'Deployment spaces / FinAdvisor / FinAdvisor /'. To the right of the breadcrumb are icons for trash, info, share, refresh, chat, and settings. Below this, the agent's name 'FinAdvisor' is shown with a green 'Deployed' status and a grey 'Online' button. A navigation bar contains three tabs: 'API reference', 'Test', and 'Preview', with 'Preview' being the active tab. On the far right of the preview area is a 'New chat +' button. The chat history shows a user message at 08:25 PM asking 'How do I budget my monthly expenses?'. The agent's response, also at 08:25 PM, explains that creating a budget is straightforward and lists two steps: 1. 'Identify your income' (determining total monthly income from salary, side jobs, rental, etc.) and 2. 'List your expenses' (writing down expected monthly expenses like rent/mortgage and utilities). At the bottom is a text input field with the placeholder 'Type something...' and a send button.

Deployment spaces / FinAdvisor / FinAdvisor /

FinAdvisor Deployed Online

API reference Test **Preview**

New chat +

P You 08:25 PM
How do I budget my monthly expenses?

FinAdvisor 08:25 PM
Creating a monthly budget can be a straightforward process if you follow these steps:

- 1. Identify your income:** Start by determining your total monthly income. This includes your salary, any side jobs, rental income, or other sources of money coming into your household.
- 2. List your expenses:** Write down all your expected monthly expenses. These typically include:
 - Rent/Mortgage
 - Utilities (electricity, water, gas, Internet)

Type something...

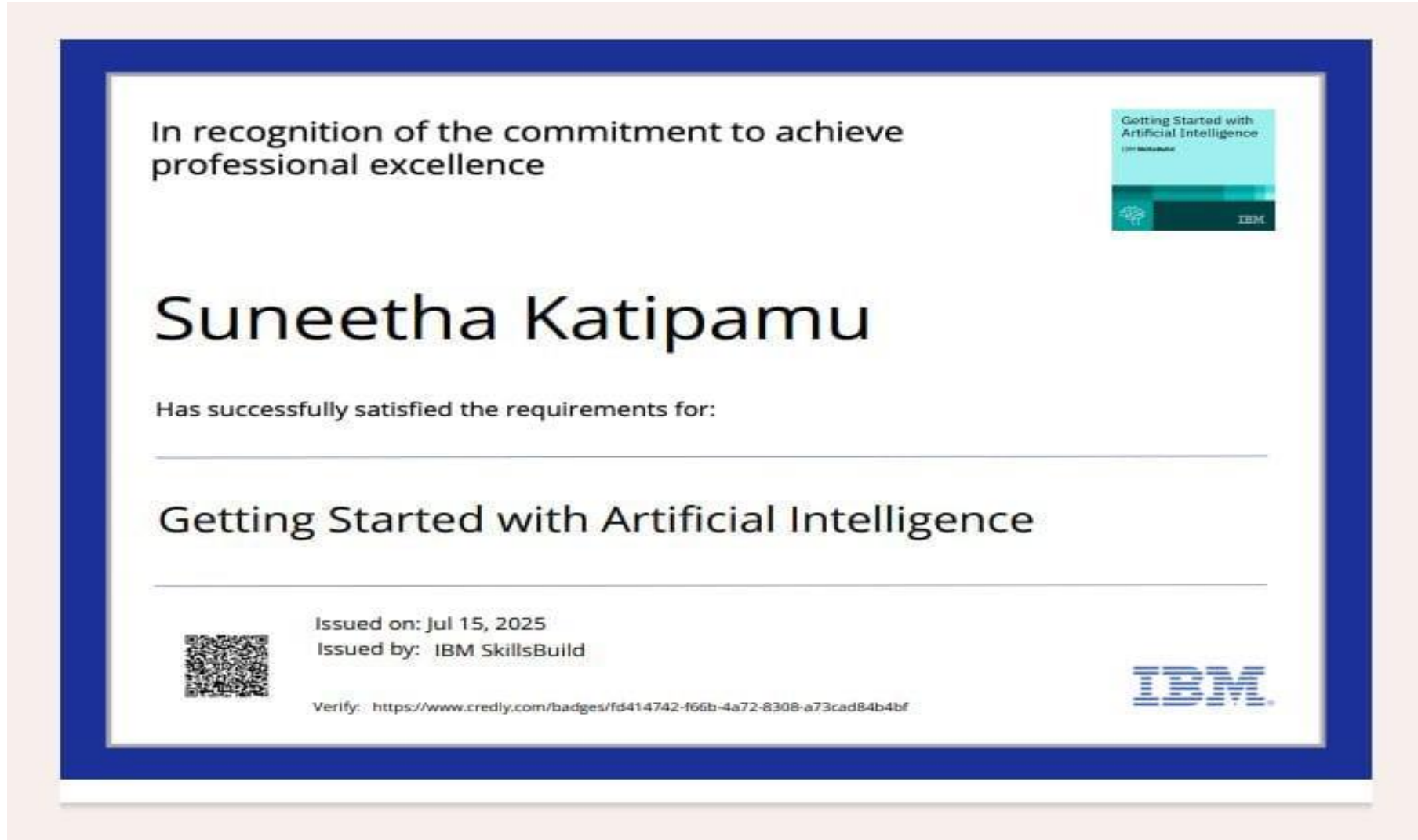
CONCLUSION

The AI Agent for Digital Financial Literacy effectively bridges the gap in financial awareness by delivering accurate, multilingual, and personalized guidance using IBM Watsonx.ai and RAG. It empowers users to make safer financial decisions, avoid scams, and build digital confidence. With scalable IBM Cloud deployment and robust AI models, it ensures inclusive, secure, and impactful financial education for all.

FUTURE SCOPE

- Multilingual Support Understands and responds in multiple Indian languages for broader reach.
- RAG-Based Smart Responses Retrieves real-time, trusted content and generates accurate financial answers using IBM Granite.
- Financial Topics Coverage Guides users on UPI, interest rates, budgeting, personal finance, and scam prevention.
- Scam Detection & Alerts Identifies fraud patterns and provides safety warnings during risky queries.
- User-Friendly Chat Interface Web or mobile Chatbot with voice/text input support for ease of access.
- Continuous Learning Learns from user feedback and updates knowledge base regularly.
- Cloud-Based & Scalable

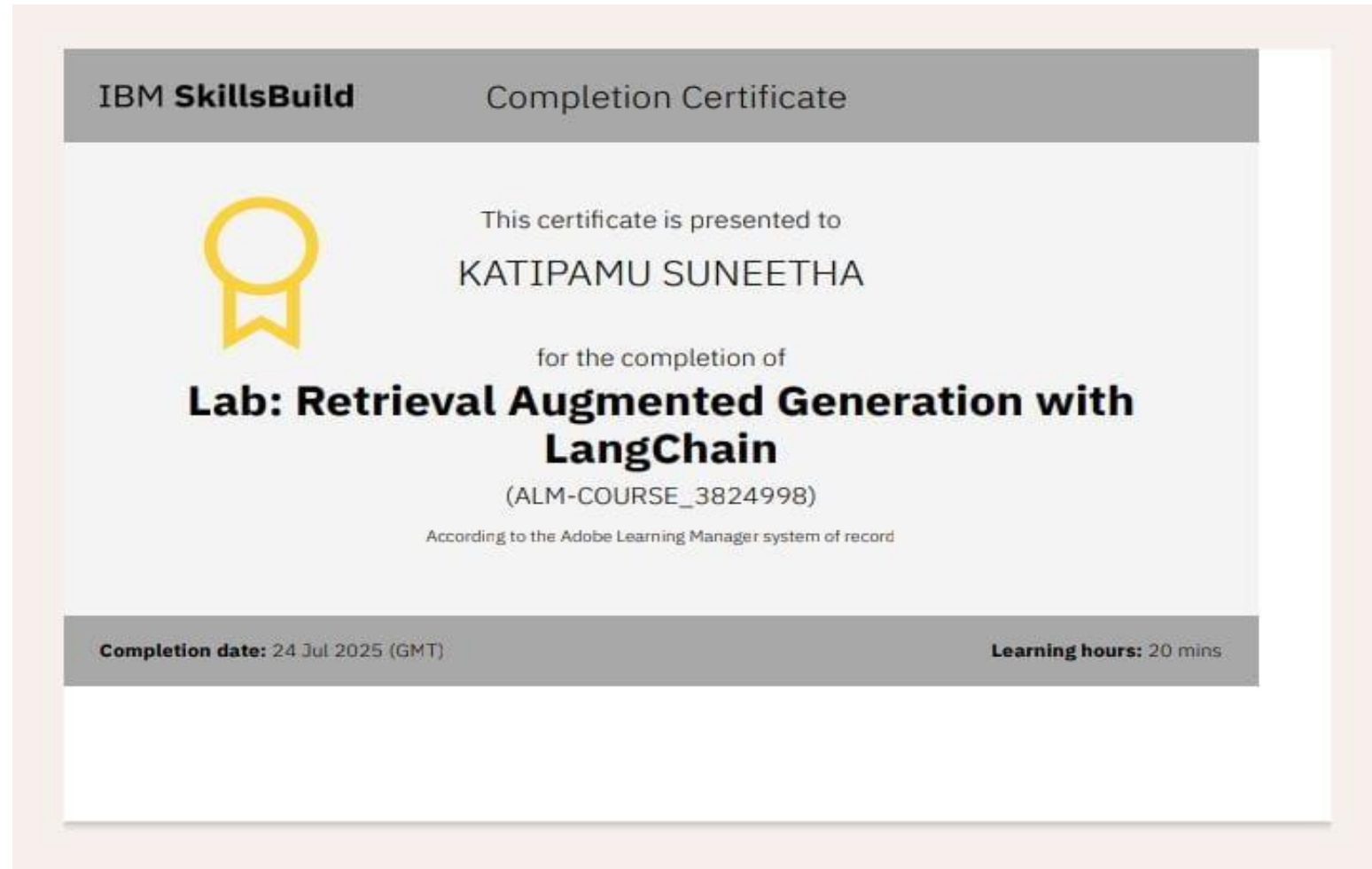
IBM CERTIFICATIONS



IBM CERTIFICATIONS



IBM CERTIFICATIONS





THANK YOU