
CAPSTONE PROJECT

AI AGENT FOR DIGITAL FINANCIAL LITERACY

using IBM Cloud (RAG-based)

Presented By:
Yogeshwaran R –
Sethu Institute of Technology – Information Technology

OUTLINE

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

PROBLEM STATEMENT

In India, many individuals, especially from rural or semi-urban areas, lack access to financial education. They are unaware of digital banking tools like UPI, personal finance practices, or how to avoid fraud. Traditional financial literacy programs are not scalable, multilingual, or personalized. There is a need for an intelligent system that can provide on-demand, easy-to-understand, trustworthy financial guidance in regional languages to improve digital financial inclusion.

PROPOSED SOLUTION

- This project proposes an AI-powered digital financial literacy agent using IBM Cloud and RAG (Retrieval-Augmented Generation).
- The chatbot helps users ask natural-language questions like:
 - “How do I use UPI?”
 - “What is a good interest rate?”
 - “How can I avoid scams?”
- **Features:**
 - Multilingual Q&A (Tamil, Hindi, English)
 - Responses retrieved from trusted financial sources (RBI, NPCI)
 - Hosted on IBM Cloud Lite, using IBM Granite RAG for smart context retrieval
 - Real-time chatbot interface using Watson Assistant

SYSTEM APPROACH

System Requirements:

- IBM Cloud Lite account
- IBM Watson Assistant
- IBM Granite API for RAG
- Cloud Object Storage for document storage
- IBM Cloud Functions (backend logic)Language Translator API

Technologies Used:

- JSON for storing FAQs
- RAG for fetching context-aware answers
- Node.js/Python for serverless function deployment

ALGORITHM & DEPLOYMENT

- **Model Used: RAG (Retrieval-Augmented Generation)**
- **Data Input:**
 - User question (text in natural language)
 - Financial literacy documents (stored in Cloud Object Storage)
- **Processing:**
 - Input is analysed using Watson Assistant
 - If dynamic info is needed, a Cloud Function triggers IBM Granite (RAG)
 - RAG fetches relevant content from stored financial documents
 - If needed, uses Language Translator for response
- **Deployment:**
 - Chatbot integrated into web app
 - Hosted on IBM Cloud with front-end interface

RESULT

The screenshot displays the IBM Watsonx deployment page for a chatbot named 'Sous Chef'. The browser address bar shows the URL: `datapatform.cloud.ibm.com/ml-runtime/deployments/3a029e50-66b6-4e84-a2e0-8441603708e9/chat?space_id=ff8d2349-ce25-4d43-ab62-7...`. The page header includes the IBM Watsonx logo, an 'Upgrade' button, and user information for 'Yogeshwaran --'s Account' in the 'Dallas' region. The breadcrumb trail indicates the path: 'Deployment spaces / Agentic_AI_01 / Sous Chef /'. The chatbot's status is 'Sous Chef' with a green checkmark, 'Deployed', and 'Online'. Below the status, there are tabs for 'API reference', 'Test', and 'Preview', with 'Preview' being the active tab. The chat interface shows a user query at 01:53 PM: 'How i to find it is a fraud?'. The chatbot's response at 01:53 PM provides detailed advice on identifying loan fraud, including reporting to the Office of Inspector General Fraud Hotline, ReportFraud.ftc.gov, and the Federal Trade Commission (FTC). The chat input field at the bottom contains the placeholder text 'Type something...'. A 'New chat +' button is located in the top right corner of the chat area.

The deployed Watsonx Agent successfully responded to a user's query about saving money on a ₹20,000 salary and generating passive income. It provided practical budgeting advice using RAG-based AI on IBM Cloud, demonstrating the chatbot's ability to deliver real-time, personalized financial guidance in natural language.

RESULT

← → ↺

datapatform.cloud.ibm.com/ml-runtime/deployments/01583611-7781-41ef-b757-4a0a57f4774c/chat?space_id=566cf153-0072-4426-b126-23...

🔍 ☆ 🏠 Incognito

⋮

☰ IBM watsonx

Upgrade ? 🔔

Yogeshwaran --'s Account ▾

Dallas ▾

Y- ⋮

[Deployment spaces](#) / [Finacial_Agent](#) / [watsonx Agent](#) /

🗑️ ⓘ ⌵ ⌲ ⌲ ⌲ ⌲

watsonx Agent

✔️ Deployed Online

API reference

Test

Preview

New chat +

?

You 06:44 PM

Hi, give me a suggest to save money from my salary. my salary is 20000. and suggest me to make passive income.

🤖

watsonx Agent 06:44 PM

Based on the search engine results, here are some suggestions to save money from your salary of 20000 and make passive income:

1. Create a budget and track your expenses to understand where your money is going. You can use a budgeting app or spreadsheet to make it easier.

Type something...

➤

RESULT

← → ↻ dataplatform.cloud.ibm.com/ml-runtime/deployments/01583611-7781-41ef-b757-4a0a57f4774c/chat?space_id=566cf153-0072-4426-b126-23... Incognito

IBM watsonx Upgrade ? ⓘ Yogeshwaran --'s Account ▾ Dallas ▾ Y- ☰

Deployment spaces / Financial_Agent / watsonx Agent / ⓘ ⓘ ⓘ ⓘ ⓘ ⓘ

watsonx Agent ✔ Deployed Online

API reference Test **Preview**

New chat +

3. Consider investing in cash-flowing assets, such as real estate or dividend-paying stocks, to generate passive income.

4. Look into freelance work or starting a side business to increase your income and potentially create passive income streams.

5. Take advantage of tax-advantaged accounts, such as a Roth IRA or 401(k), to save for retirement and reduce your tax liability.

6. Consider using a savings goal calculator to create a personalized plan for saving money.

7. Look into passive income ideas, such as investing in index funds or creating and selling an online course, to boost your budget.

Remember to always do your own research and consult with a financial advisor before making any investment decisions.

Type something...

➤

← → ↻ dataplatform.cloud.ibm.com/ml-runtime/deployments/3a029e50-66b6-4e84-a2e0-8441603708e9/chat?space_id=ff8d2349-ce25-4d43-ab62-7... Incognito

IBM watsonx Upgrade ? ⓘ Yogeshwaran --'s Account ▾ Dallas ▾ Y- ☰

Deployment spaces / Agentic_AI_01 / Sous Chef / ⓘ ⓘ ⓘ ⓘ ⓘ ⓘ

Sous Chef ✔ Deployed Online

API reference Test **Preview**

New chat +

? You 01:53 PM

How i to find it is a fraud?

🧪 Sous Chef 01:53 PM

To identify loan fraud, you can report fraudulent activity by a college or career school to the Office of Inspector General Fraud Hotline, or report fraud, scams, and bad business practices to ReportFraud.ftc.gov. You can also check for identity theft by contacting the Federal Trade Commission (FTC) or the three major credit reporting agencies, and place fraud alerts on your credit reports. Additionally, you can stay alert to mortgage fraud by being cautious of suspicious activity, such as identity theft, and checking your credit report regularly. It's also important to recognize tax scams and fraud, and to be aware of common scams and frauds, such as phishing and fake loan offers.

Type something...

➤

edunet
foundation

CONCLUSION

- The AI Financial Literacy Agent was successfully built and deployed using IBM Cloud and Watson services. It addresses the need for accessible financial education by providing multilingual, personalized assistance to users. The system demonstrated RAG-based intelligence, enhanced accessibility for rural users, and potential scalability for government or NGO-led financial inclusion programs.

FUTURE SCOPE

- **Integrate voice-based chatbot for low-literacy users**
- **Add more languages like Bengali, Marathi**
- **Connect with real-time data (bank interest rates, RBI updates)**
- **Deploy via WhatsApp, Telegram, SMS bots**
- **Partner with government schemes like PM Jan Dhan Yojana to deliver financial training**
- **Scam Detection Module: Alerts about common frauds**
- **Real-Time API Connectivity: Dynamic bank interest rates**

REFERENCES

- <https://cloud.ibm.com>
- <https://rbi.org.in>
- <https://npci.org.in>
- IBM Granite & Watson Docs
- Government financial education portals
- NPCI UPI user guide

IBM CERTIFICATIONS

In recognition of the commitment to achieve
professional excellence



Yogeshwaran R

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



Issued on: Jul 16, 2025
Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/e9c28f7b-f38b-4ee9-84e7-8c6a182d53ac>



IBM CERTIFICATIONS

In recognition of the commitment to achieve
professional excellence



Yogeshwaran R

Has successfully satisfied the requirements for:

Journey to Cloud: Envisioning Your Solution



Issued on: Jul 17, 2025
Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/4091d958-9abe-475d-8c63-238a66f3d3c1>



IBM CERTIFICATIONS

IBM **SkillsBuild**

Completion Certificate



This certificate is presented to

Yogeshwaran R

for the completion of

**Lab: Retrieval Augmented Generation with
LangChain**

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 25 Jul 2025 (GMT)

Learning hours: 20 mins



THANK YOU