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# CAPSTONE PROJECT

## AI AGENT FOR DIGITAL FINANCIAL LITERACY

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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

- Millions of people, especially in rural or underserved areas, struggle with understanding digital financial tools such as UPI, budgeting, interest rates, and online safety. Despite the availability of resources, lack of guidance, language barriers, and risk of online scams limit adoption and safe use of digital finance platforms. There's a need for an accessible, multilingual solution that promotes trustworthy digital financial literacy.

# PROPOSED SOLUTION

The proposed AI Agent leverages **Retrieval-Augmented Generation (RAG)** to provide personalized, real-time answers to user queries regarding financial literacy. Key features include:

- Fetching reliable content from government and banking websites
- Supporting multilingual interactions for inclusivity
- Educating users on UPI, loan interest rates, budgeting, scams, and more
- Enabling conversations like: “How do I send money via UPI?” or “What is a safe interest rate for a loan?”
- Ensuring privacy, trust, and cultural understanding

# SYSTEM APPROACH

## Technologies Used:

- IBM Cloud Lite Services
- IBM Granite (LLM)
- Python, LangChain, Flask/FastAPI (for backend API)
- IBM Watson/NLU APIs for language support
- MongoDB (to store user queries & sessions)
- Hugging Face Models (for RAG if external fallback needed)
- Docker (for deployment)

## System Requirements:

- Python 3.10+
- IBM Cloud account
- LangChain
- RAG setup with IBM Granite or HuggingFace
- MongoDB / IBM Cloudant for data storage

## Libraries Used:

- langchain
- pymongo
- transformers
- flask / fastapi
- ibm-watson
- nltk / spacy

# ALGORITHM & DEPLOYMENT

## Algorithm:

- **Retrieval-Augmented Generation (RAG):** Combines document retrieval and generative LLM response
- Query → Document Retriever → IBM Granite → Answer Generation

## Deployment:

- IBM Cloud Container Registry
- Dockerized backend
- Exposed via API endpoint

# RESULT

The image displays two screenshots of the IBM watsonx Agent interface, showing a chat conversation between a user and the AI agent.

**Top Screenshot:**

- Header:** IBM watsonx, Upgrade, Maulik Thakur's Account, Dallas, 10:48 PM.
- Breadcrumbs:** Deployment spaces / AI Agent Deployment / watsonx Agent /
- Agent Status:** watsonx Agent, Deployed, Online.
- Navigation:** API reference, Test, Preview (selected), New chat +.
- Chat History:**
  - You 10:48 PM:** Hey
  - watsonx Agent 10:48 PM:** Hello! I'm your AI Financial Literacy Assistant. I can help you understand digital finance, avoid scams, and make smart money decisions. Ask me anything about UPI, budgeting, loans, or saving safely -- in your preferred language!
  - You 10:49 PM:** I had 5,00,000 rupees and I want you invest for 5 years with high return and less risk
  - watsonx Agent 10:49 PM:** Given your preference for a high return with low risk over a 5-year period, you might want to consider these options:
    - 1. Public Provident Fund (PPF):** This is a long-term savings scheme provided by the Government of India. It offers a return of around 7.1% per annum with tax benefits under Section 80C of the Income Tax Act. The minimum investment amount is ₹500, and the maximum is ₹1,50,000 per financial year.
    - 2. National Pension System (NPS):** This is a pension scheme that also offers investment opportunities. The returns depend on the funds you choose, but they generally offer a balance between risk and return. The minimum investment is ₹500.
- Input:** Type something...

**Bottom Screenshot:**

- Header:** IBM watsonx, Upgrade, Maulik Thakur's Account, Dallas, 10:48 PM.
- Breadcrumbs:** Deployment spaces / AI Agent Deployment / watsonx Agent /
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  - 3. Index Funds:** These are a type of mutual fund that aims to track the performance of a specific market index. They generally have lower expense ratios compared to actively managed funds. The returns can vary, but historically, the stock market has given an average return of around 10-11% per annum.
  - 4. Fixed Deposits (FDs):** Many banks offer FDs with high returns for long-term deposits. However, the returns might not beat inflation significantly, and the risk is relatively low.
  - 5. Small Savings Schemes by Post Office:** These include schemes like the National Savings Certificate (NSC), Post Office Monthly Income Scheme (POMIS), and Sukanya Samridhi Yojana (SSY). The returns vary, but they are generally safe and offer tax benefits.
- Disclaimer:** Remember, all investments come with some level of risk, and past performance does not guarantee future results. It's crucial to diversify your investments and consider seeking advice from a certified financial planner to align your investment strategy with your financial goals and risk tolerance.
- Input:** Type something...

**Footer:** dataplatform.cloud.ibm.com/ml-runtime/deployments/\_/chat?space\_id=4090121-0b19-4e6-

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# CONCLUSION

- The AI-powered Financial Literacy Agent enhances digital empowerment by:
- Making financial knowledge accessible and interactive
- Reducing risk of fraud
- Encouraging responsible financial behavior
- Bridging the language and education gap in digital finance
- The system ensures inclusivity, trust, and relevance by retrieving authentic content from trusted sources.



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# FUTURE SCOPE

- Integration with voice assistants for speech-based queries
- Real-time fraud alert warnings
- Personalized learning modules based on user queries
- Expansion to cover topics like insurance, taxation, and retirement planning
- Deploying as a WhatsApp or Telegram bot for accessibility

# REFERENCES

- RBI & NPCI official websites
- Ministry of Finance (India) digital literacy materials
- IBM Cloud Documentation
- LangChain Documentation
- UPI Help Portals
- Cybercrime.gov.in (for scam awareness)
- Hugging Face – RAG Architecture

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# IBM CERTIFICATIONS

Screenshot/ credly certificate( getting started with AI)



# IBM CERTIFICATIONS


Screenshot/ credly certificate( Journey to Cloud)



# IBM CERTIFICATIONS

Screenshot/ credly certificate( RAG Lab)

**IBM SkillsBuild**Completion Certificate



This certificate is presented to

**Maulik Thakur**

for the completion of

**Lab: Retrieval Augmented Generation with LangChain**

(ALM-COURSE\_3824998)

According to the Adobe Learning Manager system of record

**Completion date:** 26 Jul 2025 (GMT)**Learning hours:** 20 mins



**THANK YOU**