AI AGENT FOR DIGITAL FINANCIAL LITERACY USING RAG ON IBM CLOUD

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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**
- **IBM Certifications**

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.

PROPOSED SOLUTION

- By leveraging Retrieval-Augmented Generation (RAG), the system helps users access accurate and trustworthy information on financial topics such as UPI usage, online scams, interest rates, budgeting, and personal finance—all in their preferred language.
- Data Collection:
- Curate content from trusted sources like RBI, NPCI, banking portals, government financial schemes, and verified educational platforms.
- Convert collected content into knowledge chunks (e.g., paragraphs, FAQs) suitable for vector embedding and retrieval.
- Data Preprocessing:
- Clean and normalize text (remove HTML tags, special characters).
- Translate key content into multiple languages (e.g., Hindi, Telugu) for multilingual access.
- Use embedding models to convert text into vector format for similarity search.
- Retrieval-Augmented Generation (RAG) Pipeline:
- Retrieval: A user query triggers a vector search over the knowledge base to fetch relevant documents.
- Generation: Retrieved documents are passed to a language model (e.g., IBM Granite) to generate accurate and context-aware answers.
- Deployment:
- Use IBM Watson Discovery or Vector Database for semantic retrieval.
- Use IBM Granite LLM to process retrieved information and generate user-friendly responses.
- Evaluation:
- Evaluate using accuracy, response relevancy, and user satisfaction metrics.
- Collect user feedback to improve responses and expand the knowledge base.
- Result:

SYSTEM APPROACH

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

- System requirements
- Library required to build the model

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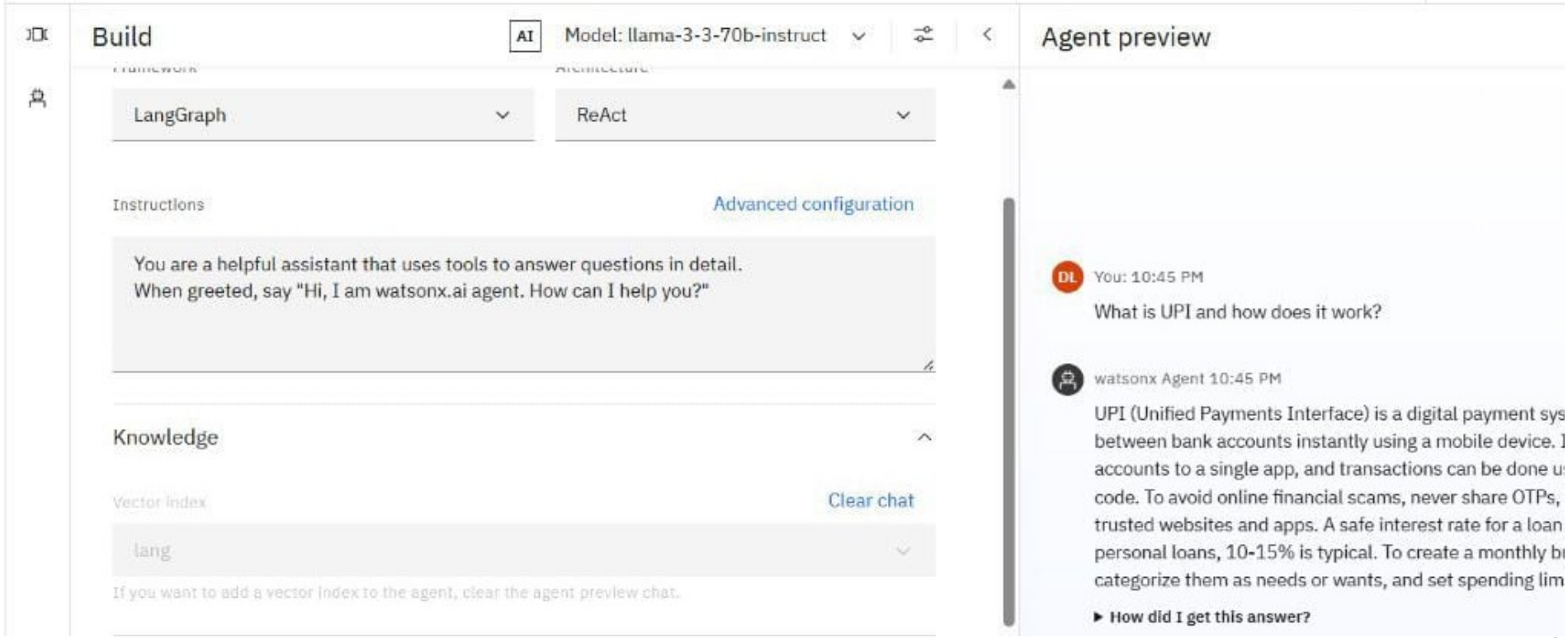
ALGORITHM & DEPLOYMENT

- In the Algorithm section, describe the machine learning algorithm chosen for predicting bike counts. Here's an example structure for this section:
- **Algorithm Selection:**
  - We use Retrieval-Augmented Generation (RAG) with IBM Granite. RAG combines a retriever (for finding relevant documents) and a generator (to answer user queries). It's ideal for financial education because it gives accurate, source-backed responses.
- **Data Input:**
  - User questions in any language (e.g., "What is UPI?")
  - Curated documents from banking portals, RBI, government sites
  - Text is chunked and embedded into a vector store for search
  - Multilingual queries supported via translation/embeddings
- **Training Process:**
  - Pretrained embedding model used to index documents
  - IBM Granite used without additional fine-tuning
- **Prediction Process:**
  - User submits question → Relevant documents are retrieved
  - Retrieved data + query sent to Granite for generating the answer

RESULT

The AI Agent powered by Retrieval-Augmented Generation (RAG) and IBM Granite was evaluated for its effectiveness in accurately answering user queries related to digital financial literacy, such as UPI usage, budgeting, interest rates, and scam prevention.



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CONCLUSION

- The AI Agent demonstrates a promising approach to bridging the digital financial literacy gap through Retrieval-Augmented Generation. By offering accurate, accessible, and multilingual financial guidance, it empowers users to make informed decisions, avoid scams, and engage confidently with digital finance platforms. The solution contributes meaningfully to financial inclusion and can be further improved with expanded datasets and deeper language integration.

FUTURE SCOPE

- **Voice-based Interaction:** Adding speech recognition and response for accessibility to illiterate or visually impaired users.
- **Offline Functionality:** Enabling limited features without internet for rural areas.
- **Expanded Language Support:** Including more regional languages and dialects for wider reach.
- **Personalized Financial Advice:** Integrating user data (securely) to offer tailored suggestions.
- **Integration with Financial Services:** Linking with banks, UPI apps, and government portals for real-time assistance and transactions.
- These improvements can help scale the solution nationally and support India's vision of digital and financial empowerment.

REFERENCES

- National Payments Corporation of India (NPCI). “Unified Payments Interface (UPI)” – https://www.npci.org.in
- Reserve Bank of India (RBI). “Financial Literacy Initiatives” – https://www.rbi.org.in
- Government of India. “Digital India Programme” – https://www.digitalindia.gov.in and other sources.

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IBM **SkillsBuild** Completion Certificate

This certificate is presented to

Dhana pavitra Lingamsetti

for the completion of

Lab: Retrieval Augmented Generation with LangChain

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 23 Jul 2025 (GMT)

Learning hours: 20 mins

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