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# CAPSTONE PROJECT

## AI AGENT FOR DIGITAL FINANCIAL LITERACY

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# OUTLINE

- Problem Statement
- Technology used
- Wow factor
- End users
- Result
- Conclusion
- Git-hub Link
- Future scope
- IBM Certifications

# PROBLEM STATEMENT

- An AI Agent for Digital Financial Literacy, powered by Retrieval-Augmented Generation (RAG), helps users understand and navigate essential financial tools and practices. It retrieves reliable content on topics such as using UPI, avoiding online scams, understanding interest rates, budgeting, and personal finance management from trusted sources like government portals, banking websites, and educational platforms.
- With multilingual support, users from diverse backgrounds can interact in their preferred languages and ask questions like “How do I send money via UPI?” or “What is a safe interest rate for a loan?” The agent ensures that financial literacy is accessible, personalized, and culturally inclusive.
- This AI-powered assistant empowers individuals with knowledge, safeguards them against fraud, and boosts their confidence in managing digital financial services.

# PROPOSED SOLUTION

- The Challenge –

An AI Agent for Predictive Bike Rental Demand Management leverages data analytics and machine learning to ensure an optimal supply of rental bikes across stations throughout the day. Urban mobility services often struggle to maintain the right number of bikes at each location, especially during peak hours, adverse weather conditions, or special events. This leads to user dissatisfaction and inefficient fleet utilization.

To address this, the proposed AI solution forecasts hourly bike demand by analyzing historical rental data, weather patterns, holidays, and local events. The system empowers stakeholders—such as city planners, rental companies, and commuters—by offering real-time, location-specific predictions of bike availability.

- Key Features:

1. **Data-Driven Forecasting:** Uses historical rental records, weather data, time and date, and contextual information (e.g., holidays, events).
2. **Advanced Time-Series Modeling:** Integrates ML models like ARIMA, SARIMA, or LSTM for accurate hourly predictions.
3. **User-Friendly Interface:** Delivers intuitive dashboards for real-time demand insights.
4. **Operational Efficiency:** Helps reduce bike shortages or surpluses by guiding rebalancing strategies.

**Evaluation & Feedback:** Continuously measures model performance using MAE/RMSE and refines based on real-time data feedback.

- Impact:

This AI agent will revolutionize the way urban bike-sharing systems are managed, reducing operational costs, improving user experience, and contributing to a more sustainable, smart city transport infrastructure.

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# TECHNOLOGY USED

- IBM cloud lite services
- Natural Language Processing (NLP)
- Retrieval Augmented Generation (RAG)
- IBM Granite model
- HTML & CSS: Designed a responsive user interface for the chatbot

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## IBM CLOUD SERVICES USED

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

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## WOW FACTORS

Wow Factor – AI Agent for Research Intelligence This AI Agent goes beyond basic search—it's like having a personal research assistant with domain expertise. By combining semantic search, auto-summarization, and trend analysis, it empowers users to uncover insights in minutes that would normally take days. Its ability to recommend papers, map collaborations, and trace citation impact makes it an intelligent research guide, not just a tool. With features like co-author suggestions and topic-based recommendations, it fosters interdisciplinary innovation, helping early-stage researchers and professionals make faster, smarter, and more connected discoveries.


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## END USERS


- Academic Researchers
- Research Institutions and Universities
- Industry R&D Teams
- Educators





# RESULTS







 IBM watsonx

Upgrade ? 

Sahil Darji's Account 

Dallas 


SD 

[Deployment spaces](#) / [Digital-Finance-AI-Agent](#) / [Digital-Finance-Agent](#) /      


## Digital-Finance-Agent Deployed Online

API reference Test **Preview**

New chat +

 You 02:28 PM

What is an EMI and how is it calculated?

 Digital-Finance-Agent 02:28 PM

An EMI, or Equated Monthly Installment, is a tool used to pay off loans or mortgages over time in equal monthly payments. It consists of both the interest on the amount borrowed and a portion of the principal.


The EMI is calculated using the following formula:

$$[EMI = \frac{P \times R \times (1+R)^N}{(1+R)^N - 1}]$$

Where:

- P is the principal loan amount (the initial amount of money borrowed).
- R is the monthly interest rate (annual rate divided by 12).
- N is the total number of monthly payments (loan term in years multiplied by 12).

To get a more precise calculation, you would need to input your specific loan details into an EMI calculator. Would you like me to find one for you?

Type something... 

# RESULTS

Digital-Finance-Agent ✓ Deployed Online

API reference

Test

Preview

New chat +

To get a more precise calculation, you would need to input your specific loan details into an EMI calculator. Would you like me to find one for you?



You 02:29 PM

What are the benefits of using a digital wallet?



Digital-Finance-Agent 02:29 PM


Digital wallets like UPI, PayPal, or Apple Pay offer several benefits:

1. **Convenience:** Digital wallets allow you to make payments without needing physical cash or cards. You can store multiple payment methods in one place and use them for online and in-store purchases.
2. **Speed:** Transactions are typically faster than traditional payment methods, as they don't require physical handling or processing time.
3. **Security:** Digital wallets often use encryption and tokenization to protect your financial information. They also usually have additional security features like biometric authentication (fingerprint or face ID).

Type something...



# RESULTS I ADDED A CHATBOT...



## AI Financial Literacy Assistant


Powered by IBM Watsonx

This intelligent assistant helps users explore topics like UPI, banking frauds, digital payments, savings, and more. Backed by trusted sources such as RBI, SEBI, and NPCI, it's a smart way to get real-time financial guidance in simple language.

💡 Use the chatbot on the right to begin — ask anything about finance and get instant help!

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Digital Finance Assistant



Hi! I'm a virtual assistant.  
How can I help you today?

What is UPI?

How to use UPI?

Online Scam Safety

Return to assistant →

Type something... ➤

Built with IBM watsonx ⓘ

# RESULTS



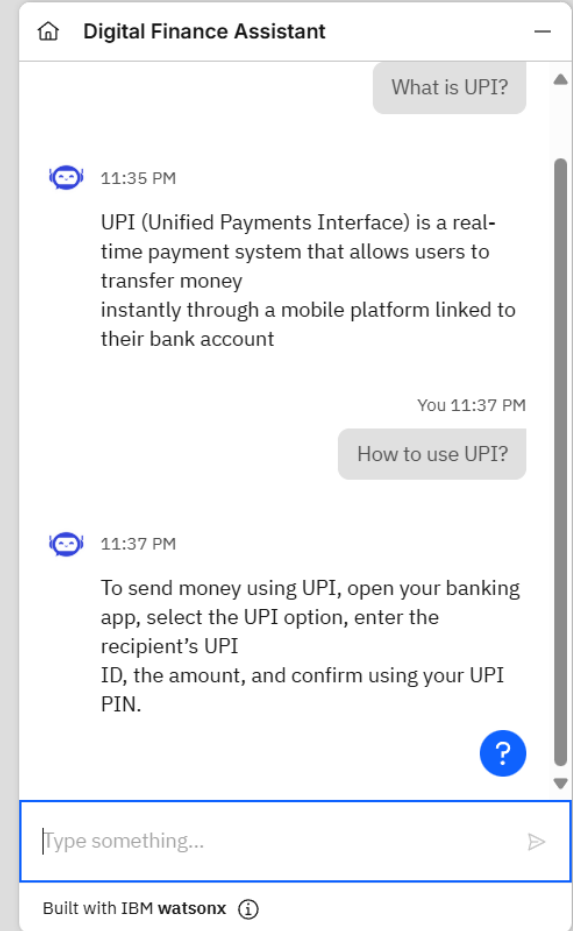
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## CONCLUSION

- The AI Agent for Research Assistance revolutionizes how researchers interact with academic content by offering intelligent, real-time support. By integrating semantic search, auto-summarization, citation analysis, and collaboration mapping, the system not only streamlines literature reviews but also promotes deeper insights and interdisciplinary discovery.
- This solution has the potential to transform research workflows, making knowledge more accessible, efficient, and impactful for both new and experienced researchers.

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# FUTURE SCOPE

- Multilingual Support
- Voice Interaction
- Domain-Specific Agents
- Real-time Data Integration
- Personalized Research Dashboards

- **IBM CERTIFICATIONS**  
**GETTING STARTED WITH AI**



- **IBM CERTIFICATIONS:**


**RAG**

8/5/25, 11:33 PM

Completion Certificate | SkillsBuild

IBM SkillsBuild

Completion Certificate



This certificate is presented to

Sahil Darji

for the completion of

**Lab: Retrieval Augmented Generation with LangChain**

(ALM-COURSE\_3824998)

According to the Adobe Learning Manager system of record

Completion date: 16 Jul 2025 (GMT)

Learning hours: 20 mins

[https://skills.yourlearning.ibm.com/certificate/ALM-COURSE\\_3824998](https://skills.yourlearning.ibm.com/certificate/ALM-COURSE_3824998)

1/1



# IBM CERTIFICATIONS:

## JOURNEY TO CLOUD

In recognition of the commitment to achieve  
professional excellence



# Sahil Darji

Has successfully satisfied the requirements for:

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## Journey to Cloud: Envisioning Your Solution

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Issued on: Jul 20, 2025

Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/e86677a7-3955-4c2d-931d-dabb5775bdf6>



Git hub link : [Digital-Finance-Assistant Github](#)

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## GITHUB LINK

- [Readme File for Digital-Finance-Assistant](#)



**THANK YOU**