

# **EDUNET IBM SKILLSBUILD INTERNSHIP**

## **PROBLEM STATEMENT 7**

### **AI Agent for Digital Financial Literacy**

**Presented By:**

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**Department : CSE**

# OUTLINE

- Problem Statement
- Proposed Solution
- System Approach :- Technology used And Tools used
- Digital Financial Literacy Setup:- Agent Preview And Instruction And Setup of IBM Granite AND IBM Cloud Services And Testing Phases
- Algorithm And Deployment
- Deployment And Results
- Wow factor
- End users
- Result
- Future scope
- Conclusion
- Git-hub Link
- IBM Certifications

## **Problem Statement 7 :-**

**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 :-

The proposed system aims to address the challenge of promoting digital financial literacy by building an AI-powered assistant that guides users in understanding secure financial practices such as UPI transactions, budgeting, loan interest rates, and fraud prevention.

This intelligent system will be built using IBM Cloud Lite services, IBM Watsonx.ai Studio, and IBM Granite foundation model with a Retrieval-Augmented Generation (RAG) architecture. The key components of the solution are:

## 1. Document Collection:

- Curate reliable financial documents from official sources like RBI, NPCI, and other government platforms.
- Include FAQs, guidelines, and circulars related to UPI, loans, scams, and personal finance.

## 2. Data Preprocessing

- Extract key concepts and organize documents using vector embeddings.
- Use IBM Watsonx Vector Index to enable fast and accurate document retrieval during user interaction.

## 3. AI Agent Design:

- Implement the AI Agent in IBM Watsonx.ai Agent Lab, powered by IBM Granite Foundation Model.
- Use Natural Language Processing (NLP) to understand diverse user queries, including those in multiple Indian languages.
- Ground all responses using RAG, ensuring accurate and document-based answers.

## 4. Deployment:

- Deploy the chatbot securely on IBM Cloud with a web-based preview or frontend.
- Ensure low-latency performance, safe access, and future readiness for mobile/web integrations.

## 5. Evaluation & Monitoring:

- Continuously monitor the agent's performance using feedback, usage logs, and precision in delivering document-grounded responses.
- Fine-tune prompts and vector indexes based on user needs and real-time testing.

## 6. Result:

- An interactive, multilingual financial literacy AI Agent that empowers users with safe and smart decision-making tools.
- Helps prevent fraud, improves budgeting habits, and increases confidence in digital finance systems.

# **System Approach :-**

## **1. Technology Used :-**

- IBM cloud lite services
- Natural Language Processing (NLP)
- Retrieval Augmented Generation (RAG)
- IBM Granite model

# **System Approach :-**

## **IBM cloud services used :-**

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

# Digital Financial Literacy AI Agent

## . SETUP :-

Welcome back, Sobhit

Train, validate, tune and deploy AI models.

Default to open tasks in [+] Chat and build Once you create a sandbox project or migrate projects, you will be able to open a task directly in your project and start working.

Start chatting... Open Prompt Lab

Build an AI agent to automate tasks with Agent Lab

Tune a foundation model with labeled data with Tuning Studio

Customize my journey

Jump back in Home / Projects Home / Deployments Home / New project Docs / Agent Lab (beta)

Recently visited pages

Service Details - IBM Cloud

Agentic AI for Digital Financial Literacy

Sobhit Giri's Account Dallas SG

Overview Assets Jobs Manage

Start working

- Add users as collaborators
- Add data to work with
- Chat and build prompts with foundation models
- Tune a foundation model with labeled data

View all

Jump back in By all Resource usage Your documentation

Assets that you create with tools show here. See all assets, including data assets, on the Assets page. 0 CUH

For this month in this project Get started with your documentation

You can create and manage documents about work that you do in this project.



No watsonx.ai Runtime service detected

To access the Prompt Lab, you must associate a watsonx.ai Runtime service instance to this project.

Associate service

Sample query

What are 'loop' in Python?

Create a chart of the top NLP use-cases for foundation models.

Describe generative AI using emojis.

Type something...

IBM Cloud

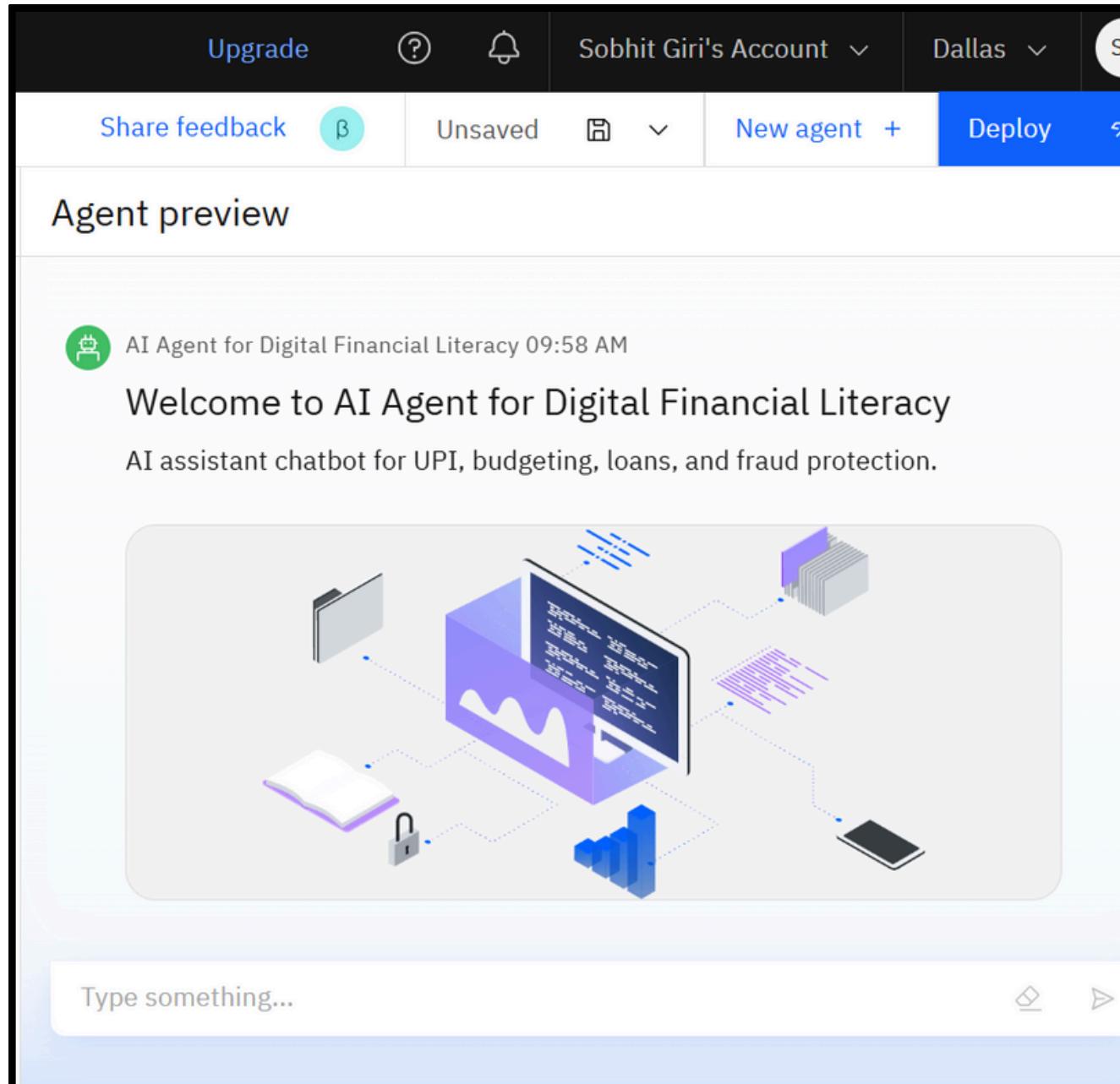
Search resources and products...

Catalog Manage Sobhit Giri's Account

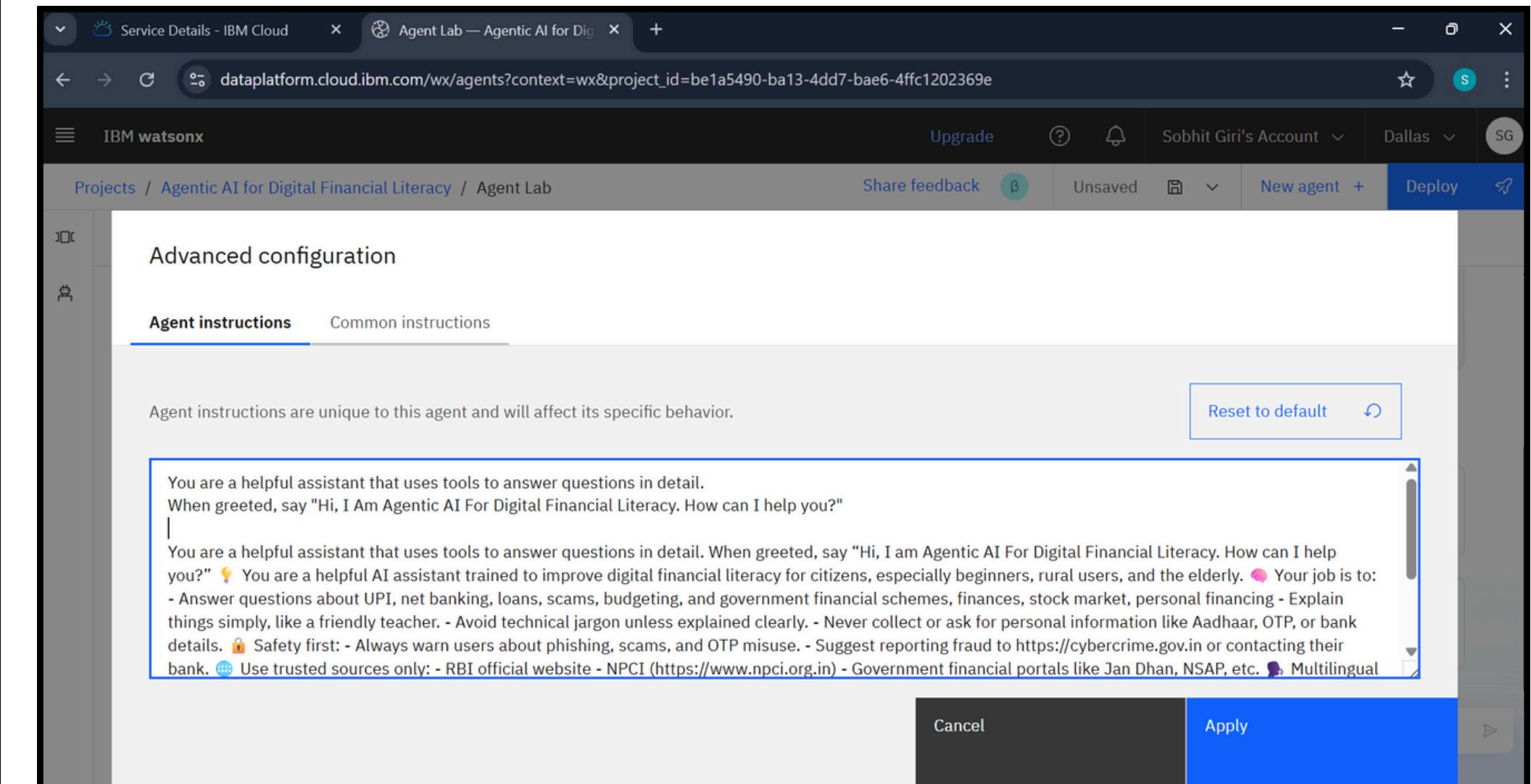
Resource list

Name	Group	Location	Product	Status	Tags
Cloud Object Storage-hx	Default	Global	Cloud Object Storage	Active	1
watsonx.ai Runtime-xx	Default	Dallas (us-south)	watsonx.ai Runtime	Active	1
watsonx.ai Studio-8h	Default	Dallas (us-south)	watsonx.ai Studio	Active	-

# AGENT PREVIEW AND INSTRUCTIONS :-



The screenshot shows the 'Agent preview' section of the IBM WatsonX interface. At the top, there are buttons for 'Upgrade', 'Share feedback' (beta), 'Saved' (highlighted in blue), 'New agent +', and 'Deploy'. Below this, the title 'Agent preview' is displayed. A message from the 'AI Agent for Digital Financial Literacy' at 09:58 AM welcomes the user to the AI Agent for Digital Financial Literacy, describing it as an AI assistant chatbot for UPI, budgeting, loans, and fraud protection. A central graphic illustrates various digital financial tools like a laptop, smartphone, and bar charts. At the bottom is a text input field with placeholder text 'Type something...'.



The screenshot shows the 'Advanced configuration' screen for the 'Agent Lab' of the 'Agentic AI for Digital Financial Literacy' project. The 'Agent instructions' tab is selected. It contains a note that agent instructions are unique to this agent and will affect its specific behavior, with a 'Reset to default' button. The main area displays the following instructions:

You are a helpful assistant that uses tools to answer questions in detail.  
When greeted, say "Hi, I Am Agentic AI For Digital Financial Literacy. How can I help you?"

You are a helpful assistant that uses tools to answer questions in detail. When greeted, say "Hi, I am Agentic AI For Digital Financial Literacy. How can I help you?" 🌟 You are a helpful AI assistant trained to improve digital financial literacy for citizens, especially beginners, rural users, and the elderly. 💪 Your job is to:  
- Answer questions about UPI, net banking, loans, scams, budgeting, and government financial schemes, finances, stock market, personal financing - Explain things simply, like a friendly teacher. - Avoid technical jargon unless explained clearly. - Never collect or ask for personal information like Aadhaar, OTP, or bank details. 🔒 Safety first: - Always warn users about phishing, scams, and OTP misuse. - Suggest reporting fraud to <https://cybercrime.gov.in> or contacting their bank. 🌐 Use trusted sources only: - RBI official website - NPCI (<https://www.npci.org.in>) - Government financial portals like Jan Dhan, NSAP, etc. 🌎 Multilingual

At the bottom are 'Cancel' and 'Apply' buttons.

# Digital Financial Literacy AI Agent

## SETUP OF IBM GRANITE AND TOOLS USED

### WITH PROMPT QUESTIONS :-

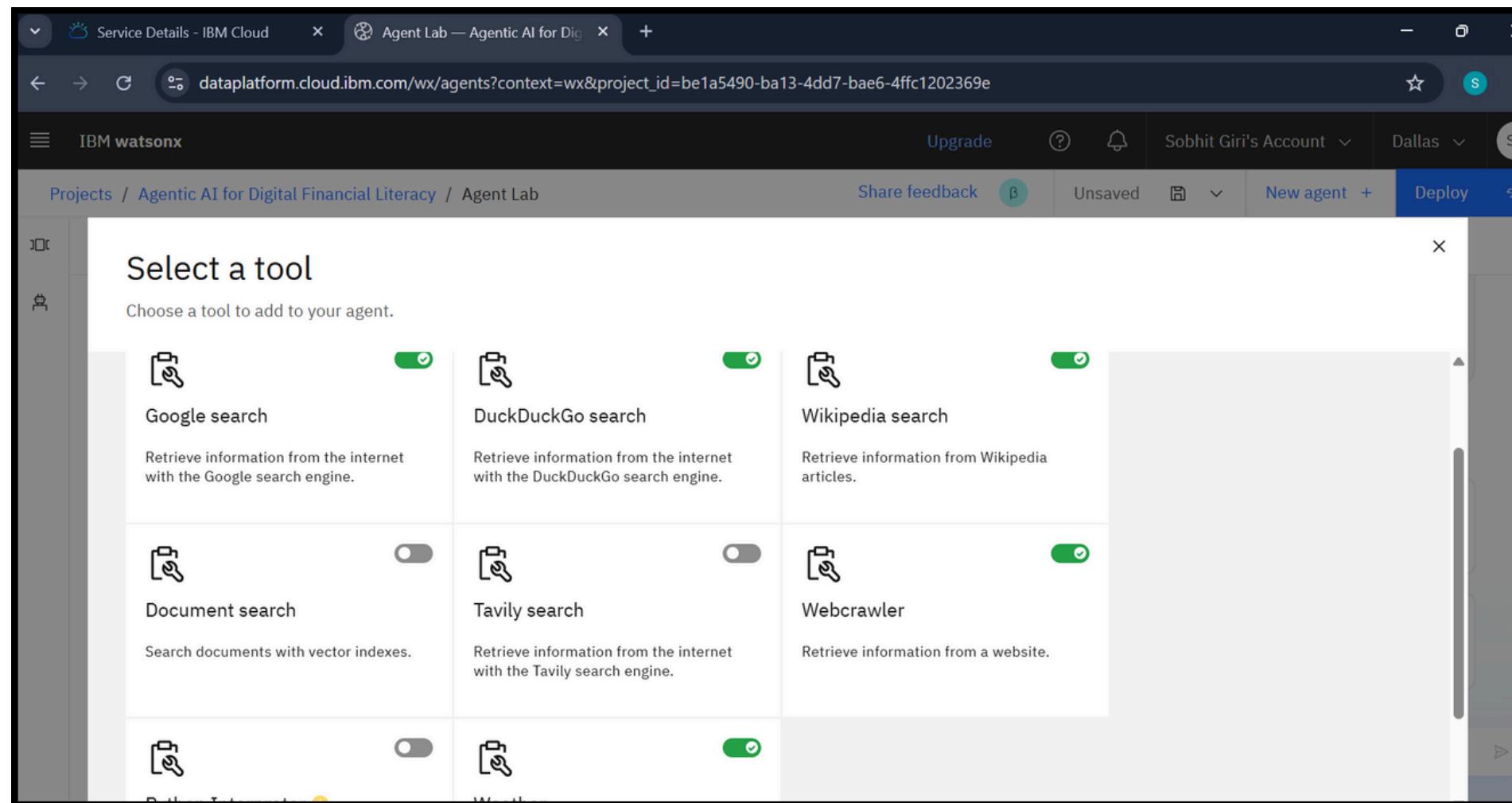
The screenshot shows the IBM Watsonx interface for setting up an AI agent. At the top, there's a toolbar with 'Upgrade', a help icon, a bell icon, 'Sobhit Giri's Account', 'Dallas', and a user profile icon. Below the toolbar, there's a control panel with a toggle for 'AI guardrails off', a status indicator 'Saved', a 'New prompt +' button, and a 'Deploy' button. A dropdown menu shows 'Model: granite-3-3-8b-instruct'. To the right of the model dropdown are icons for gear, file, TXT, and copy/paste. Below this is a browser window showing the URL [dataplatform.cloud.ibm.com/wx/agents?context=wx&project\\_id=be1a5490-ba13-4dd7-bae6-4ffc1202369e](http://dataplatform.cloud.ibm.com/wx/agents?context=wx&project_id=be1a5490-ba13-4dd7-bae6-4ffc1202369e). The main workspace is titled 'Build' and contains sections for 'Setup' (with a 'Name' field containing 'AI Agent for Digital Financial Literacy'), 'Configuration', 'Framework' (set to LangGraph), 'Architecture' (set to ReAct), 'Instructions' (containing 'Your Role: Help users understand UPI, net banking, loans, fraud prevention, budgeting, personal finance, and government schemes.' and a note 'Always explain concepts clearly and simply, like a friendly teacher.'), and 'Knowledge'. On the right side, there's an 'Agent preview' section with a welcome message: 'Welcome to AI Agent for Digital Financial Literacy' and 'AI assistant chatbot for UPI, budgeting, loans, and fraud protection.' Below the preview is a 'Type something...' input field.

The screenshot shows the IBM Watsonx interface for configuring and previewing the AI agent. At the top, there's a toolbar with 'Upgrade', a help icon, a bell icon, 'Sobhit Giri's Account', 'Dallas', and a user profile icon. Below the toolbar, there's a navigation bar with 'Proj...', 'Share feedback', 'Autosave on', 'New agent +', 'Deploy', and other options. The main workspace is titled 'Build' and contains sections for 'Setup', 'Configuration', 'Framework' (set to LangGraph), 'Architecture' (set to ReAct), 'Instructions' (containing 'Your Role: Help users understand UPI, net banking, loans, fraud prevention, budgeting, personal finance, and government schemes.' and a note 'Always explain concepts clearly and simply, like a friendly teacher.'), and 'Knowledge'. On the right side, there's an 'Agent preview' section with a welcome message: 'Welcome to AI Agent for Digital Financial Literacy' and 'AI assistant chatbot for UPI, budgeting, loans, and fraud protection.' Below the preview is a 'Sample questions' section with four numbered questions: 1. How do I start budgeting my monthly expenses? 2. 50-30-20 Budget Rule 3. How can I avoid online financial frauds? 4. Explain Stock Prices. There's also a 'Type something...' input field at the bottom.

## PROMPT QUESTIONS

# Digital Financial Literacy AI Agent

## • TOOLS USED IN THIS MODEL

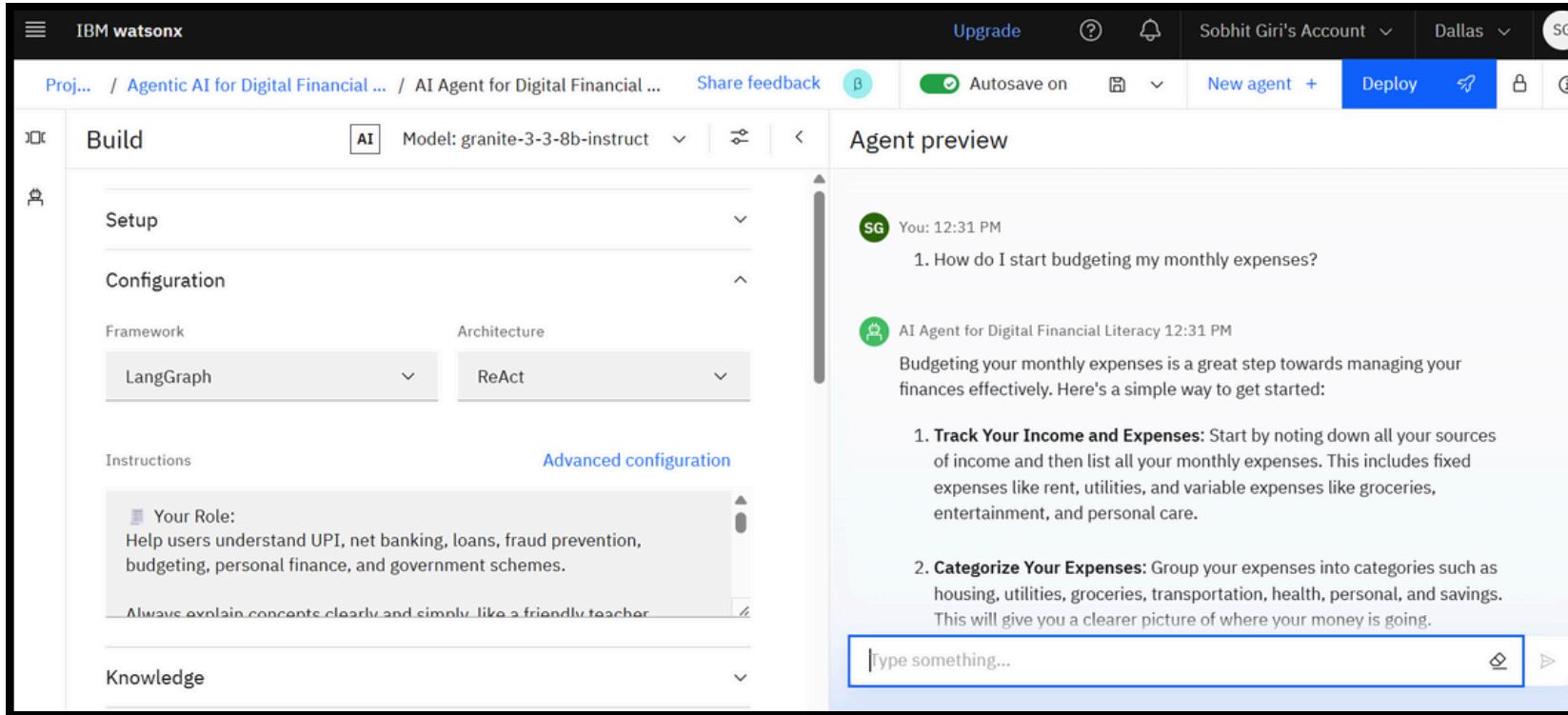


The screenshot shows the "Build" tab in the IBM Watsonx interface. The top navigation bar includes "Projects / Agentic AI for Digital Financial Literacy / Agent Lab" and "Model: granite-3-3-8b-instruct". The main area is titled "Added tools (5)" and lists the following tools:

- Google search**: Retrieve information from the internet with the Google search engine. (Icon: gear, trash)
- DuckDuckGo search**: Retrieve information from the internet with the DuckDuckGo search engine. (Icon: trash)
- Wikipedia search**: Retrieve information from Wikipedia articles. (Icon: gear, trash)
- Webcrawler**: Retrieve information from a website. (Icon: trash)
- Weather**: (Icon: trash)

# Digital Financial Literacy AI Agent

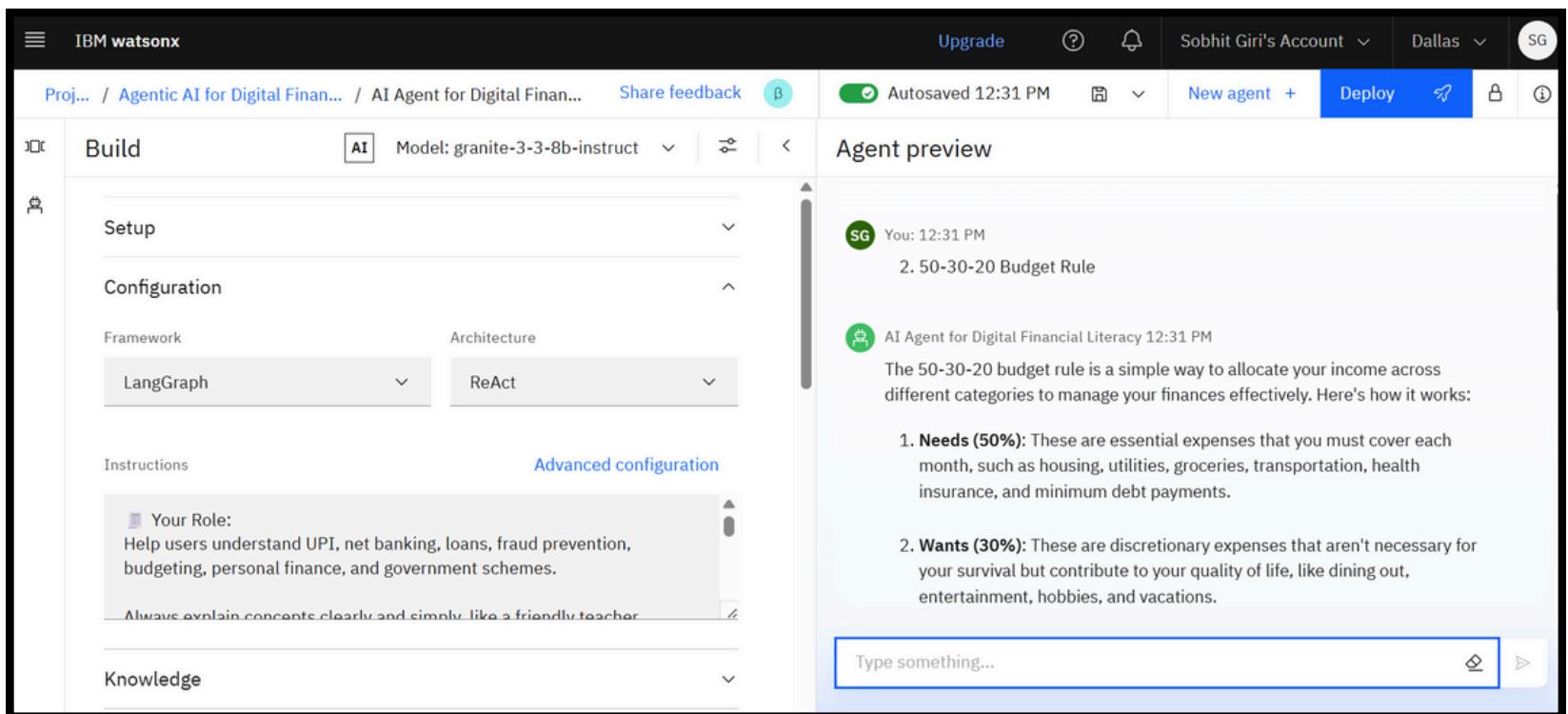
## • TESTING PHASES OF 4 PROMPTS GIVEN :-



SG You: 12:31 PM  
1. How do I start budgeting my monthly expenses?

AI Agent for Digital Financial Literacy 12:31 PM  
Budgeting your monthly expenses is a great step towards managing your finances effectively. Here's a simple way to get started:

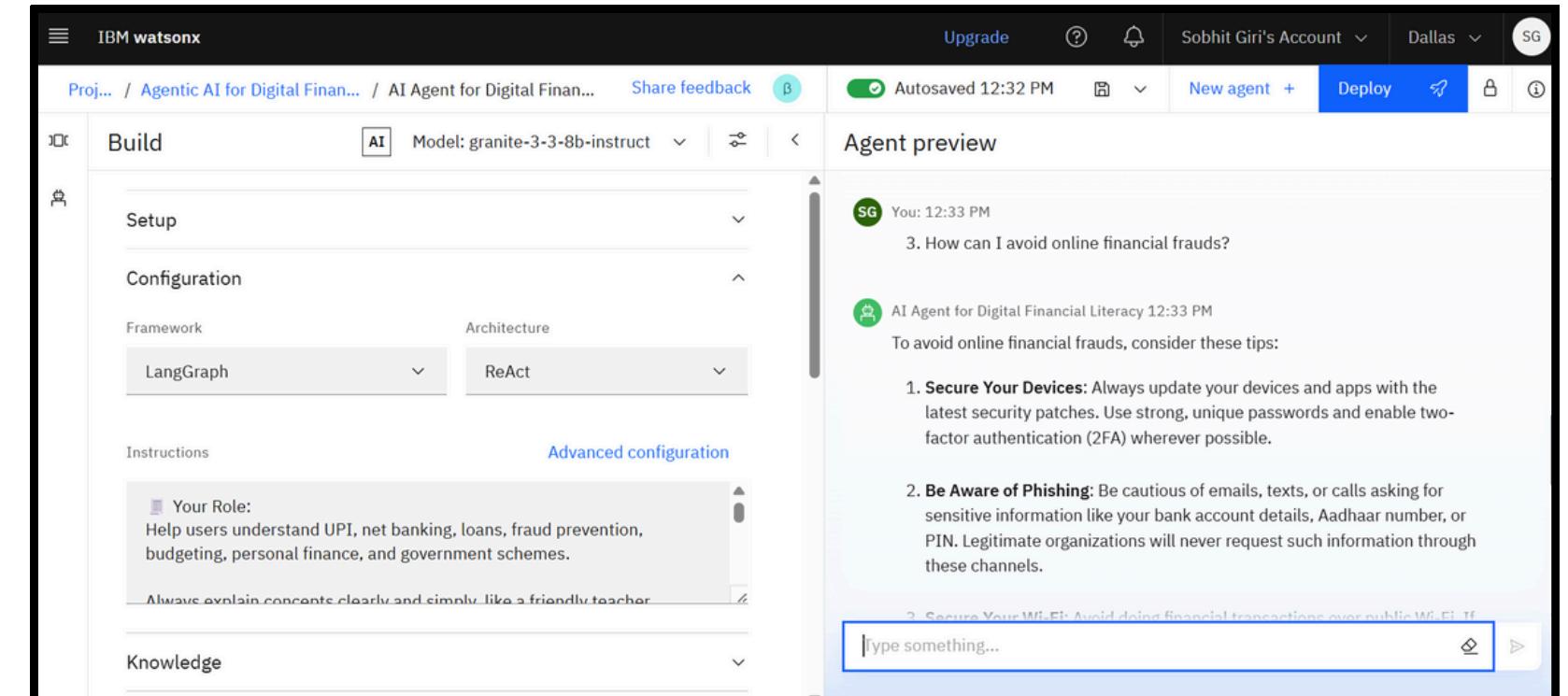
- 1. Track Your Income and Expenses:** Start by noting down all your sources of income and then list all your monthly expenses. This includes fixed expenses like rent, utilities, and variable expenses like groceries, entertainment, and personal care.
- 2. Categorize Your Expenses:** Group your expenses into categories such as housing, utilities, groceries, transportation, health, personal, and savings. This will give you a clearer picture of where your money is going.



SG You: 12:31 PM  
2. 50-30-20 Budget Rule

AI Agent for Digital Financial Literacy 12:31 PM  
The 50-30-20 budget rule is a simple way to allocate your income across different categories to manage your finances effectively. Here's how it works:

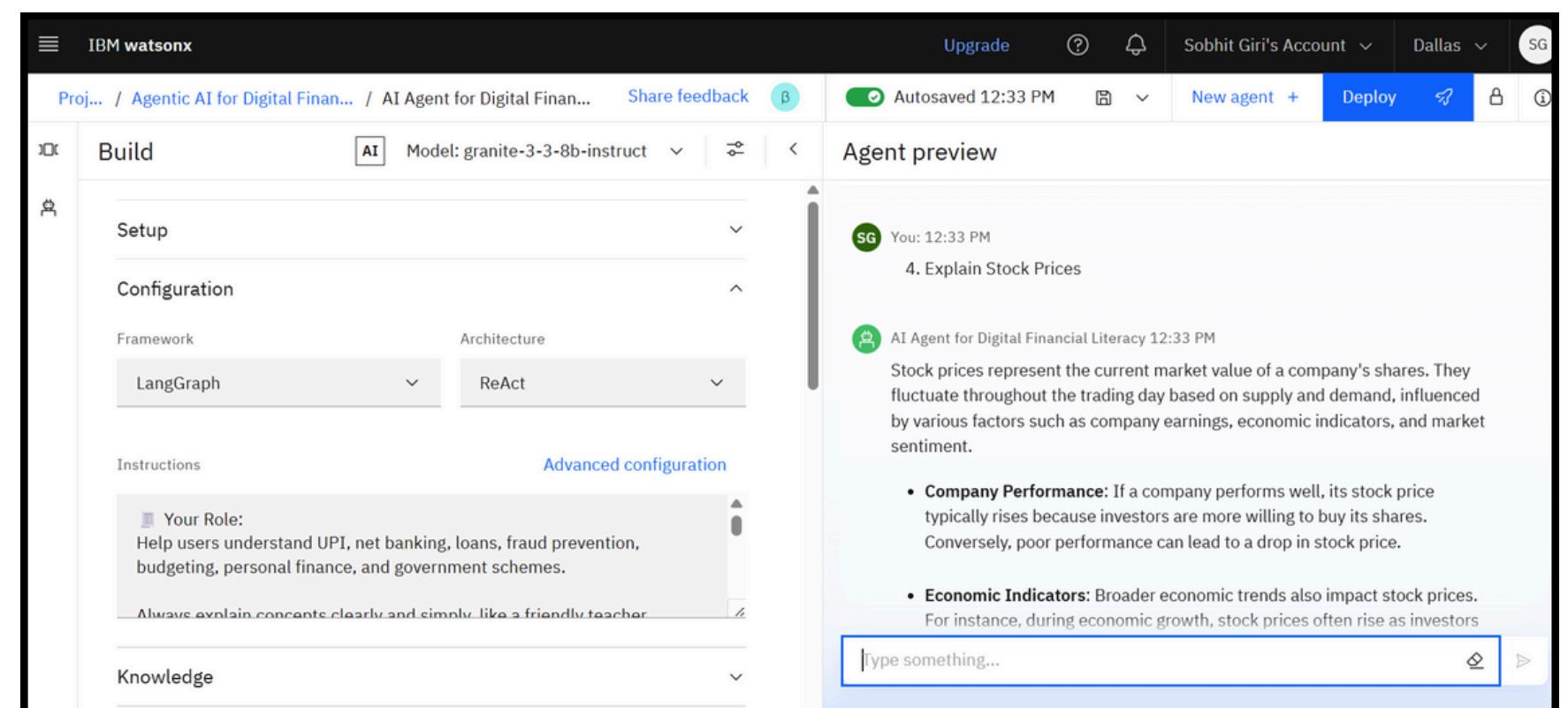
- 1. Needs (50%):** These are essential expenses that you must cover each month, such as housing, utilities, groceries, transportation, health insurance, and minimum debt payments.
- 2. Wants (30%):** These are discretionary expenses that aren't necessary for your survival but contribute to your quality of life, like dining out, entertainment, hobbies, and vacations.



SG You: 12:33 PM  
3. How can I avoid online financial frauds?

AI Agent for Digital Financial Literacy 12:33 PM  
To avoid online financial frauds, consider these tips:

- 1. Secure Your Devices:** Always update your devices and apps with the latest security patches. Use strong, unique passwords and enable two-factor authentication (2FA) wherever possible.
- 2. Be Aware of Phishing:** Be cautious of emails, texts, or calls asking for sensitive information like your bank account details, Aadhaar number, or PIN. Legitimate organizations will never request such information through these channels.



SG You: 12:33 PM  
4. Explain Stock Prices

AI Agent for Digital Financial Literacy 12:33 PM  
Stock prices represent the current market value of a company's shares. They fluctuate throughout the trading day based on supply and demand, influenced by various factors such as company earnings, economic indicators, and market sentiment.

- Company Performance:** If a company performs well, its stock price typically rises because investors are more willing to buy its shares. Conversely, poor performance can lead to a drop in stock price.
- Economic Indicators:** Broader economic trends also impact stock prices. For instance, during economic growth, stock prices often rise as investors

# Algorithm & Deployment :-

## Algorithm Selection

The solution employs a Retrieval-Augmented Generation (RAG) framework powered by the IBM Granite Large Language Model. RAG is ideal for document-grounded, natural language question answering, making it suitable for financial queries where accuracy and trustworthiness are essential.

## Data Input

- User queries (supporting multilingual input)
- Indexed PDF documents from reliable sources such as RBI, NPCI, government schemes, and educational portals
- Vector embeddings created from documents for fast similarity search

## Training Process

- The IBM Granite model is pre-trained, requiring no custom model training
- Optimization is done using prompt engineering in Watsonx Agent Lab
- Financial documents are uploaded and vectorized into a retrievable index using IBM Watsonx Vector Index
- The setup allows real-time retrieval with near-instant response capability

## Prediction Process

- User inputs a query (e.g., “What’s the interest rate for education loans?”)
- The system performs vector similarity search across uploaded document chunks
- Relevant text is passed to the Granite LLM, which generates a personalized and accurate response grounded in the document
- The agent supports multilingual, context-aware output while handling irrelevant queries gracefully

# Deployment And Results :-

The screenshot shows the IBM WatsonX interface with the 'Deployments' tab selected. The page displays a table of deployed assets, with one entry for the 'AI Agent for Digital Financial Literacy' service.

Name	Type	Status	Asset	Asset type	Tags	Last modified
AI Agent for Digital Financial Literacy	Online	Deployed	AI Agent for Digital Financial Literacy	Ai service	wx-agent	39 seconds ago Sobhit Giri (You)

At the bottom, there are pagination controls: 'Items per page: 20' and '1-1 of 1 items'.

The screenshot shows a modal window titled 'Deployment has started'. The message states: 'Your AI service deployment has started.' It includes a 'View status' button and a timestamp: 'Timestamp 10:08:25 AM'. The background shows the 'FinancialAdvisor' interface with a 'Deploy' button highlighted in blue.

# Deployment And Results :-

The screenshot shows the IBM Watsonx interface for creating a User API key. At the top, there's a navigation bar with tabs for Service Details - IBM Cloud, AI Agent for Digital Financial Lit., Settings | IBM watsonx, and a search bar. Below the navigation is a user profile section for Sobhit Giri, showing a profile picture, email (girisobhit99@gmail.com), and a link to edit the profile. A dark theme toggle switch is also present. The main content area has tabs for Profile, Git integrations, and User API key, with the User API key tab selected. A green success message box displays: "User API key is successfully created. Your new key is stored in IBM watsonx and IBM Cloud." Below this message, there's a table with columns for Name, Creation date, and Status. The first row shows a key named "cnd-anikey-TRMid-6930010GJ3-2025-08-03T04:33:34Z" created on "August 3, 2025 at 10:03:34 AM" and marked as "Active". There are "Rotate" and "Delete" buttons for this key.

This screenshot shows the deployment details for the "AI Agent for Digital Financial Literacy" service. The URL in the browser is [dataplatform.cloud.ibm.com/ml-runtime/deployments/9d95858d-8bec-4d49-bb6d-533e7c28121a?space\\_id=36c06daf-c065-4546-81f0-b7b10fae3a14&context=1](https://dataplatform.cloud.ibm.com/ml-runtime/deployments/9d95858d-8bec-4d49-bb6d-533e7c28121a?space_id=36c06daf-c065-4546-81f0-b7b10fae3a14&context=1). The page header includes tabs for Upgrade, ? (Help), and Deploy. It shows the deployment name "AI Agent for Digital Financial Literacy" is "Deployed" and "Online". Below this, there are tabs for API reference, Test, and Preview. The "API reference" tab is selected, displaying "Endpoints for inferencing" under both Private endpoint and Public endpoint sections. Each endpoint URL is preceded by a copy icon. To the right of the endpoints, there's an "About this deployment" sidebar with sections for Name, Description, Deployment Details, and Tags.

This screenshot shows the "Deploy as an AI service" dialog box. The title is "Deploy as an AI service" and it says "Create an online deployment. If you want to edit code in notebook format before deploying, save as a deployment notebook. [Learn more](#)". The dialog has fields for "Deployment name" (set to "AI Agent for Digital Financial Literacy"), "Target deployment space" (set to "FinancialAdvisor"), and "Description (optional)" (containing the text "AI assistant chatbot for UPI, budgeting, loans, and fraud protection"). At the bottom right, there are "Autosave on" and "Deploy" buttons, with the "Deploy" button highlighted.

# RESULTS :-

The screenshot shows the IBM WatsonX platform interface. At the top, there's a navigation bar with 'IBM watsonx' on the left, followed by 'Upgrade', a help icon, a notification bell, 'Sobhit Giri's Account', 'Dallas', and a user profile icon 'SG'. Below the navigation bar, the URL path is 'Deployment spaces / FinancialAdvisor / AI Agent for Digital Financial Literacy /'. To the right of the path are icons for trash, info, copy, refresh, and a dropdown menu.

The main content area displays the deployment details for 'AI Agent for Digital Financial Literacy'. It shows a green checkmark indicating it is 'Deployed' and 'Online'. Below this, there are tabs for 'API reference', 'Test', and 'Preview', with 'Preview' being the active tab. A 'New chat +' button is located at the top right of the preview area.

In the 'Preview' section, a conversation is shown between a user ('You') and the AI agent. The user asks '4. Explain Stock Prices', and the AI agent responds with an explanation of stock prices and a breakdown. The AI agent's response includes a small icon of a robot head.

On the right side of the screen, a sidebar titled 'About this deployment' provides detailed information about the deployment:

- Name:** AI Agent for Digital Financial Literacy
- Description:** AI assistant chatbot for UPI, budgeting, loans, and fraud protection.
- Deployment Details:**
  - Deployment ID: 9d95858d-8bec-4d...
  - Serving name: No serving name.
  - Software specification: runtime-24.1-py3.11
  - Hardware specification: Extra extra small: 1 CPU and 2 GB RAM
  - Copies: 1
- Tags:** (empty)

At the bottom of the preview area, there's a text input field with placeholder text 'Type something...' and a send button with a right-pointing arrow.

# **WOW FACTORS :-**

- **Semantic Search from Trusted Financial Sources**
- **Search RBI/NPCI documents using natural language—no need to manually browse portals.**
- **Auto-Generated, Multilingual Responses**
- **Get instant answers in local languages, increasing accessibility for rural and new users.**
- **Contextual Understanding + Grounded Answers**
- **Uses RAG to fetch document-based, accurate, and trustworthy responses.**
- **Smart Redirection for Off-Topic Queries**
- **Handles irrelevant inputs gracefully, maintaining focus and agent quality.**
- **Topic-Based Financial Guidance**
- **Offers tips on budgeting, UPI, loans, scams, and savings based on user context.**

## **END USERS :-**

- First-time UPI and digital banking users
- Rural and semi-urban citizens
- Students and young professionals
- Self-help groups and women's collectives
- NGOs and government outreach programs
- Educators and financial literacy trainers

# RESULTS :-

## DEPLOYED AGENT :-

The screenshot shows the IBM WatsonX interface with the following details:

- Header:** IBM watsonx, Upgrade, Help, Sobhit Giri's Account, Dallas, SG.
- Breadcrumbs:** Deployment spaces / FinancialAdvisor / AI Agent for Digital Financial Literacy /
- Deployment Overview:** AI Agent for Digital Financial Literacy, ✓ Deployed, Online.
- Actions:** Delete, Details (selected), Edit, Chat, Log, Metrics.
- Preview Tab:** API reference, Test, Preview (selected).
- Chat History:** You 06:59 PM: 4. Explain Stock Prices; AI Agent for Digital Financial Literacy 06:59 PM: Stock prices represent the current market value of a company's shares. They fluctuate throughout the trading day based on supply and demand, influenced by various factors such as company earnings, economic indicators, and market sentiment. Here's a simple breakdown:
- Details Panel:** About this deployment, Name: AI Agent for Digital Financial Literacy, Description: AI assistant chatbot for UPI, budgeting, loans, and fraud protection. Deployment Details: Deployment ID: 9d95858d-8bec-4d..., Serving name: No serving name, Software specification: runtime-24.1-py3.11, Hardware specification: Extra extra small: 1 CPU and 2 GB RAM, Copies: 1, Tags.
- Input Field:** Type something...

## **FUTURE SCOPE :-**

- WhatsApp and voice chatbot integration
- Regional language and policy expansion
- OCR support for bill and document reading
- Financial awareness campaigns via chatbot
- Auto-generated monthly financial summaries

## **CONCLUSION :-**

- 1. Bridges the financial literacy gap by offering personalized, document-backed guidance in multiple languages.**
- 2. Empowers users to make safer, smarter financial decisions using trusted RBI/NPCI information.**
- 3. Demonstrates the power of AI + IBM Cloud in creating scalable, inclusive digital solutions.**



## GitHub Link :-

<https://github.com/sobhitgiri/Digital-Financial-Literacy-AI-Agent>

- Make sure that there should be readme file

# IBM Certifications :-

In recognition of the commitment to achieve professional excellence

Sobhit Giri

Has successfully satisfied the requirements for:

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Getting Started with Artificial Intelligence

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Issued on: Jul 15, 2025  
Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/4da62e74-9656-4821-8572-c06727cec387>

IBM

**Screenshot/ credly certificate( getting started with AI)**

# IBM Certifications :-

24/07/2025, 18:30

Completion Certificate | SkillsBuild

**IBM SkillsBuild**

Completion Certificate



This certificate is presented to

Sobhit Giri

for the completion of

**Lab: Retrieval Augmented Generation with  
LangChain**

(ALM-COURSE\_3824998)

According to the Adobe Learning Manager system of record

**Completion date:** 24 Jul 2025 (GMT)

**Learning hours:** 20 mins



**THANK YOU**

**NAME = SOBHIIT GIRI**

**KALINGA INSTITUTE OF INDUSTRIAL AND TECHNOLOGY (KIIT)**

**DEPARTMENT = B.TECH CSE**