
CAPSTONE PROJECT

INTERVIEW TRAINER AGENT:

AI-POWERED INTERVIEW PREPARATION

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OUTLINE

- **Problem Statement** (Should not include solution)
- **Proposed System/Solution**
- **System Development Approach** (Technology Used)
- **Result (Output Image)**
- **Conclusion**
- **Future Scope**
- **References**

PROBLEM STATEMENT

- Problem Statement No.22 – Interview Trainer Agent
- **The Challenge** – An Interview Trainer Agent, powered by RAG (Retrieval-Augmented Generation), prepares users for job interviews by generating tailored question sets and preparation strategies based on their profile name, experience level, and job role.
- It retrieves role-specific interview questions, industry expectations, behavioral scenarios, and HR guidelines from recruitment portals, professional networks, and company interview databases.
- Users can input their resume or job title, and the agent provides targeted questions, model answers, and improvement tips.
- It supports both technical and soft skill assessment, ensuring a comprehensive interview prep experience.
- This AI-driven assistant builds user confidence, sharpens responses, and increases success rates in competitive hiring environments.

PROPOSED SOLUTION

Our solution is an AI-powered Interview Trainer Agent designed to provide highly personalized and effective interview preparation:

- **Personalized Question Generation:**
 - The agent generates interview question sets tailored to the user's profile name, experience level, and job role.
 - This ensures relevance and focuses preparation on specific career goals.
- **Retrieval-Augmented Generation (RAG):**
 - Utilizes RAG to access and synthesize information from diverse sources:
 - Recruitment portals
 - Professional networks
 - Company interview databases
 - This allows for the retrieval of role-specific interview questions, industry expectations, behavioral scenarios, and HR guidelines.
- **Comprehensive Preparation Features:**
 - **Targeted Questions:** Provides specific questions relevant to the user's inputs.
 - **Model Answers:** Offers examples of effective responses to common and role-specific questions.
 - **Improvement Tips:** Gives actionable advice to refine answers, communication style, and overall interview performance.
- **Holistic Skill Assessment:**
 - Supports preparation for both **technical skills** (e.g., coding challenges, technical concepts) and **soft skills** (e.g., communication, teamwork, problem-solving, leadership).
- **Enhanced User Confidence:**
 - By providing a structured, personalized, and feedback-rich training environment, the agent aims to significantly boost user confidence and readiness for competitive hiring environments.

SYSTEM APPROACH

System Requirements

- IBM Cloud Trial Account
- Browser (for Watson Assistant UI)
- Basic system with internet for deployment testing

Libraries / Tools Used

- ibm-watson-assistant (via IBM Cloud UI)
- ibm-watson-machine-learning or watsonx.ai (for LLM)
- Flask or Streamlit (for backend integration)
- requests, json, etc. for API calls (Python backend)
- IBM Cloud Services: Watson Assistant, Watsonx Granite Model, Cloud Functions / Foundry (if deployed)

RESULT

The screenshot shows the IBM Watsonx interface for the Interview Trainer Agent. The top navigation bar includes 'IBM watsonx', 'Upgrade', a help icon, a notification bell, 'Praveen S N's Account', 'Dallas', and a profile icon. The main menu on the left has sections for 'Build' (selected), 'Setup', 'Configuration', 'Framework' (LangGraph selected), 'Architecture' (ReAct selected), 'Instructions' (containing a text box about being an AI Interview Trainer Agent), 'Advanced configuration', 'Knowledge', 'Tools' (with 'Add a tool' and 'Create custom tool' buttons), and 'Added tools (3)' (Google search). The right panel is titled 'Agent preview' and shows a conversation transcript:

Sure, let's begin. Can you tell me about a challenging project you've worked on and how you handled it?

▶ How did I get this answer?

PS You: 03:26 PM
I want to practice an interview for a software developer role

1 watsonx Agent 03:26 PM
Great! Let's focus on that. Can you describe a complex software development project you've been involved in and explain your role, the technologies you used, and the challenges you faced?

▶ How did I get this answer?

PS You: 03:26 PM
Conduct an HR round mock interview

1 watsonx Agent 03:26 PM
Alright, let's move to a common HR question. Can you tell me about a time when you had to adapt to significant changes at work or in a project, and how you managed those changes?

▶ How did I get this answer?

A text input field at the bottom says 'Type something...' with a magnifying glass icon and a right-pointing arrow.

RESULT

The screenshot shows the IBM Watsonx interface with the title bar "IBM watsonx" and various navigation and account options. A modal dialog titled "Select a tool" is open, prompting the user to "Choose a tool to add to your agent." A yellow warning message at the top of the dialog states: "Python Interpreter This tool runs generated Python code without your review, which can produce unwanted consequences." Below this is a search bar labeled "Search for a tool". The main area displays a grid of eight tool cards:

Tool	Description	Status
Google search	Retrieve information from the internet with the Google search engine.	Enabled (green switch)
DuckDuckGo search	Retrieve information from the internet with the DuckDuckGo search engine.	Enabled (green switch)
Wikipedia search	Retrieve information from Wikipedia articles.	Enabled (green switch)
Document search	Search documents with vector indexes.	Disabled (gray switch)
Tavily search	Retrieve information from the internet with the Tavily search engine.	Disabled (gray switch)
Webcrawler	Retrieve information from a website.	Disabled (gray switch)
Python Interpreter <small>!</small>	Execute Python code generated by the agent.	Enabled (green switch)
Weather	Retrieve the weather of a city.	Disabled (gray switch)

RESULT

Agent preview

Agent preview

PS You: 03:09 PM

begin an interview

WatsonX Agent 03:09 PM

Here's a common interview question:

Can you tell me a little about yourself?

Please respond as if you were in a real interview. I'll give you feedback on your answer.

▶ How did I get this answer?



Type something...

PS You: 03:25 PM

Start a mock interview

WatsonX Agent 03:25 PM

Sure, let's begin. Can you tell me about a challenging project you've worked on and how you handled it?

▶ How did I get this answer?

PS You: 03:26 PM

I want to practice an interview for a software developer role

WatsonX Agent 03:26 PM

Great! Let's focus on that. Can you describe a complex software development project you've been involved in and explain your role, the technologies you used, and the challenges you faced?

▶ How did I get this answer?

PS You: 03:26 PM

Conduct an HR round mock interview

WatsonX Agent 03:26 PM

Type something...

RESULT

- GitHub Link :

https://github.com/PraveenSN5/Interview_Trainer_Agent.git

CONCLUSION

The **Interview Trainer Agent** project effectively demonstrates the integration of conversational AI (Watson Assistant) with large language models (Watsonx) to simulate a real-time, AI-powered interview experience.

By leveraging IBM Cloud tools, the system is capable of:

- Conducting mock interview sessions through an interactive chatbot
- Analyzing user responses using Watsonx Granite LLM
- Delivering constructive feedback to help users improve communication, clarity, and confidence

FUTURE SCOPE

- This project has great potential for improvement and wider use. In the future, the system can be enhanced in the following ways:
-  **Voice Support**
 - Add voice input so users can speak answers like in a real interview
 - Use speech-to-text for better analysis
-  **Multi-Language Support**
 - Allow users to practice interviews in different languages
 - Helpful for users from various regions
-  **Smarter Feedback**
 - Give better suggestions based on previous performance
 - Adjust question difficulty based on user skill level
-  **Performance Tracking**
 - Add a dashboard to show user progress over time
 - Help users know where to improve
-  **Job Portal Integration**
 - Connect with job sites so users can practice based on real job roles

REFERENCES

- **IBM Watson Assistant –**

<https://www.ibm.com/cloud/watson-assistant>

- **IBM Watsonx & Granite LLMs –**

<https://www.ibm.com/watsonx>

- **IBM Cloud Documentation –**

<https://cloud.ibm.com/docs>

- **IBM SkillsBuild - Getting Started with AI –**

<https://www.skillsbuild.org>

- **Natural Language Processing (NLP) concepts –**

<https://www.geeksforgeeks.org/nlp-natural-language-processing/>

- **Chatbot Design Guidelines –**

<https://www.ibm.com/blogs/watson-health/chatbots-design/>

IBM CERTIFICATIONS

■ AI Certification: IBM SkillsBuild - Getting Started with Artificial Intelligence

In recognition of the commitment to achieve professional excellence



Praveen SN

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



Issued on: Jul 16, 2025

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■ Certificate: Journey to Cloud – Envisioning Your Solution

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IBM CERTIFICATIONS

■ Certificate: Retrieval Augmented Generation with LangChain

IBM SkillsBuild

Completion Certificate



This certificate is presented to

Praveen S N

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



THANK YOU