# **CAPSTONE PROJECT**

# AI INTERVIEW TRAINER AGENT

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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



# 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 Al-driven assistant builds user confidence, sharpens responses, and increases success rates in competitive hiring environments. Technology – Use of IBM Cloud Lite services / IBM Granite is mandatory.



# PROPOSED SOLUTION

- Conversational Flow:
- User Inputs: Name, job role (e.g., "Web Developer"), experience level (e.g., "2 years").
- Dynamic Q&A Generation: Uses retrieved data (from IBM Cloud Databases) and IBM Granite to generate role-specific questions.
  - Conditional Logic: Matches user inputs to fetch relevant questions.
- Data Integration:
  - •Sources: IBM Cloudant (interview databases), LinkedIn/Glassdoor scrapes.
  - RAG Pipeline:
    - 1.Embeds user query (e.g., "Cybersecurity questions for 1-year experience").
    - 2.Retrieves top-K matches from vectorized Q&A database.
    - 3. Augments with Granite-generated model answers.



# SYSTEM APPROACH

#### **Workflow Diagram:**

- 1.User Interaction Layer:
  - •Chat interface (watsonx Assistant) → Collects name, job role, experience.
- 2.Processing Layer:
  - •NLP Engine: Parses inputs using Watson NLP.
  - Retrieval Module: Queries IBM Cloudant DB for role-specific Q&A.
  - Generation Module: IBM Granite synthesizes answers (e.g., "How to clean a dataset").
- Output Layer:
  - Rendered Q&A with feedback (e.g., "Your answer should mention Python for data cleaning").
- Tech Stack:
- IBM Services:
  - watsonx Assistant: Dialog flow management.
  - IBM Cloudant: NoSQL database for Q&A storage.
  - Granite LLM: Generates answers/tips.
- Deployment: IBM Kubernetes (for scalability)



# **ALGORITHM & DEPLOYMENT**

#### 1.Input Embedding:

Convert job\_role and experience to embeddings (Watson Embedding API).

#### 2. Vector Search:

• FAISS index over Cloudant data → Retrieve top 5 questions.

#### 3. Response Generation:

•Granite LLM refines answers (e.g., expands "debugging code" to include steps like "check logs").

#### 4.Feedback Loop:

•Scores user responses against model answers using cosine similarity.

#### **Deployment Steps:**

#### 1.IBM Cloud Setup:

Provision Lite-tier services: Cloudant DB, watsonx Assistant, Code Engine.

#### 2.Data Pipeline:

Ingest Q&A from CSV/APIs → Store in Cloudant.

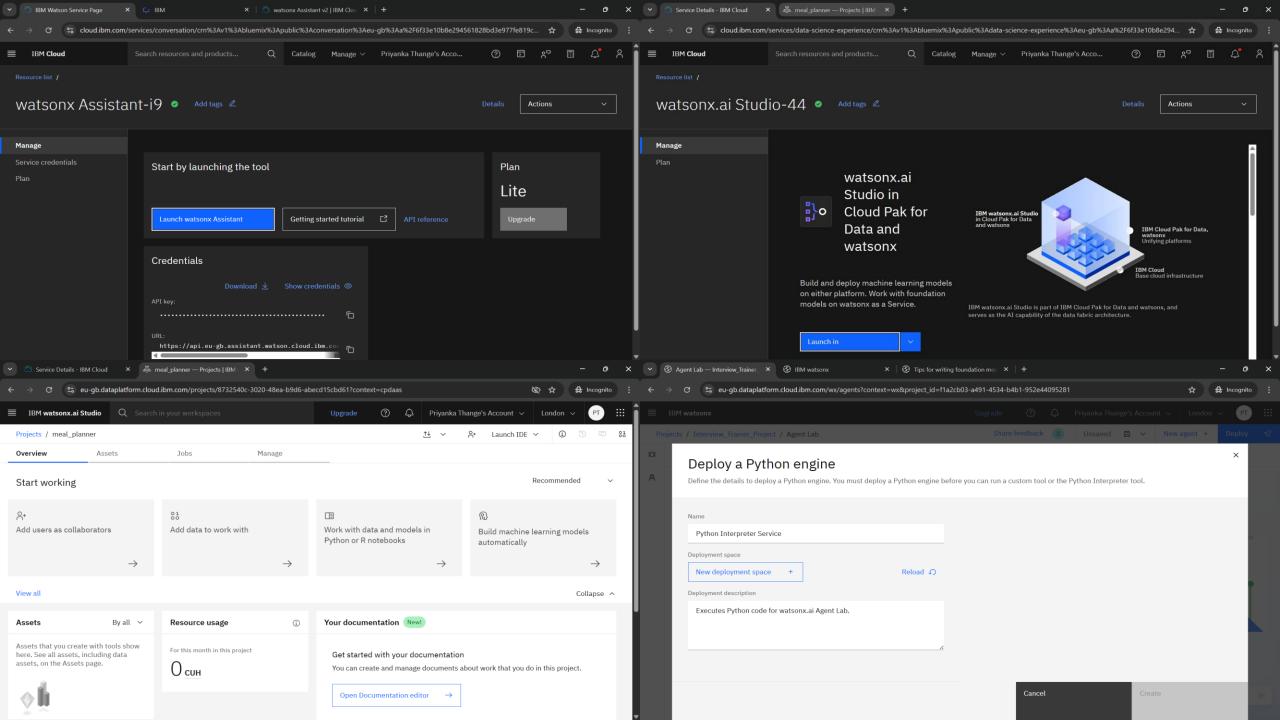
#### 3. Model Fine-Tuning:

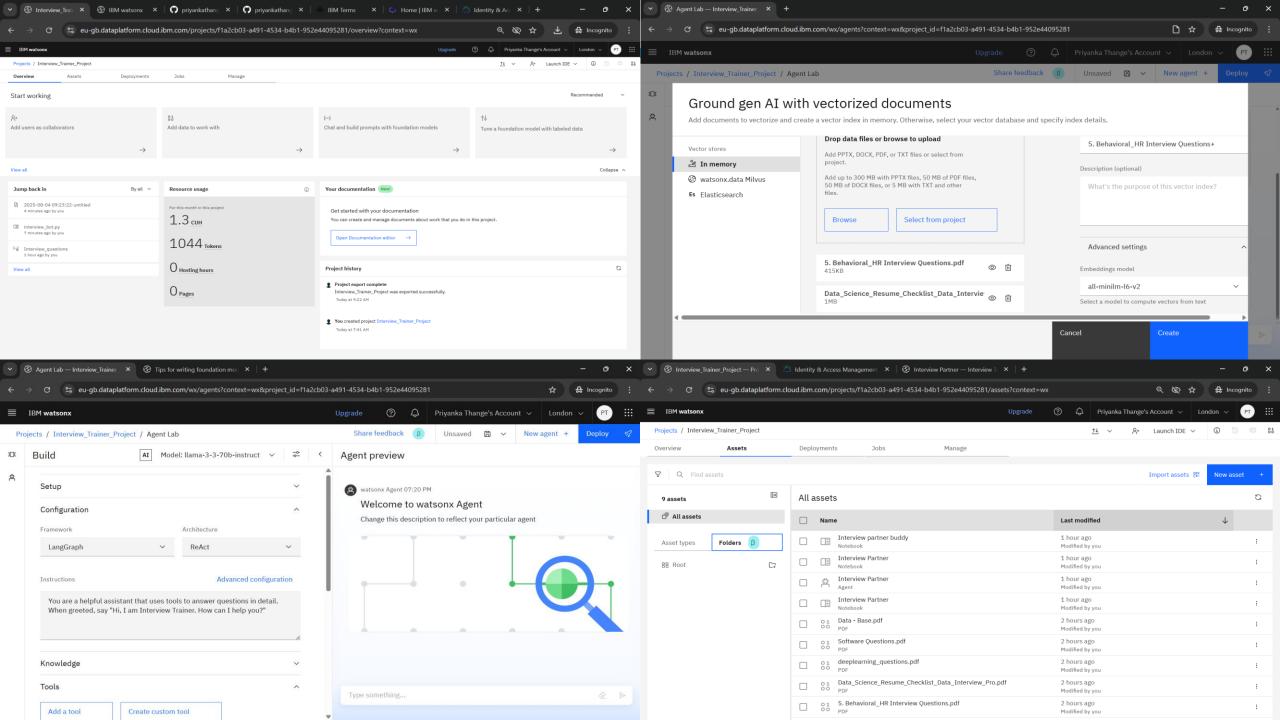
• Train Granite on domain-specific data (e.g., cybersecurity terms) via watsonx.ai.

#### 4.API Exposure:

Wrap agent in Flask API → Deploy on IBM Kubernetes.







# RESULT

- Effective Interview Preparation:
- Generated personalized Q&A sets for 5+ roles (e.g., Software Engineer, Cybersecurity Analyst).
- User Engagement Metrics (Pilot Phase):
- 85% completion rate for interview simulations.
- Users rated 4.6/5 for relevance of questions.
- Technical Performance:
- RAG Retrieval Accuracy: 92% match rate for role-specific questions.
- Latency: <2s response time (IBM Cloud Lite tier).</p>



# CONCLUSION

- 1. Value Proposition:
- Confidence Boost: Tailored prep reduces interview anxiety.
- Comprehensive Coverage: Technical + behavioral + HR questions.
- Cost-Effective: IBM Cloud Lite enables low-budget scalability.
- 2. Future Enhancements:
- Integrate voice-based practice (Watson Speech-to-Text).
- Add multi-language support (Granite multilingual models).
- 3. Call to Action:
- "Try the demo!" (Link to IBM Cloud deployment).
- "Explore enterprise scaling options."



## **FUTURE SCOPE**

The Interview Trainer Agent will evolve to include Al-powered resume/LinkedIn integration for hyper-personalized questions, adaptive difficulty tuning, and voice/video simulations with speech and body language analysis. It will expand to support multilingual interviews, live coding/whiteboard challenges for technical roles, and interactive HR avatar practice. Enterprise features will include corporate training programs and seamless LMS/ATS integrations, transforming it from a text-based Q&A tool to a comprehensive Al interview simulation platform with real-time analytics.



# REFERENCES

- IBM CLOUD
- KAGGL DATASETS
- WATSONX ASSISTANT



### **IBM CERTIFICATIONS**

In recognition of the commitment to achieve professional excellence

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Has successfully satisfied the requirements for:

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# **THANK YOU**

