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# **CAPSTONE PROJECT**

## **INTERVIEW TRAINER**

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## OUTLINE

- Problem Statement
- Proposed System/Solution
- System Development Approach
- Algorithm & Deployment
- Result
- Conclusion
- Future Scope
- References

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# PROBLEM STATEMENT

- The Interview Trainer Agent, powered by RAG, helps users prepare for job interviews by generating role-specific questions, model answers, and feedback based on their resume or job title. It pulls data from recruitment portals and professional networks to offer tailored strategies for both technical and soft skills, boosting confidence and improving interview success rates.

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# PROPOSED SOLUTION

- The proposed system aims to address the challenge of improving job interview readiness by generating tailored question sets, model answers, and preparation strategies using Retrieval-Augmented Generation (RAG) and large language models. The solution will consist of the following components:
- **Data Collection:** Gather relevant data from resumes, job titles, and user inputs such as experience level and role type. Retrieve role-specific interview questions, behavioural scenarios, and HR expectations from recruitment portals, job databases, and professional networks.
- **Data Preprocessing:** Parse and clean resume text to extract relevant keywords, skills, and experience summaries. Perform context-aware feature extraction (e.g., job domain, seniority, technical vs non-technical roles) to inform prompt generation.
- **AI Model Integration (LLM + RAG):** Use IBM Granite large language models to generate tailored technical and behavioural interview questions. Employ Retrieval-Augmented Generation (RAG) to enhance responses with data from trusted sources like interview prep repositories, company-specific questions, and industry expectations. Generate model answers and improvement tips based on LLM outputs and resume-job fit.
- **Deployment:** Develop a user-friendly web interface where users can input their resume or job title and receive interactive interview training. Host the backend and AI model integration on IBM Cloud using scalable and secure services, ensuring low latency and accessibility.
- **Evaluation:** Assess the system's effectiveness through user feedback, qualitative scoring (e.g., question relevance, clarity, usefulness), and user improvement over sessions. Continuously refine prompt templates and retrieval sources based on usage data and accuracy of generated content.

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# SYSTEM APPROACH

- System Requirements
  - IBM Cloud Lite account for deployment
  - Access to IBM Granite LLM (via Watsonx API)
  - Basic compute resources for hosting (Cloud Functions)
  - Internet access for calling API endpoints and retrieving external content (for RAG)

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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:**
  - The project uses IBM Granite, a large language model (LLM), for generating personalized interview questions and model answers. Retrieval-Augmented Generation (RAG) enhances the accuracy and relevance by incorporating external, role-specific information from job portals and interview datasets. This hybrid approach is selected to ensure both adaptability and contextual awareness.
- **Data Input:**
  - User's resume (text), or Job title and experience level Optional: Job description or company type for more refined generation These inputs help tailor the interview content to specific domains, seniority, and job expectations..
- **Training Process:**
  - Since IBM Granite is a pre-trained foundation model, there is no need for traditional supervised training. Instead, the system relies on: Prompt engineering (to optimize LLM output) Retrieval logic configuration (in RAG) to pull role-specific documents Manual tuning through iterative feedback loops.
- **Prediction Process:**
  - The system: Accepts input via frontend (job role or resume) Dynamically constructs a prompt Sends the prompt to IBM Granite API (Optionally) Augments context using RAG for role-based data from recruitment sites Outputs: Interview questions, model answers, and feedback tips in real time. This structure enables highly adaptive and scalable interview preparation for a wide range of job seekers.

# RESULT

IBM watsonx

Upgrade ? 🔔 Ujjwal Mishra's Account Dallas UM

Projects / HR\_Ai

Overview Assets Deployments Jobs Manage

Start working Recommended

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 Collapse

**Jump back in** By all

Interview\_trainer  
2 hours ago by you

Interview\_trainer  
2 hours ago by you

View all

**Resource usage** ⓘ

For this month in this project

0 CUH

1864 Tokens

0 Hosting hours

**Your documentation** New!

Get started with your documentation

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

Open Documentation editor →

Project history ↻

# RESULT

The screenshot displays the IBM Watsonx interface for building and previewing an AI agent named 'Interview\_trainer'.

**Build Section:**

- Model:** granite-3-3-8b-instruct
- Framework:** LangGraph
- Architecture:** ReAct
- Instructions:** As Interview\_trainer, your role is to assist users in generating interview questions based on their stream. When a user shares their stream, use your understanding of that stream to suggest 4-5 questions. [Advanced configuration](#)
- Knowledge:**
- Tools:** Add a tool, Create custom tool
- Added tools (4):**

**Agent preview Section:**

- Header:** Interview\_trainer 08:19 PM
- Welcome to Interview\_trainer**  
Helping applicants with their interview prep.
- Diagram:** A flowchart illustrating the agent's logic, featuring a central green circle with a blue magnifying glass icon.
- Sample questions:** Hi, can you help me with my interview preparation. [→](#)
- Input field:** Type something...



# RESULT

## Agent preview

UM You: 08:20 PM

Hi, can you help me with my interview preparation.

Interview\_trainer 08:20 PM

Hi there! I'm Interview\_trainer, ready to help you with your interview preparations. Of course, I can assist you. Could you please share a bit about the position you're applying for and your background? This will help me generate relevant interview questions for you. Also, would you like a hint before I suggest the questions?

► How did I get this answer?

UM You: 08:21 PM

I have just completed my btech in automation and robotics and would be applying for a similar role

Interview\_trainer 08:21 PM

Great! To help you best, I'd like to know if you're open to providing a bit more context about your experience during your B.Tech, any projects you worked on, or specific skills you've acquired in automation and robotics. This will allow me to tailor the interview questions to your profile. Also, would you like a hint before I suggest the questions?

► How did I get this answer?

UM You: 08:22 PM

my major project was working on stabilizing the RCM of a surgical robot

|Type something...



UM You: 08:22 PM

my major project was working on stabilizing the RCM of a surgical robot

Interview\_trainer 08:22 PM

That sounds impressive! Based on your background in automation and robotics, particularly your major project involving the stabilization of a surgical robot's RCM, here are some interview questions tailored for you:

1. Can you describe your experience with the control systems of robotic arms, specifically focusing on the RCM stabilization project during your B.Tech?
2. How did you approach the challenge of stabilizing the RCM of a surgical robot in your major project?
3. What specific tools or software did you use in your project for simulation and testing?
4. Can you explain a situation where you had to troubleshoot a problem with a robotic system? How did you identify and resolve the issue?
5. How do you stay updated with the latest advancements in robotics and automation, and how have these influenced your approach to your major project?

Before I check your answers, would you like a hint for any of these questions?

► How did I get this answer?

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# CONCLUSION

- The Interview Trainer Agent demonstrates the effective application of IBM Granite LLM and RAG techniques to generate personalized interview preparation content. It successfully tailors question sets, model answers, and improvement tips based on a user's resume or job title, significantly enhancing user readiness and confidence for job interviews.
- Challenges faced during implementation included prompt optimization, ensuring domain-specific accuracy, and handling variations in resume formats. Continuous refinement through user feedback and improved RAG sources helped address these issues.
- This solution emphasizes the importance of intelligent, context-aware preparation tools in today's job market, providing scalable, adaptive support to diverse candidates and improving overall interview success rates.

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## FUTURE SCOPE

- Potential enhancements for the Interview Trainer Agent include integrating voice-based interaction for simulating mock interviews, allowing users to practice in a more natural and immersive way. The system can be expanded to support multilingual responses to cater to a broader user base.
- Personalization can be further improved by analyzing user performance across sessions and dynamically adjusting difficulty levels and feedback. Adding resume scoring capabilities and career role suggestions based on input would enhance utility.
- Emerging technologies such as emotion recognition via webcam (for non-verbal feedback), and integration with platforms like LinkedIn or Coursera for live profile analysis and upskilling recommendations could significantly boost the agent's real-world relevance.

# IBM CERTIFICATIONS



# IBM CERTIFICATIONS



## IBM CERTIFICATIONS



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**THANK YOU**