CAPSTONE PROJECT

AGENTIC CAREER COUNSELING COMPANION

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OUTLINE

- **Problem Statement**

- **Proposed System/Solution**

- **System Development Approach**

- **Algorithm & Deployment**

- **Result (Output Image)**

- **Conclusion**

- **Future Scope**

- **References**

PROBLEM STATEMENT

Students often struggle to make informed career decisions due to fragmented access to guidance, limited self-awareness of academic strengths, and rapidly evolving industry landscapes. Traditional counseling methods lack personalization and scalability, leading to missed opportunities and career mismatches. The challenge is to develop an intelligent, autonomous agent that continuously monitors student performance, evolving interests, and real-time labor market trends to deliver tailored career pathway suggestions. This would empower students to make confident, future-ready decisions with minimal dependency on manual intervention.

PROPOSED SOLUTION

- An AI-powered career assistant that:

- Monitors student performance and interests

- Uses labor market data in real-time

- Suggests career paths using IBM Granite and Watsonx

- Offers chatbot/voice-based interaction for career questions

Key Features

- Personalized Career Recommendations

- Real-Time Labor Market Insights

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- Chatbot/Voice Interface

- Minimal Manual Dependency

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SYSTEM APPROACH

- **Platform Used:**

- IBM Cloud Lite

- IBM Watsonx.ai Studio

- **Technologies:**

- Granite 3B model (career reasoning)

- Watson Assistant (chatbot)

- IBM Cloud Functions (logic layer)

- Object Storage (student data)

- **Libraries Required**

- Transformers, ibm Watson, matplotlib

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ALGORITM & DEPLOYMENT

- Model
  UsedGranite-3B / Granite-8B-instruct (from IBM watsonx.ai)

- System Architecture
  Student academic
  Interests (selected via form/chat or extracted from queries)
  Natural language queries (e.g., "What career suits me?", "What jobs are trending in IT?")
- Processing:
- Prompt engineered query sent to Granite modelLangGraph + ReAct architecture used for multi-step reasoning
- Optional filtering using real-time labor market APIs (e.g., Naukri/LinkedIn Job Trends API)

RESULT

- Understand and respond to student queries about careers
- Analyze academic scores and subject preferences
- Suggest career paths based on job trends and skill demand
- Recommend relevant courses, certifications, or degrees
- Adapt responses for different education levels and regions (e.g., rural vs urban)
- Maintain a history of past queries and tailor suggestions accordingly
- Support interaction in simple, local-language style (prompt-tuned)

RESULT

RESULT

RESULT

CONCLUSION

- Reduces dependency on manual counselors
- Personalized and scalable
- Real-time and future-ready
- Ideal for rural or underserved areas

FUTURE SCOPE

- Lack of Personalized Career Guidance

    Most students receive **generic advice** based on limited options or outdated information. They often don't have access to **counselors who understand their individual strengths, interests, or local opportunities**. This is especially true in rural areas, where schools may not even have trained career advisors. As a result, students may choose careers that don't match their skills, personality, or future job market needs.

- Evolving Job Market & Industry Demands

    The job landscape is **changing rapidly** due to technology, automation, and new industries. Roles like **data scientist, UX designer, or AI engineer** didn't exist a decade ago, yet traditional counseling still focuses on older career paths (like doctor, engineer, teacher). Students need up-to-date insights into **what skills are in demand** and how to prepare for **emerging opportunities** — which is not possible through manual methods alone.

REFERENCES

- IBM Granite AI Models – https://www.ibm.com/granite
- IBM Cloud Lite Services – https://www.ibm.com/cloud/free
- IBM Watsonx.ai Studio – https://www.ibm.com/products/watsonx-ai
- IBM Cloud Functions – https://cloud.ibm.com/functions/

IBM CERTIFICATIONS

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(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 24 Jul 2025 (GMT)   **Learning hours:** 20 mins

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