
CAPSTONE PROJECT

AGENTIC CAREER COUNSELING COMPANION

Presented By:
C.Y.CHETNA REDDY
Sri Venkateswara College of Engineering
Department of CSE

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

- Students often struggle to make informed career decisions due to fragmented access to guidance, limited self-awareness of their academic strengths, and a rapidly evolving job market.
- Traditional counseling methods lack personalization and scalability, resulting in missed opportunities and career mismatches.
- The challenge is to develop an intelligent, autonomous agent that continuously monitors academic performance, evolving student interests, and real-time labor market trends to suggest personalized career pathways.

PROPOSED SOLUTION

- The proposed system is an AI-based Career Counseling Agent designed to support students in making informed and personalized career decisions. By continuously analyzing academic records, interest indicators, and real-time labor market trends, the system delivers intelligent and dynamic career path recommendations.
- **Academic Performance Monitoring:**

Continuously tracks and evaluates students' academic achievements to understand their strengths and potential.
- **Interest Mining through Surveys and Behavior Analysis:**

Identifies student interests using interactive surveys and digital behavior patterns such as browsing history and content engagement.
- **Labor Market Analysis via APIs:**

Integrates with external job market APIs to analyze demand trends, skill gaps, and emerging opportunities across industries.
- **Career Recommendation Engine:**

Leverages AI models to map student profiles to suitable career paths, educational programs, and training opportunities.
- **AI-Powered Chatbot for Interaction:**

Offers 24/7 personalized guidance through a conversational interface to answer queries, suggest career options, and provide resources.
- **Cloud-Based Scalable Deployment:**

Ensures accessibility and scalability through a robust cloud infrastructure that supports a growing number of users seamlessly.

 - **Result:**

The AI-based Career Counseling Agent is expected to significantly enhance student guidance by delivering timely, personalized career recommendations. It helps bridge the gap between student potential and real-world opportunities

SYSTEM APPROACH

The system will follow a modular approach with the following components:

✓ Input Sources:

Academic Data (Marks, Attendance, Courses)

Behavioral Data (Survey forms, Web usage)

External APIs (Job trends, skill demands)

✓ Processing Modules:

NLP for analyzing interest

Clustering for career mapping

AI/ML model for recommending top 3–5 career paths

✓ Output:

Dashboard view

PDF report

Chatbot suggestion

ALGORITHM & DEPLOYMENT

Algorithm

K-Means Clustering for grouping students with similar traits

Decision Trees for rule-based career suggestions

TF-IDF + Cosine Similarity for interest and job trend mapping

Input:

Academic records, survey answers, job trend data

Model Training:

Dataset: Sample career-skill-job dataset

Trained on skill-demand mappings

Deployment:

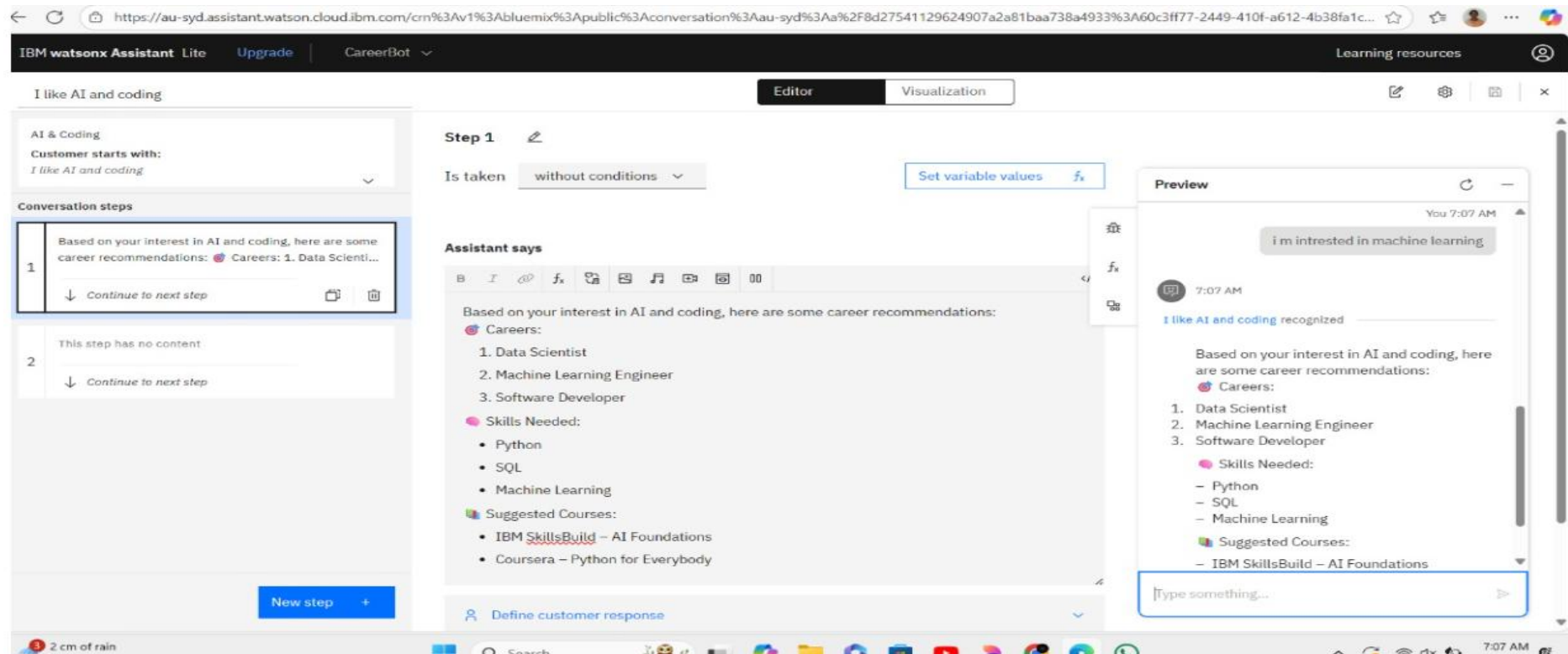
Backend on IBM Cloud using Flask

MongoDB for storing history

React UI deployed on Netlify

RESULT

This screenshot shows the dialog created for a student interested in AI and Coding. Watson Assistant recognizes the intent and provides relevant career suggestions, required skills, and learning resources.”



CONCLUSION

- The Agentic Career Counseling Companion aims to revolutionize student guidance by making career planning personalized, dynamic, and AI-driven.
- It leverages real-time analytics and automation to recommend career paths aligned with students' evolving skills and interests.
- With continuous updates and feedback loops, the system ensures relevant, timely, and scalable counseling solutions.

FUTURE SCOPE

Planned Enhancements:

- Integration with school ERP systems
- Advanced personality and emotional intelligence tests
- More APIs for global job markets
- Mobile App version
- Multilingual chatbot (regional languages)
- Voice assistant for accessibility

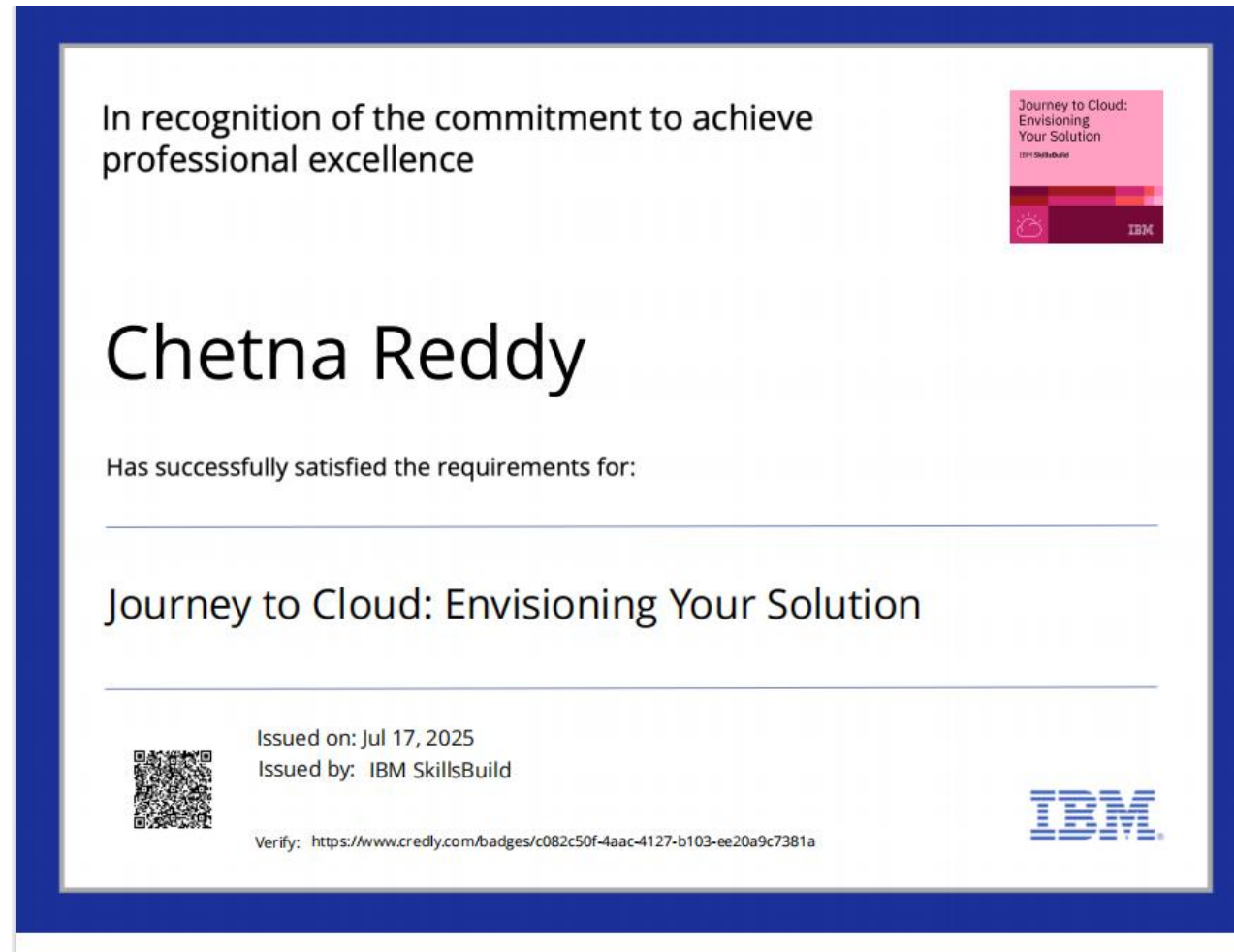
REFERENCES

- LinkedIn Economic Graph
- IBM Cloud AI Developer Tools
- “AI for Career Counseling” – IEEE Xplore 2023
- Scikit-learn Documentation
- MongoDB Developer Guide
- SkillsBuild Courses – IBM
- Naukri API Job Trends 2024

IBM CERTIFICATIONS



IBM CERTIFICATIONS



IBM CERTIFICATIONS

IBM **SkillsBuild**

Completion Certificate



This certificate is presented to

Chetna Reddy

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