CAPSTONE PROJECT

AGENTIC AI FOR PERSONALIZED COURSE PATHWAYS

Presented By

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OUTLINE

- Problem Statement
- Technology used
- Wow factor
- End users
- Result
- Conclusion
- Git-hub Link
- Future scope
- IBM Certifications



PROBLEM STATEMENT

Students often struggle to identify the right learning path that aligns with their interests and long-term goals due to the overwhelming number of online courses and a lack of personalized guidance. Skill Pilot aims to solve this by acting as an Agentic AI coach that interacts with students, understands their interests (like Frontend Development, Cybersecurity, UI/UX Design, etc.), assesses their current skill level, and dynamically builds a personalized course roadmap that adapts over time based on progress and preferences.

Proposed Solution:

Skill Pilot is an AI-powered learning coach built using IBM Cloud Lite services. It uses Natural Language Processing (NLP) to understand user interests, the IBM Granite model to generate personalized learning roadmaps, and Retrieval-Augmented Generation (RAG) with web crawling and search capabilities to fetch the most relevant and up-to-date learning content. The roadmap adapts over time based on the learner's progress, feedback, and evolving goals, enabling a truly personalized learning experience.



TECHNOLOGY USED

IBM cloud lite services

Natural Language Processing (NLP)

Retrieval Augmented Generation (RAG)

IBM Granite model



IBM CLOUD SERVICES USED

- IBM Cloud Watsonx Al Studio
- IBM Cloud Watsonx Al runtime
- IBM Cloud Agent Lab
- IBM Granite foundation model



WOW FACTORS

This agent dramatically reduces the time spent choosing the right learning resources, improves learning outcomes through personalized roadmaps, empowers beginners to confidently navigate tech careers, and fosters continuous growth by adapting to individual goals and progress.

Unique Features:

Semantic understanding of user goals through natural conversation

Dynamic roadmap generation based on skill level, interests, and time commitment

Real-time content retrieval from trusted sources using RAG and web search

Auto-curated learning modules with links to hands-on tutorials, articles, and projects

Progress-aware roadmap updates that evolve with user performance and feedback

Project suggestions aligned with industry expectations

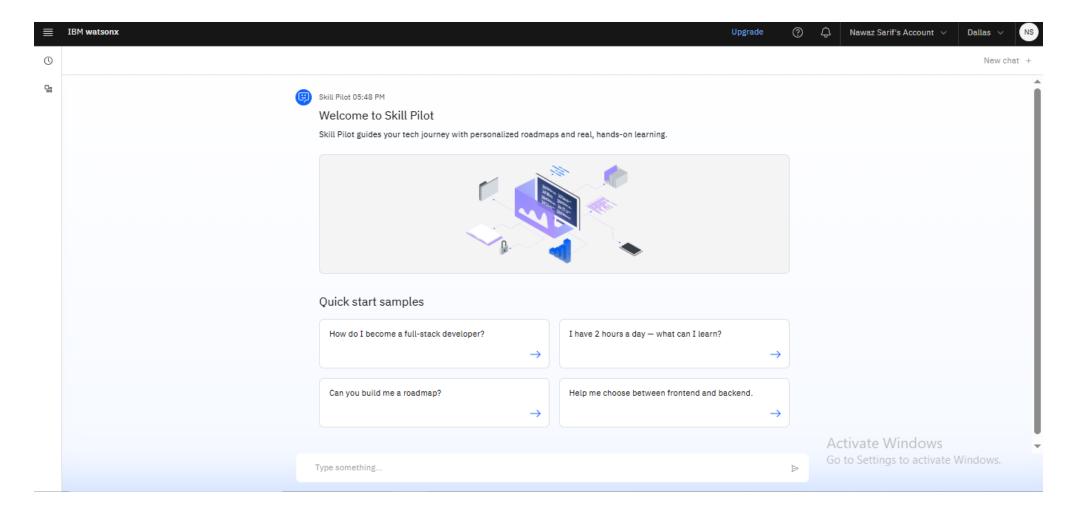
Goal-focused content delivery, whether it's job-readiness, skill expansion, or portfolio building



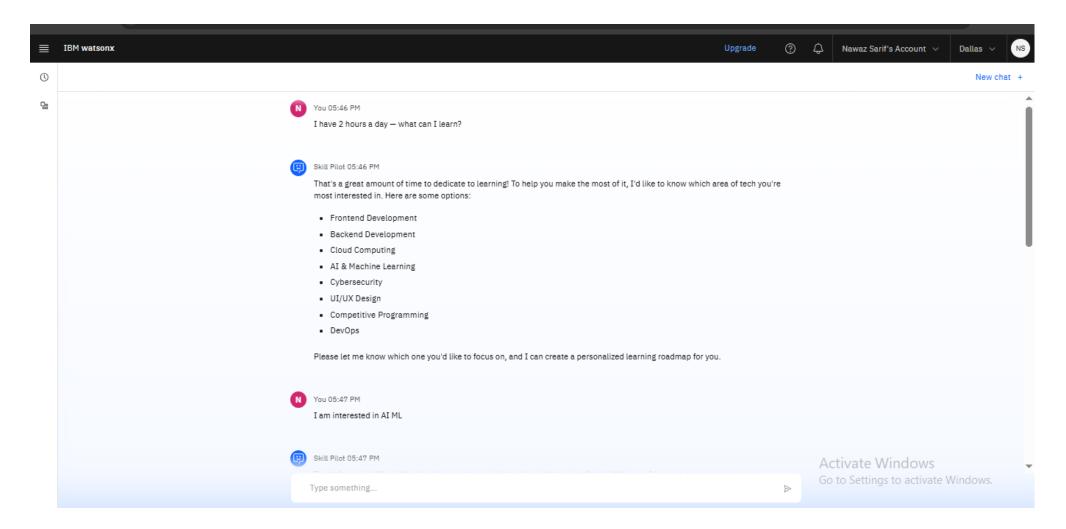
END USERS

- Students & College Graduates
- Early-Career Professionals
- Self-Learners & Hobbyists
- Academic Institutions & Training Centers
- Anyone Overwhelmed by Learning Choices
- Learners who want to skip the research and jump straight into a tailored, evolving plan

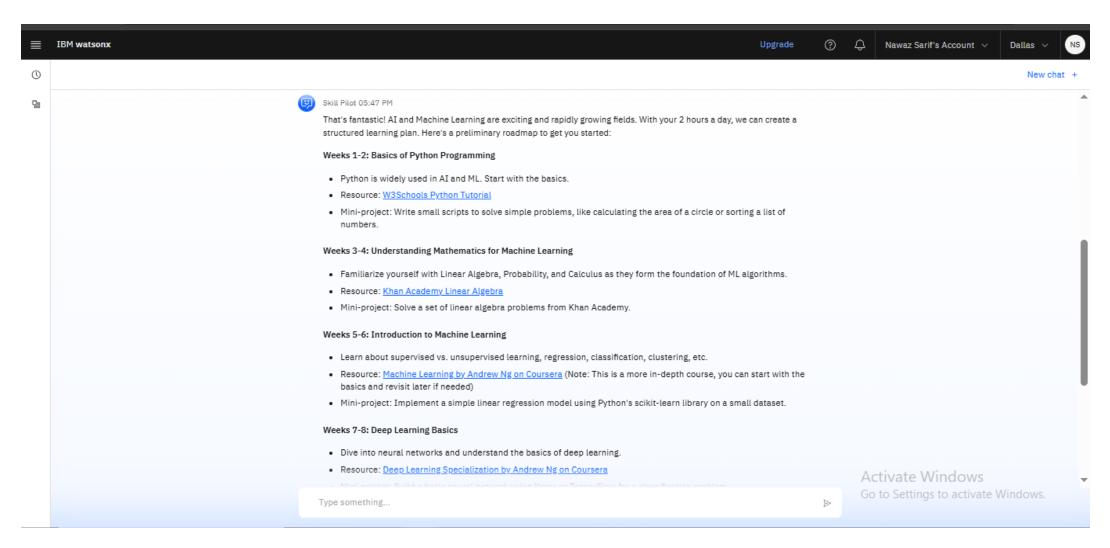






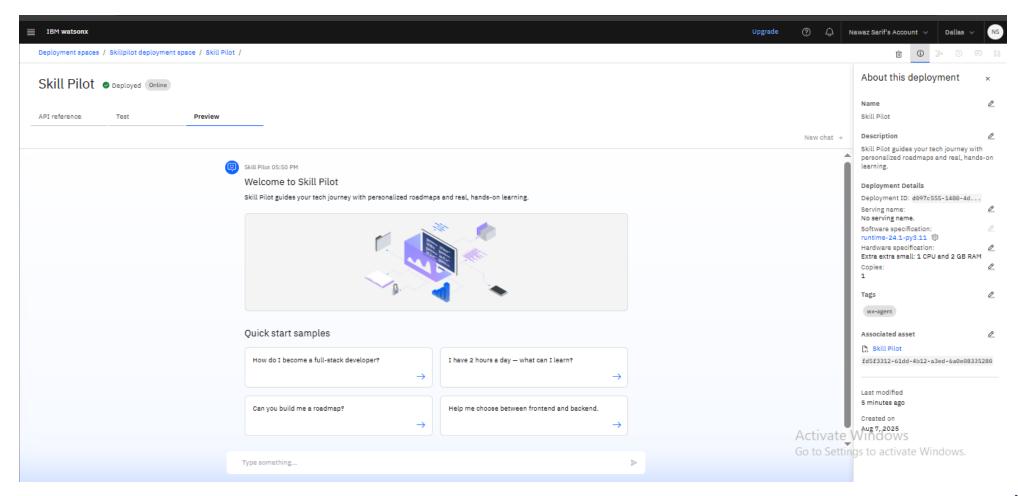








Deployed AI Agent





CONCLUSION

- The agent can generate personalized learning roadmaps, recommend curated resources, and even guide users through hands-on projects.
- It saves time by automating content discovery, skill assessment, and progress tracking across multiple domains.
- Skill Pilot enhances learning efficiency, confidence, and adaptability for students, professionals, and self-learners alike.



FUTURE SCOPE

- The agent can be enhanced with voice-based interaction, enabling hands-free, conversational learning.
- Integration with online coding platforms and learning management systems.
- Multilingual support will expand accessibility to diverse user bases across different regions.
- Over time, the agent can evolve into a collaborative hub, connecting learners with peers, mentors, and industry experts for guided growth.



IBM CERTIFICATIONS

In recognition of the commitment to achieve professional excellence



Nawaz Sarif

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



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IBM SkillsBuild

Completion Certificate



This certificate is presented to

Nawaz Sarif

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



GITHUB LINK

https://github.com/Nawaz0119/Skill_pilot_AgenticAl.git



THANK YOU

