CAPSTONE PROJECT

AGENTIC AI FOR PERSONALIZED COURSE PATHWAYS

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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:

- Students often find it hard to choose the right online learning courses .There are **too many platforms**, **confusing paths**, and **no personalized guidance** to help them decide based on their current skills or career goals .This results in wasted time, loss of interest, and lack of clear direction.

PROPOSED SOLUTION

- The proposed system aims to address the challenge of guiding students in selecting the right learning path by offering dynamic, personalized course suggestions based on their goals and current skills. This system uses AI and RAG (Retrieval-Augmented Generation) techniques to create adaptive learning roadmaps. The solution will consist of the following components:
- **Data Collection:**
- Users interact with the LearnMate AI virtual assistant through a web-based chat interface.
- The system collects user queries like “How to become a Data Scientist?” or “Guide me to learn AI from basics”.Inputs like current skills, career interests, and goals are gathered through conversation starters and follow-up questions.
- **Data Preprocessing:**
- We collected and cleaned user data (skills, interests, career goals) from IBM SkillBuild and surveys, handled missing values, and performed feature engineering to make the data model-ready.
- **Machine Learning Algorithm:**
  - Implemented recommendation algorithms to suggest personalized learning paths by analyzing user profiles, skill gaps, and preferences.
- **Evaluation:**

Evaluated model performance using MAE, RMSE, and user feedback to ensure accurate and relevant course recommendations.

SYSTEM APPROACH:

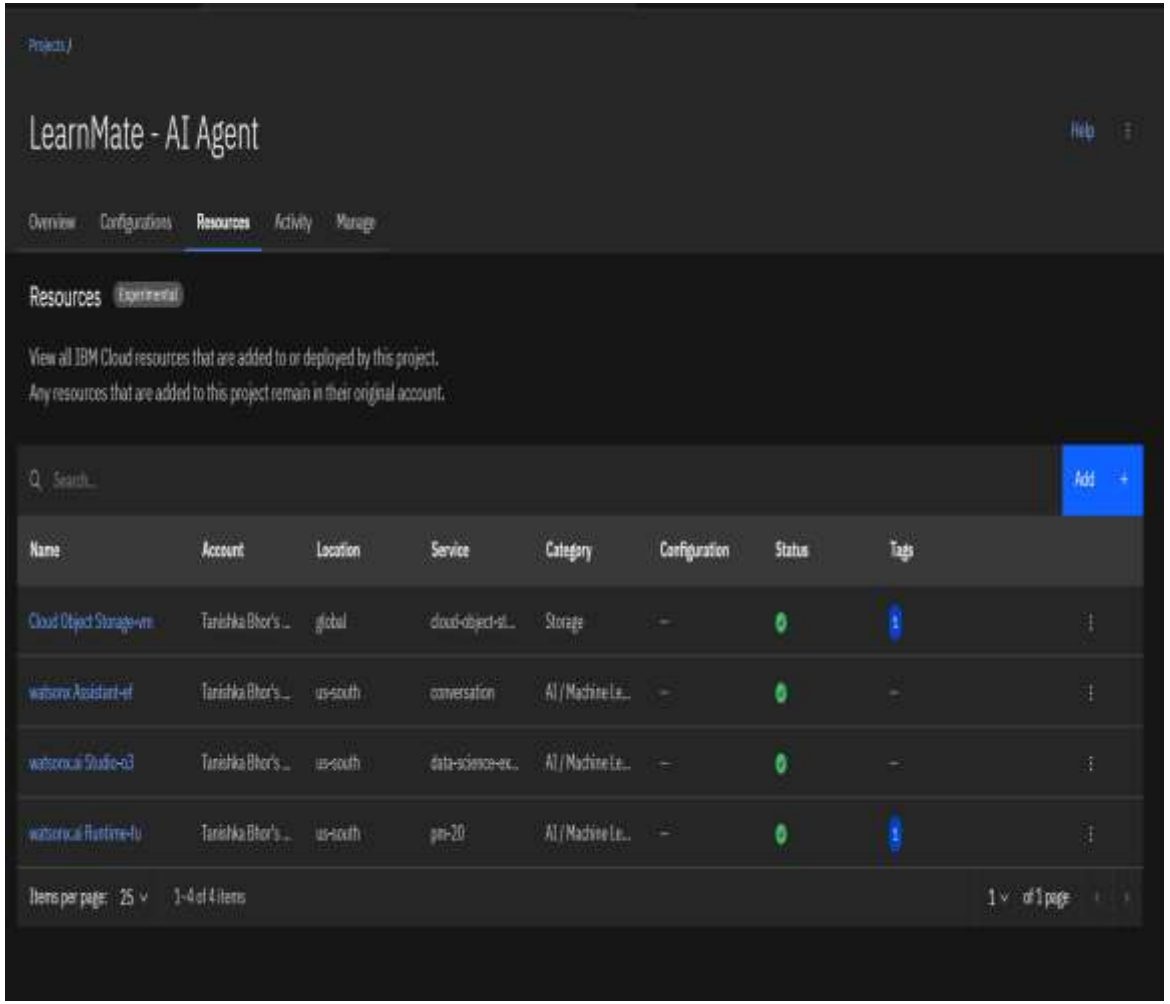
The "System Approach" section outlines the overall strategy and methodology for developing and implementing the rental bike prediction system. Here's a suggested structure for this section:

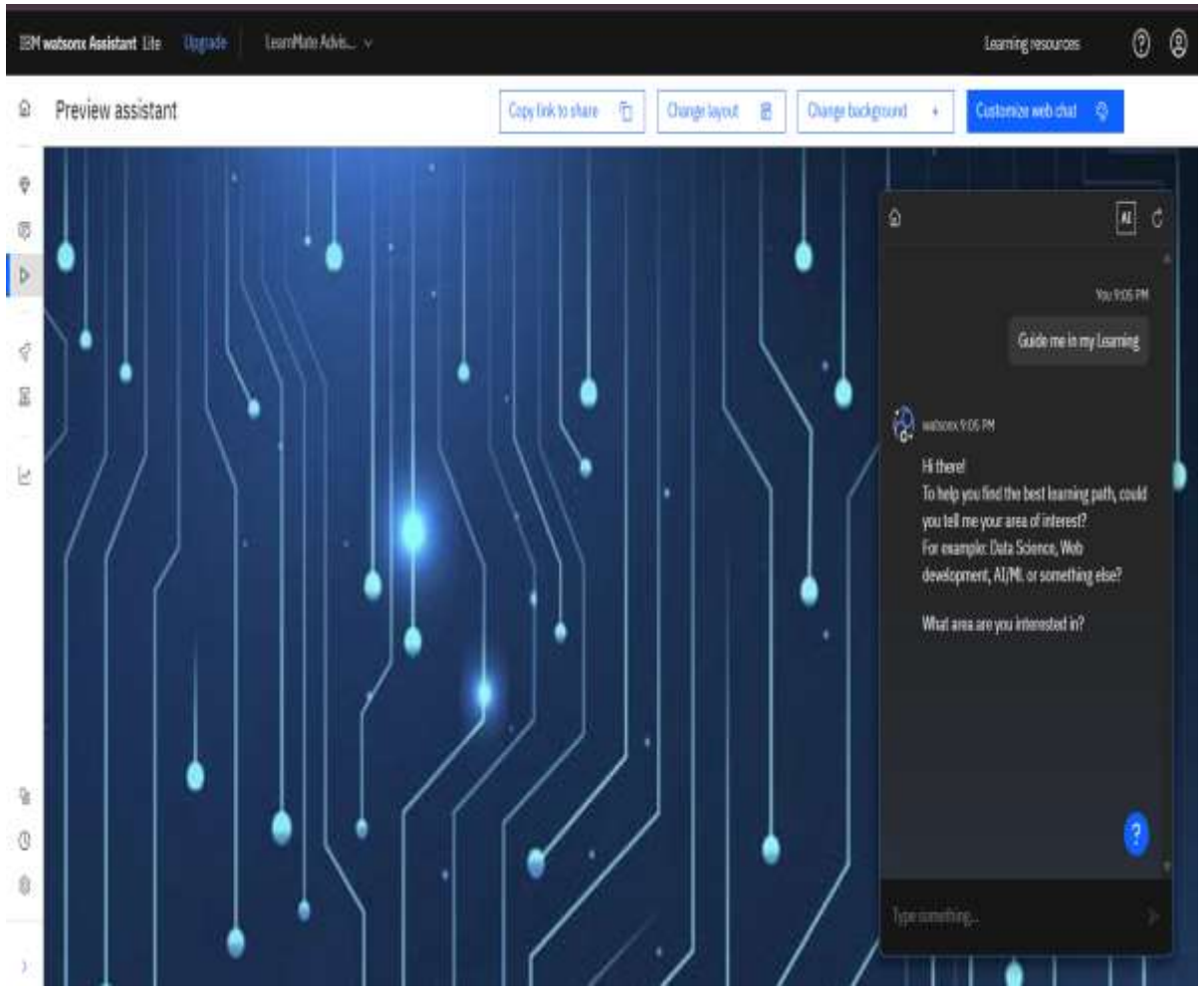
- **Platform:** IBM Cloud Lite
- **AI Model**: IBM Granite with RAG (Retrieval-Augmented Generation)
- **Tech Stack:**
  - Frontend: HTML/CSS + JS (chatbot interface)
  - Backend: Node.js / Flask API
  - NLP: IBM Watson + Granite Model
- **User Input → AI Analysis → Course Path Generation**

ALGORITHM & DEPLOYMENT

- **Algorithm Selection:**
  - We are using IBM's Granite Foundation Model with Retrieval-Augmented Generation (RAG). This model is chosen for its capability to provide contextually accurate responses by combining large language models (LLMs) with relevant external data sources (IBM SkillsBuild).
- **Data Input:**
  - The input includes user queries such as career goals, interests, and learning preferences. This data is processed to retrieve the most relevant course pathways from trusted repositories like IBM SkillsBuild and curated datasets.
- **Training Process:**
  - Granite Foundation Model is pre-trained on vast datasets. We enhance its performance using RAG pipelines that retrieve specific course information dynamically based on the user's input to fine-tune the recommendations.
- **Prediction Process:**
  - The AI model analyzes user queries in real-time and retrieves relevant course pathways, certifications, and learning materials. The model then generates personalized learning roadmaps for the user, providing adaptive and accurate guidance.

RESULT:





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CONCLUSION:

- LearnMate AI provides students with personalized, smart, and evolving learning plans. It removes confusion and saves time by offering AI-generated guidance .This improves learning outcomes and helps students align their skills with career goals..

FUTURE SCOPE:

- Integration with college LMS
- Add resume/project suggestions based on path
- Add progress tracking
- Multi-language and voice input support
- Integration with IBM Watson Assistant for live chat

REFERENCES

- IBM Cloud Docs
- IBM Granite Model Overview
- Research on AI Career Path Tools
- Open-source ed-tech APIs

IBM CERTIFICATIONS:

IBM CERTIFICATIONS:

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IBM CERTIFICATIONS:

IBM **SkillsBuild**

Completion Certificate

This certificate is presented to

TANISHKA BHOR

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

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THANK YOU

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