EDUNET FOUNDATION IBM SKILLSBUILD PROJECT

FITNESS BUDDY

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OUTLINE

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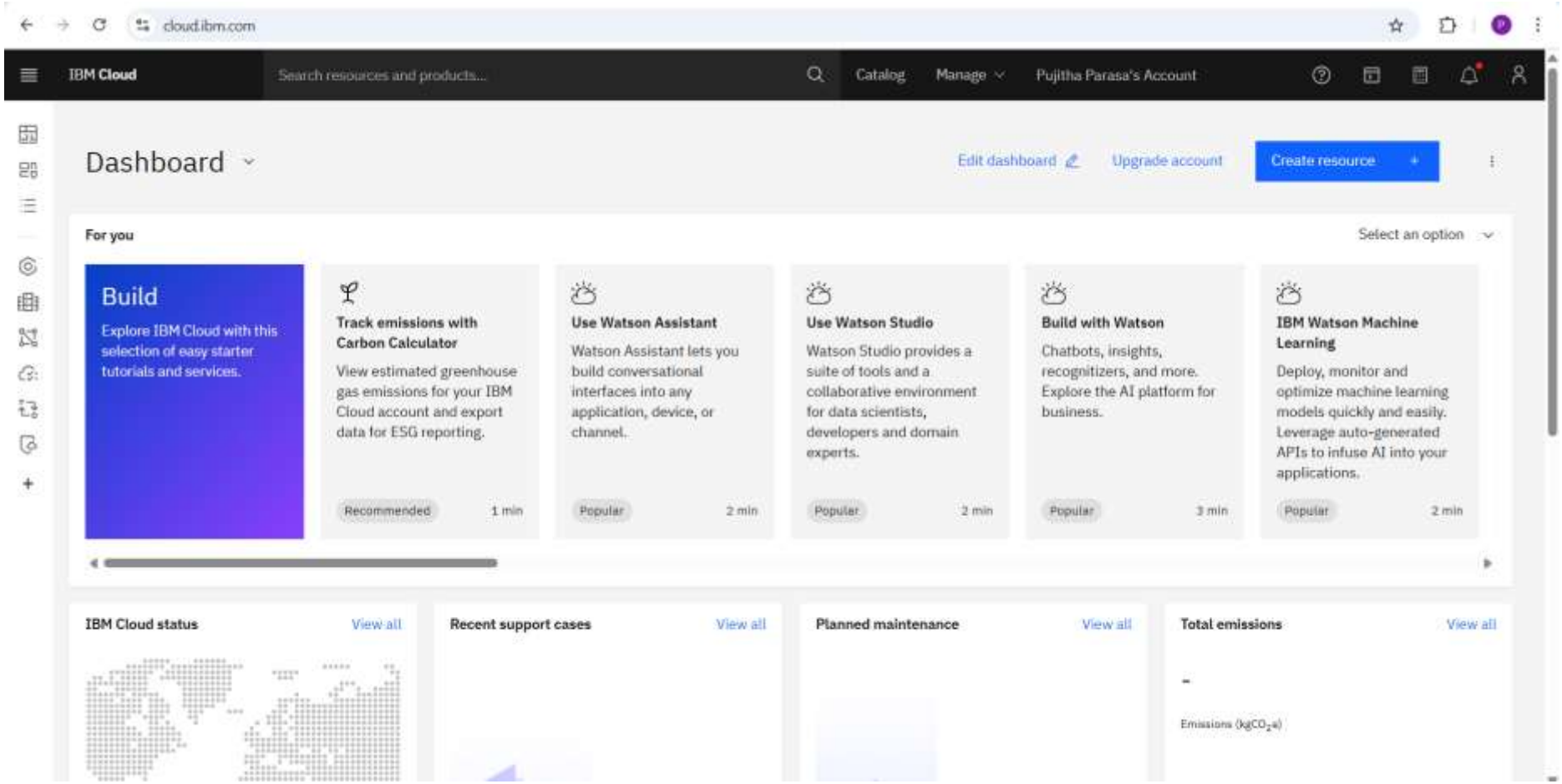
PROBLEM STATEMENT

The challenge - In today’s fast-paced world, many individuals struggle to maintain a healthy lifestyle due to lack of personalized guidance, time constraints, and inconsistent motivation. Traditional fitness solutions often require expensive subscriptions, in-person consultations, or rigid schedules that don't adapt to personal preferences or daily routines. There is a growing need for an accessible, friendly, and intelligent virtual assistant that can provide on demand fitness advice, healthy lifestyle suggestions, and basic nutrition guidance—all tailored to individual needs and available at any time.

PROPOSED SOLUTION

- To develop an intelligent virtual assistant that delivers personalized fitness guidance, nutrition tips, and motivational support—accessible anytime, without the constraints of traditional fitness programs
- **Data Collection:**
  - Collect user inputs: age, gender, fitness goals, dietary preferences, workout history
  - Use external sources like weather APIs and calender events to adjust recommendations.
- **Data Preprocessing:**
  - Clean and preprocess the collected data to handle missing values, outliers, and inconsistencies.
  - Feature engineering to extract relevant features from the data that might impact bike demand.
- **AI Agent:**
  - Use foundation models like ibm/granite-3b-instruct for chat based fitness advice
  - Generate meal plans and motivational messages using text generation capabilities.
- **Deployment:**
  - Host AI agent as an API using IBM Watson Machine Learning or Code Engine
  - Build a chatbot style frontend using Gradio.
- **Evaluation:**
  - Assess the model's performance using appropriate metrics such as Mean Absolute Error (MAE), Root Mean Squared Error (RMSE), or other relevant metrics.
  - Continuously improve prompt quality through Watson.ai.Studio dashboards.

PROPOSED SOLUTION



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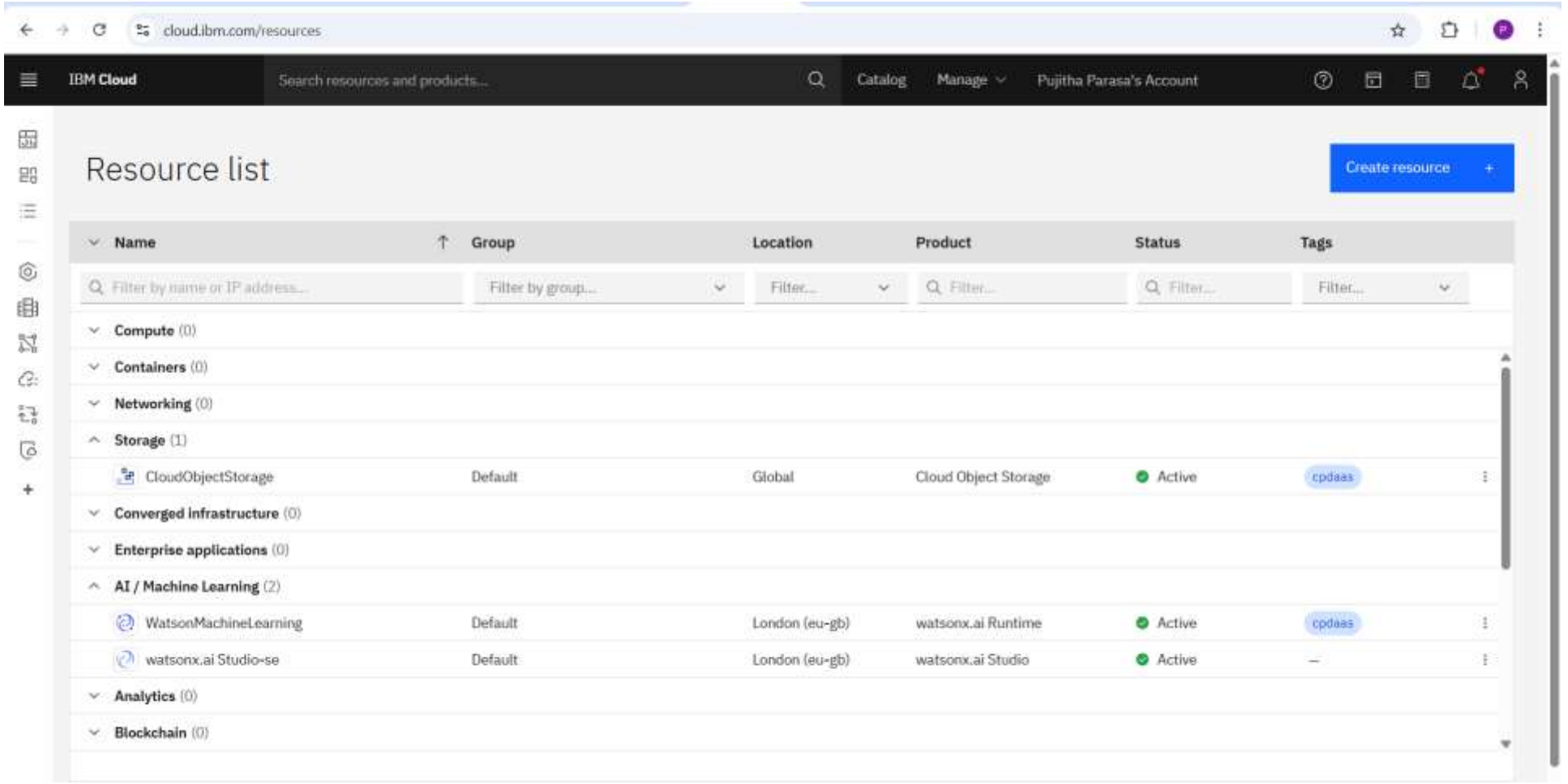

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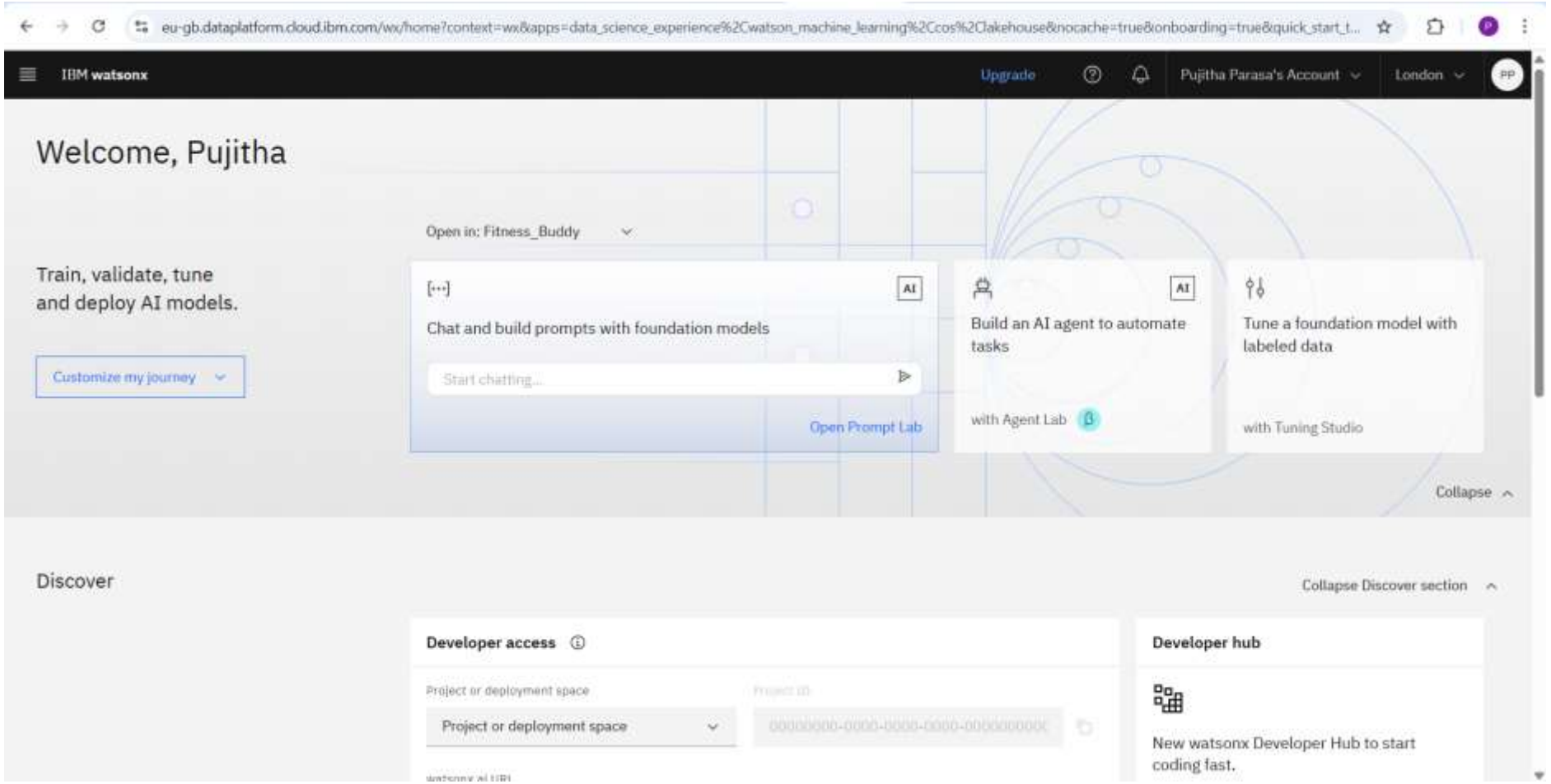

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SYSTEM APPROACH

- **System requirement**

Processor: Intel Core i5/i7 (or AMD equivalent)

RAM: Minimum 8 GB (Recommended: 16 GB for smooth model training/testing)

Storage: Minimum 50 GB free space

GPU (Optional but preferred): NVIDIA CUDA-enabled GPU (e.g., GTX 1660 or higher) for local training.

Internet Connection: Stable broadband for cloud access and deploymen

- **Library required to build the model**

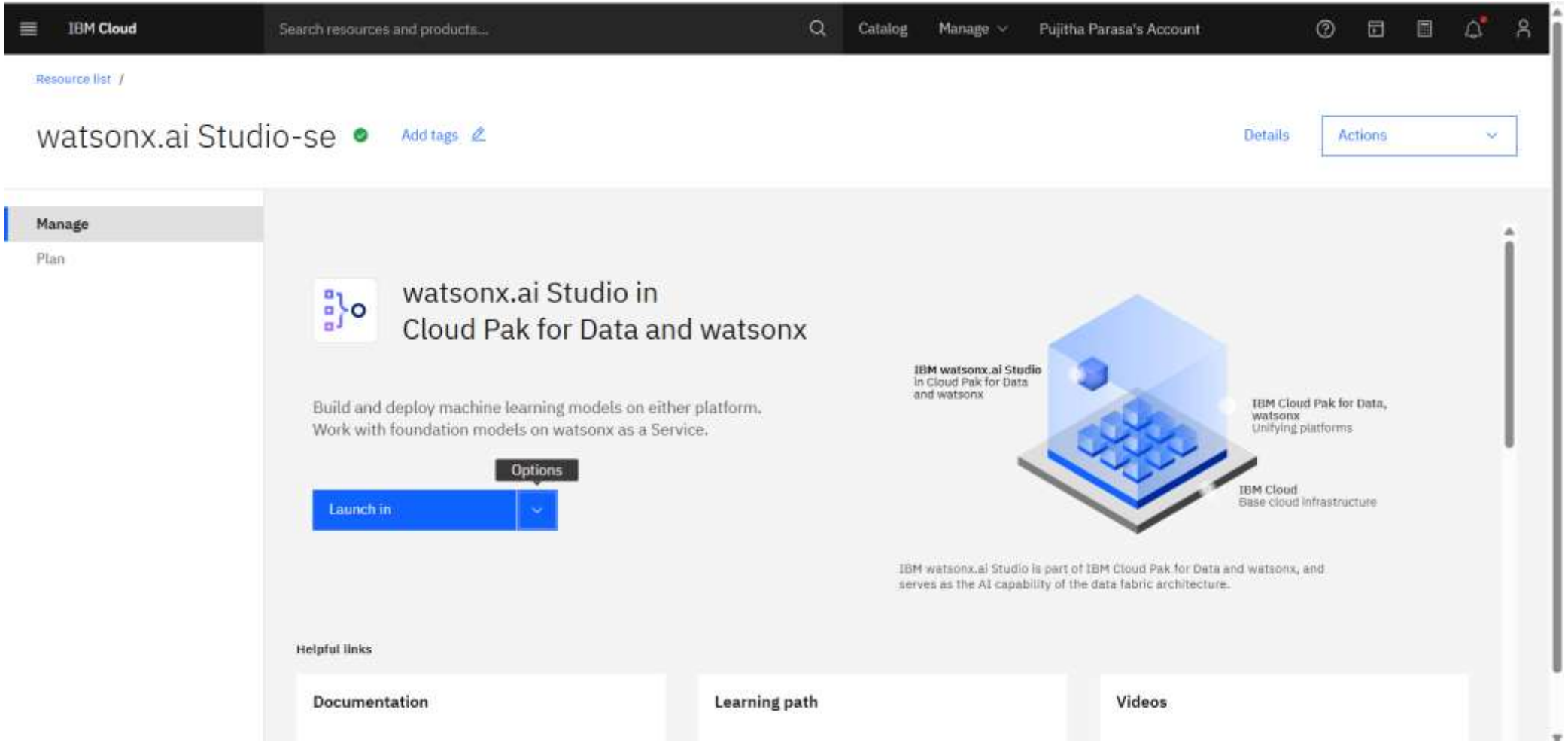
IBM watsonx.ai Studio – Used to build, train, and manage the AI workflow and interactions.

IBM Granite-3.3-8B-Instruct – The selected large language model for generating intelligent responses and supporting predictive capabilities.

IBM Cloud – Provides the infrastructure to run and deploy the solution.

Watsonx Runtime Studio – Acts as the execution environment for running the model over the cloud with high performance and scalability

SYSTEM APPROACH



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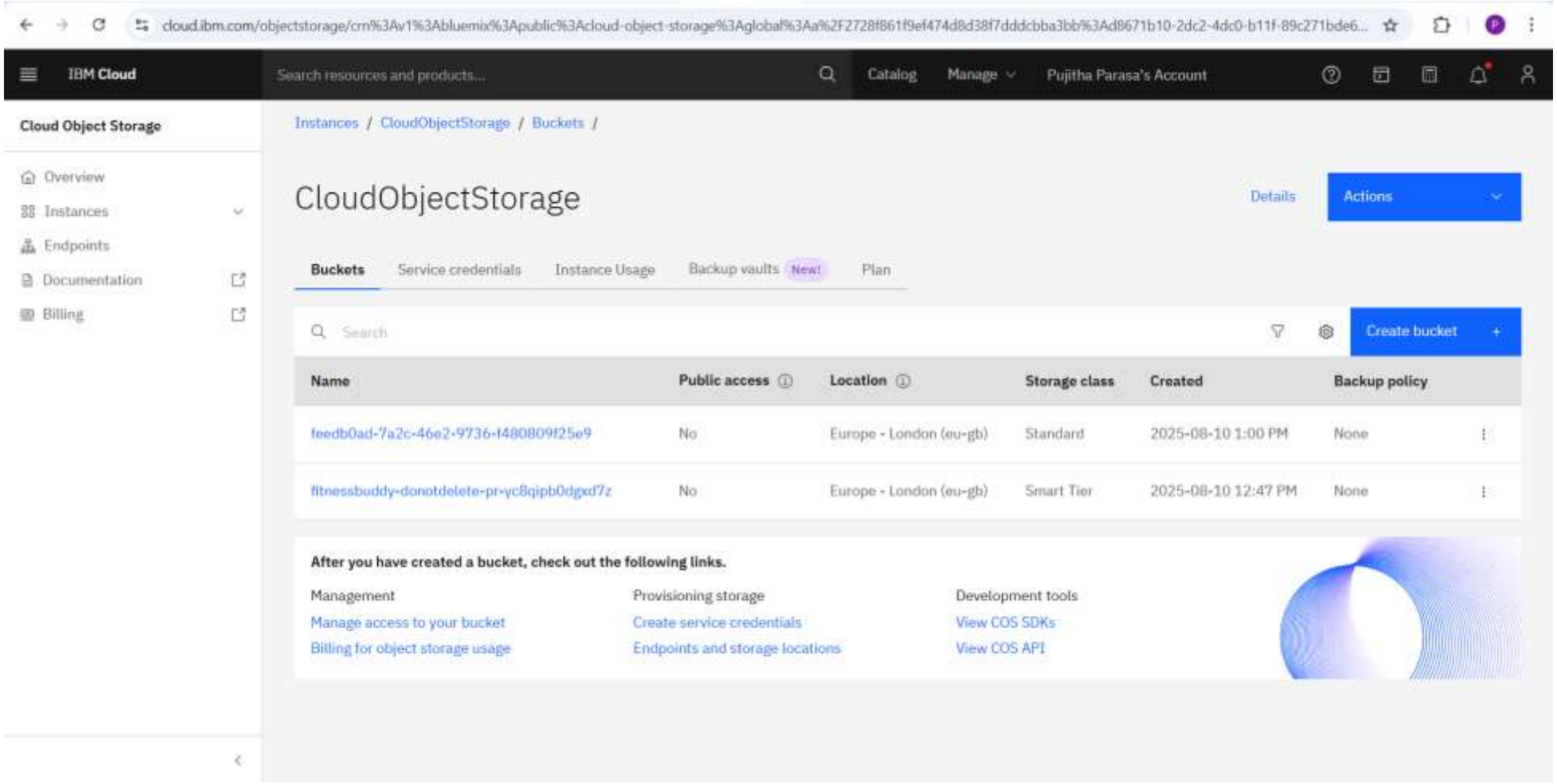

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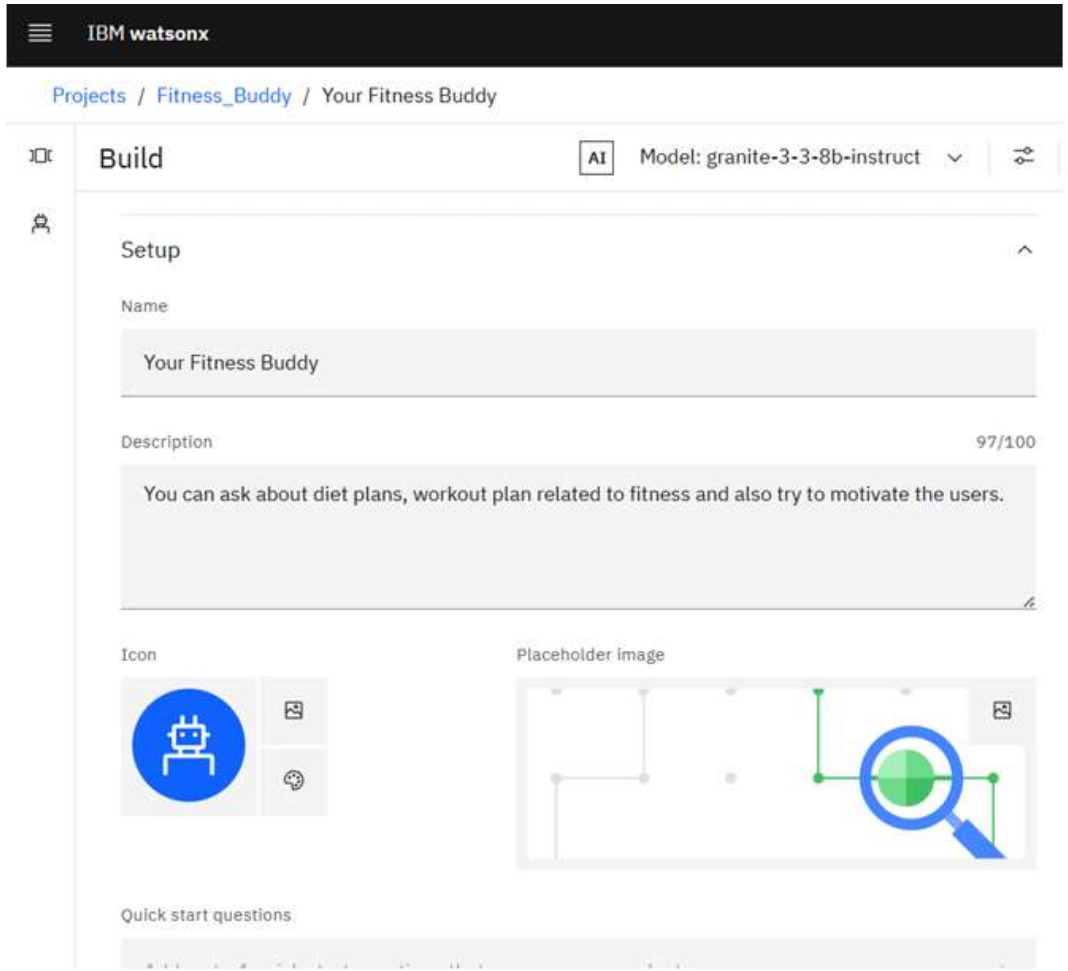
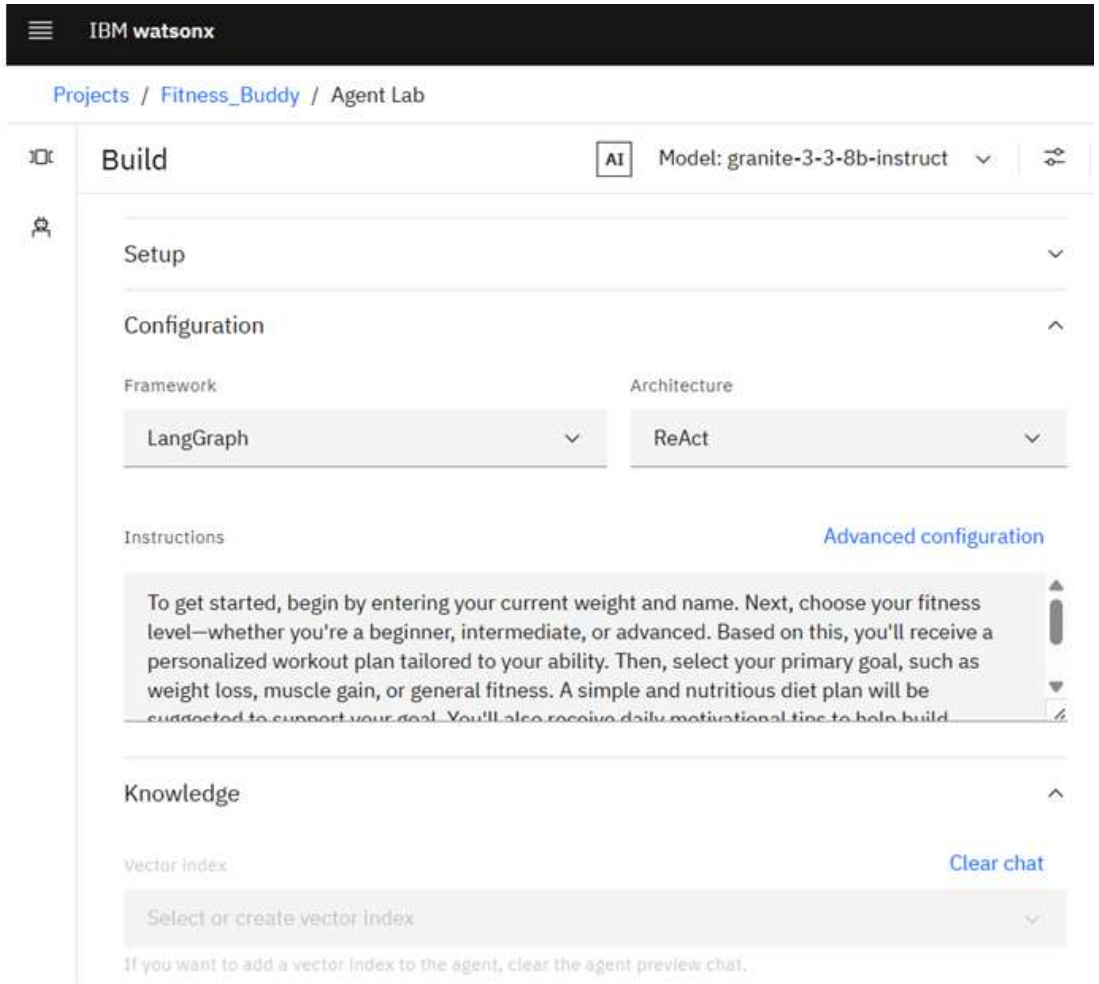
ALGORITHM & DEPLOYMENT

- 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 Fitness Buddy system leverages a Large Language Model (LLM) — specifically, IBM Granite-3.3-8B-Instruct — to deliver dynamic, context-aware fitness advice and recommendations. This LLM is capable of understanding user inputs in natural language and generating personalized fitness plans, motivational messages, and nutritional suggestions. It is selected due to its strong instruction-following ability, conversational fluency, and capability to adapt to diverse user queries, making it ideal for an AI health assistant..
- Data Input:
  - The model utilizes user-provided inputs such as fitness goals, current activity level (e.g., beginner, intermediate, advanced), preferred workout types (e.g., cardio, strength, yoga), dietary preferences, and availability. It also considers contextual and behavioral data like time of day, day of the week, and consistency history. These inputs help tailor each session uniquely to the individual user.
- Training Process:
  - While the core LLM (Granite) is pre-trained by IBM, further customization is achieved by prompting and fine-tuning behavior through curated sample interactions and continuous feedback loops. Relevant prompt engineering techniques are used to optimize how the model responds to fitness-related queries. Continuous performance review, feedback rating, and iterative prompt adjustment act as an ongoing "training" process for system refinement.
- Prediction Process:
  - When a user interacts with the assistant, their input is processed in real-time. The model dynamically interprets user context and intent, then predicts the most suitable response — such as a personalized workout, motivational message, or dietary suggestion. The system adapts over time based on usage history, enhancing relevance in future interactions. This form of prediction is generative and goal-aligned rather than statistical, making the LLM suitable for personalized, conversation-driven use cases..

ALGORITHM & DEPLOYMENT





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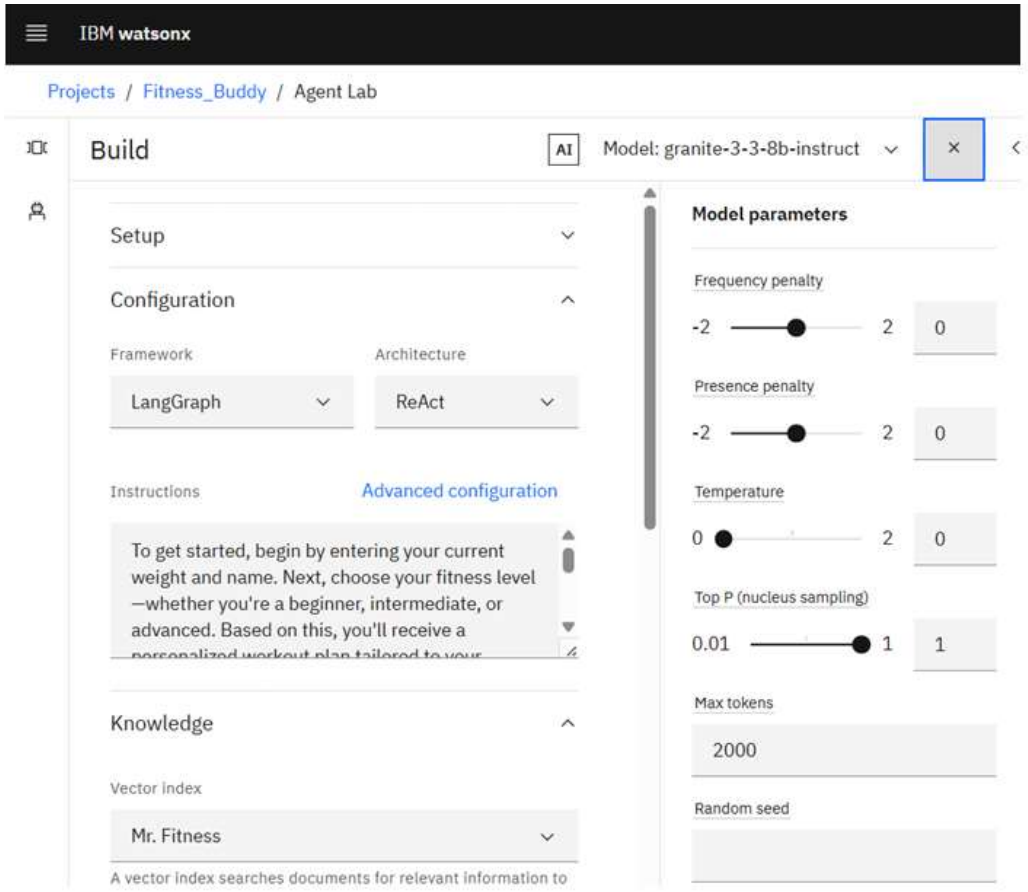

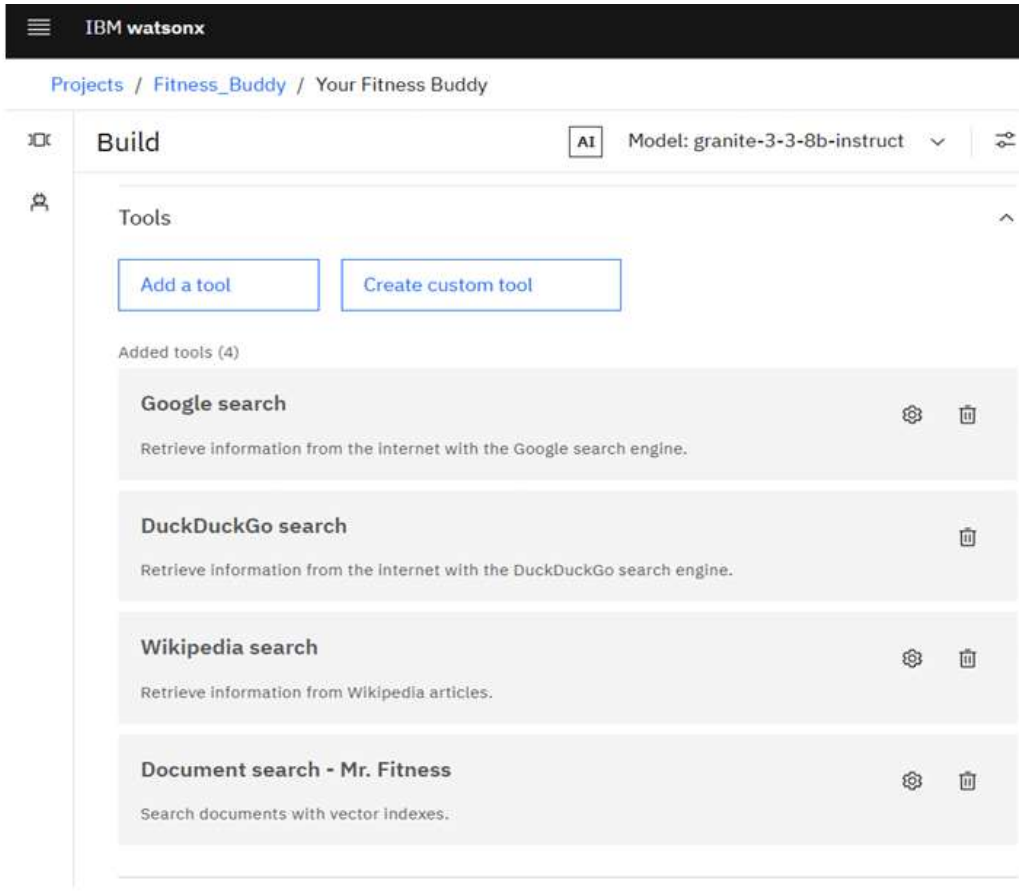

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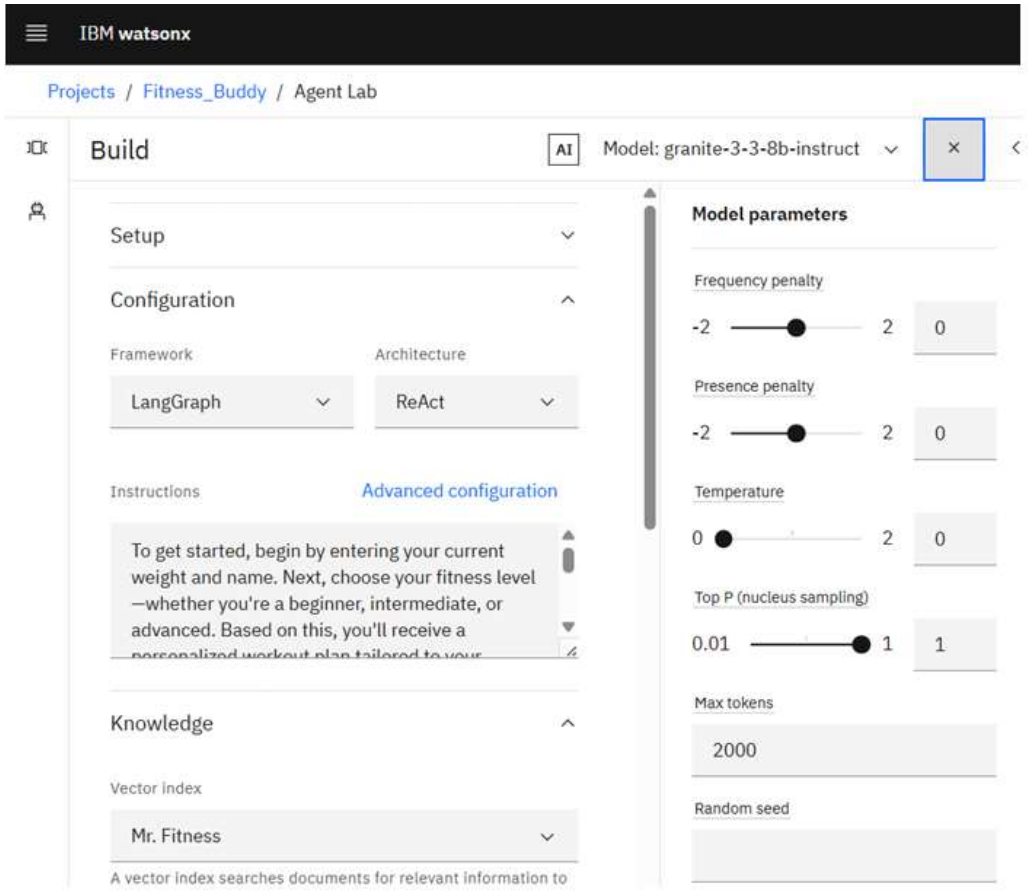

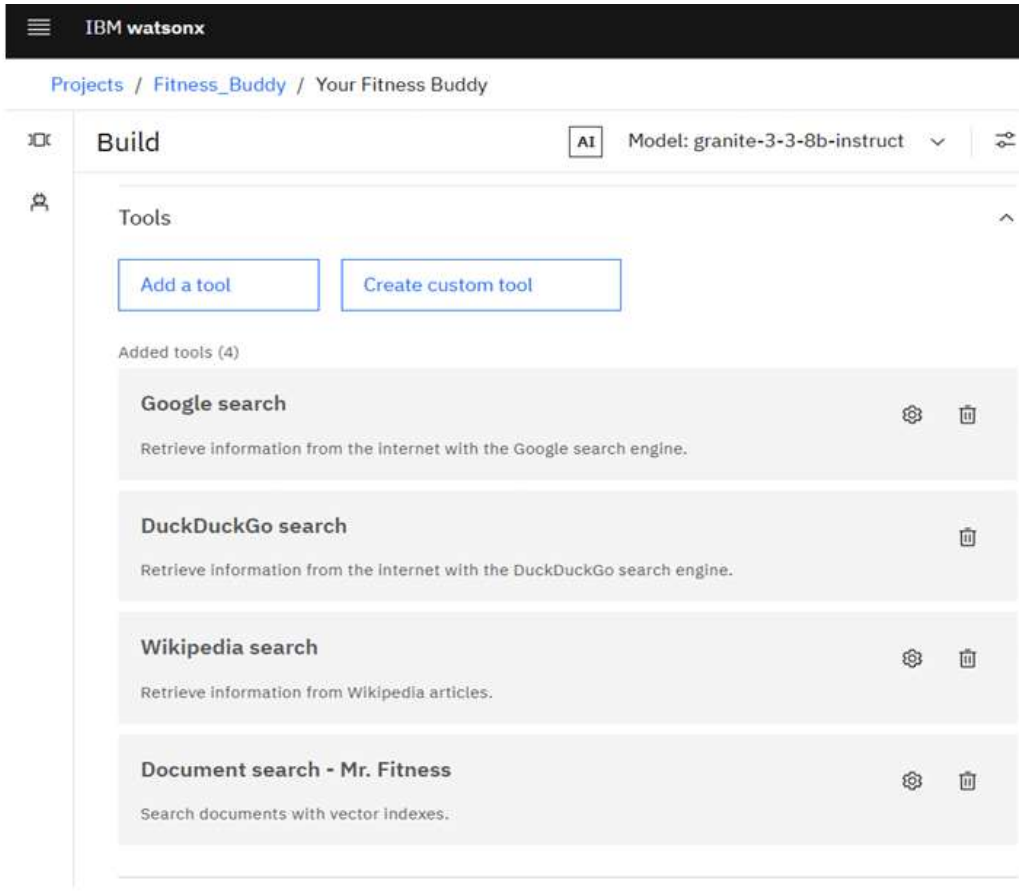

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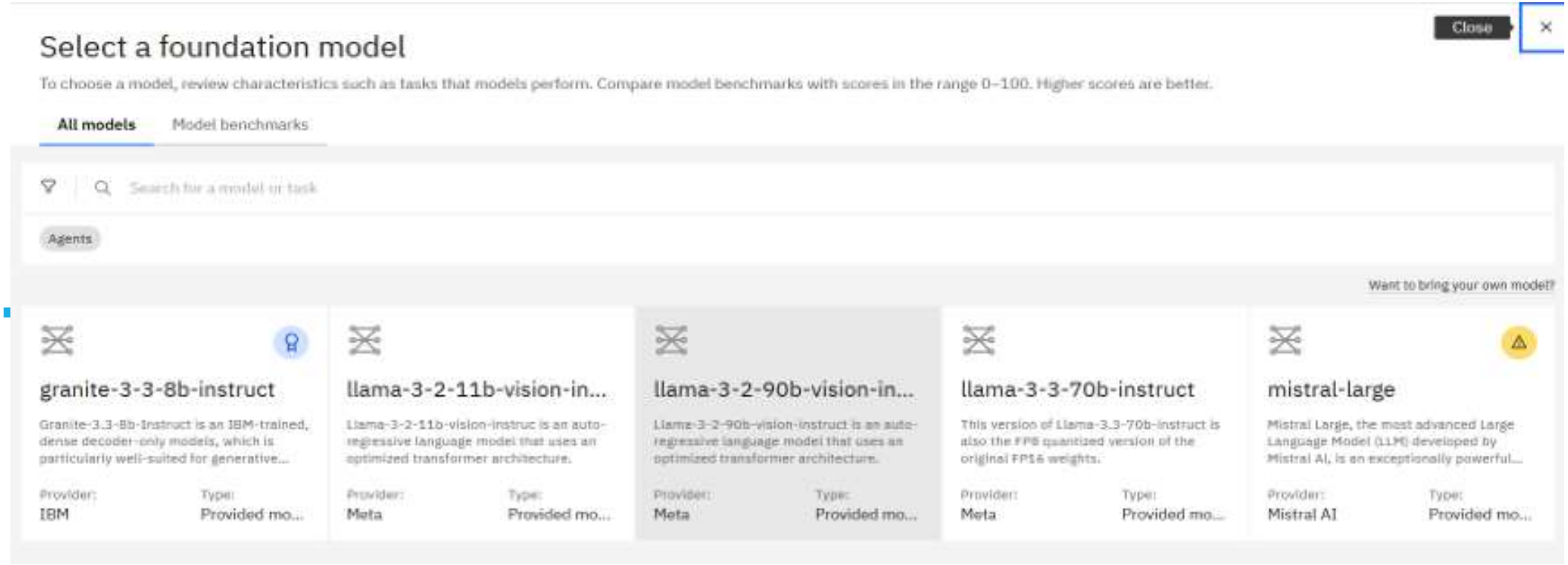

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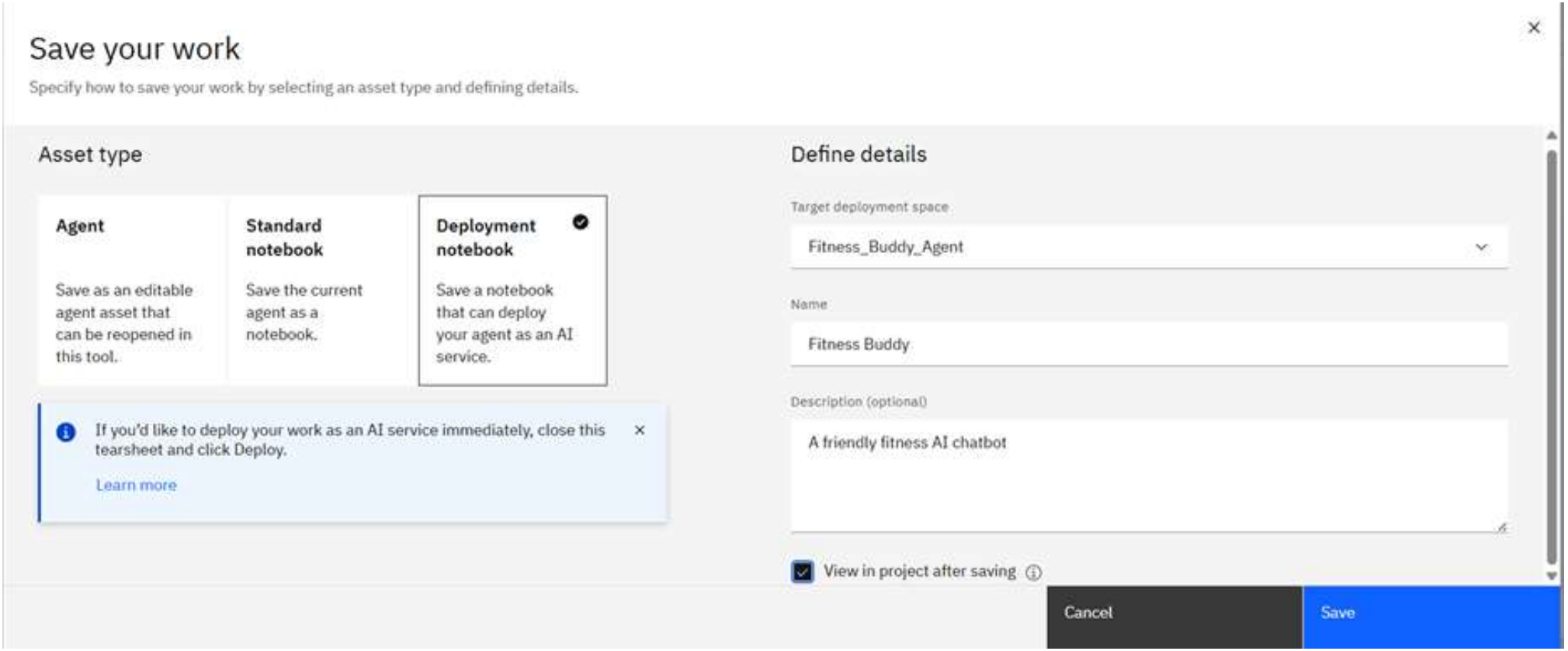

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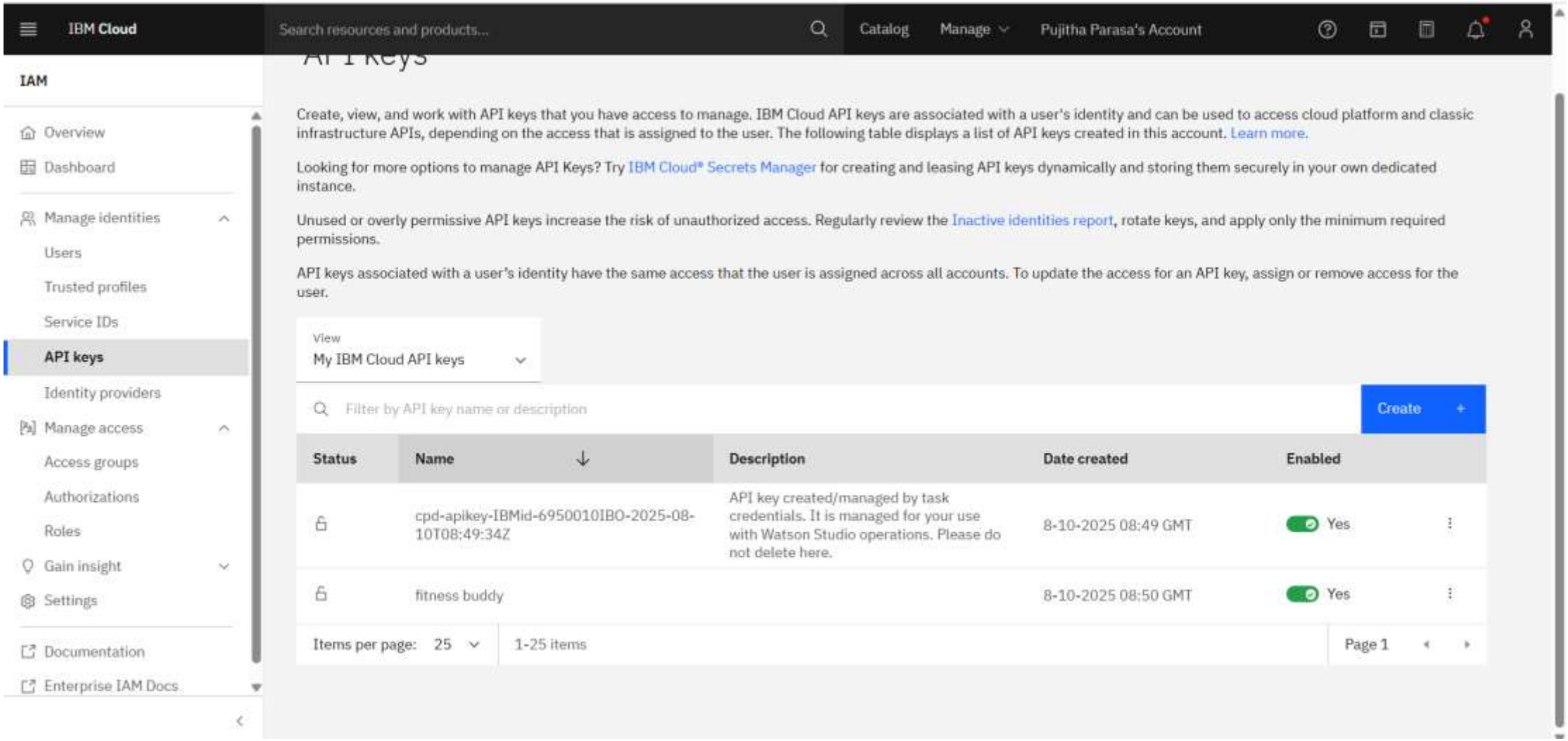

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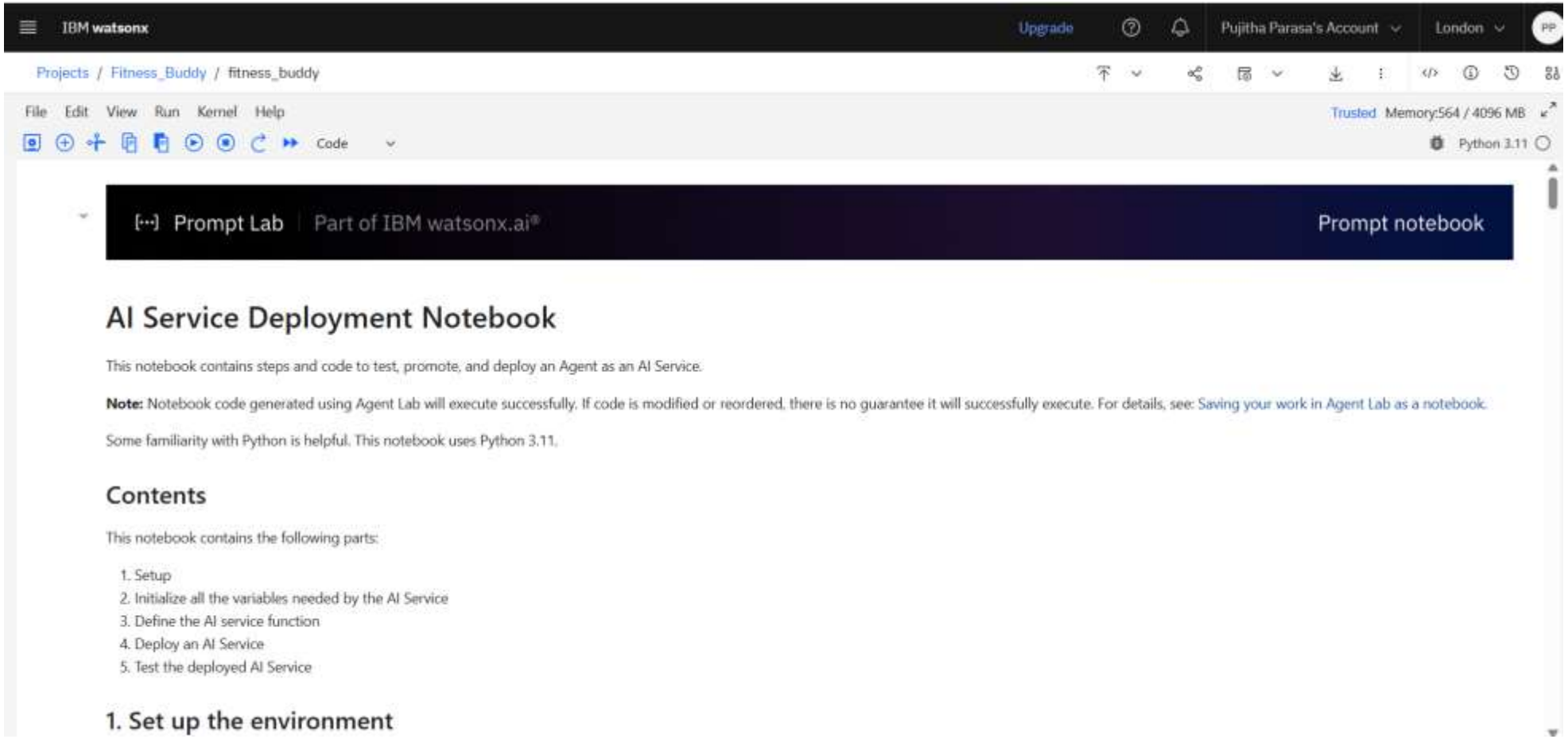

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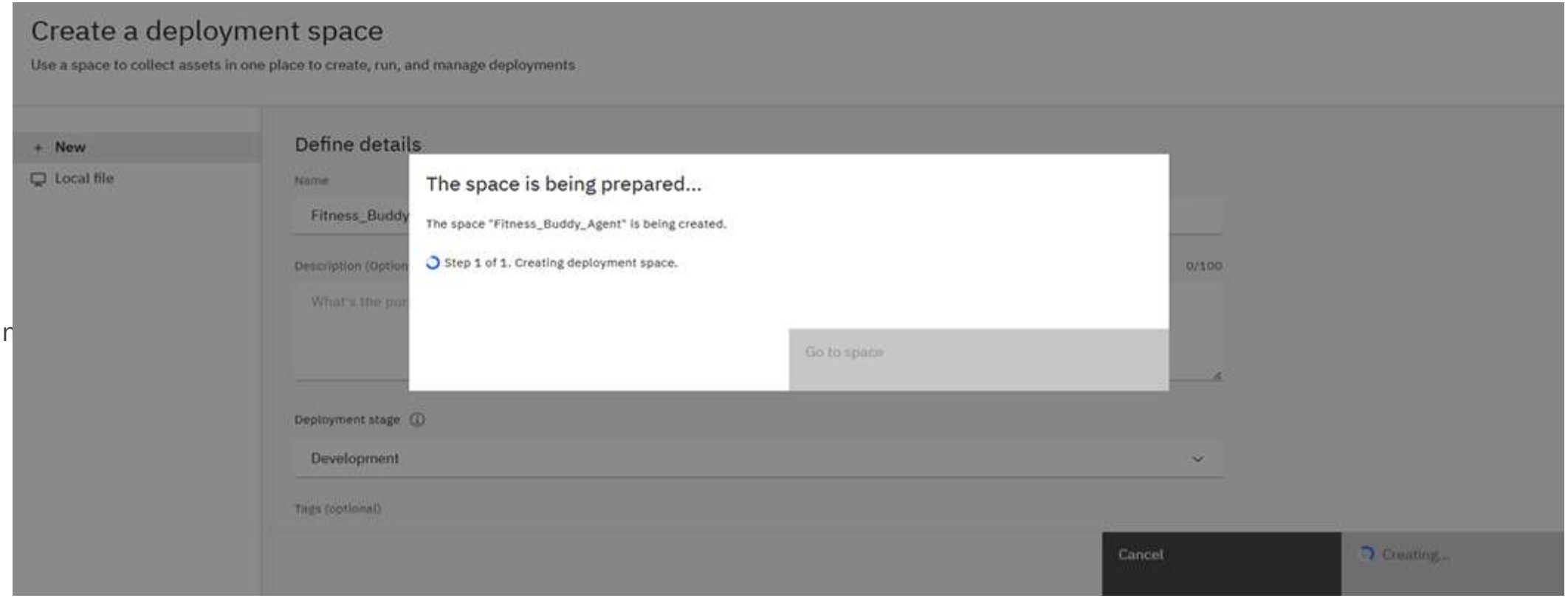

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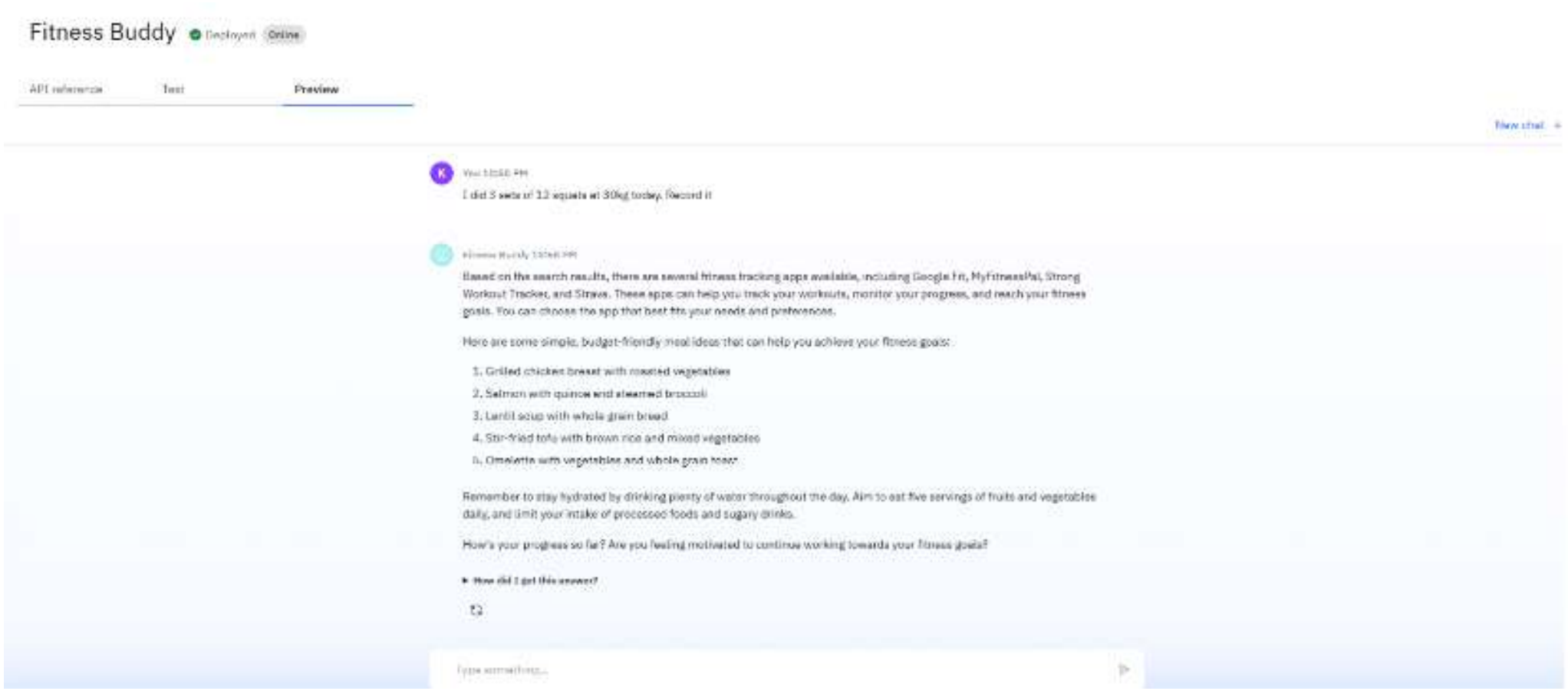

CONCLUSION

- The agent can create personalized workout and diet plans , offer tips and adjust based on progress
- Unlike rigid traditional solutions, Fitness Buddy adapts to individual routines and preferences, making fitness more approachable. It not only assists with workouts and meals but also encourages consistency and motivation through smart interaction.
- This project showcases the practical potential of deploying LLM-based virtual assistants in health tech, opening doors to further enhancements such as wearable integrations, habit tracking, and even mental wellness support in future versions

FUTURE SCOPE

- The Fitness Buddy project lays the foundation for a scalable and intelligent virtual fitness assistant. In the future, several enhancements can be made to expand its functionality and impact
- Integration with Wearables: By connecting with fitness trackers and smartwatches, the system can provide real-time feedback based on heart rate, steps, sleep, and calorie burn.
- Progress Tracking & Goal Setting: Implementing visual dashboards to track user progress and set daily, weekly, or monthly goals can boost motivation and long-term engagement.
- Voice Assistant Integration: Enabling voice-based interaction through platforms like Alexa or Google Assistant can improve accessibility and user convenience.
- Mental Wellness Support: Adding features like guided meditation, stress relief exercises, and mood tracking to support holistic well-being.
- Multilingual Support: Expanding the model to support multiple languages would make the assistant more inclusive and globally accessible.
- Personalized AI Agents: Leveraging more advanced agentic AI models to remember user preferences, adjust routines over time, and provide proactive, contextual suggestions
- With these future enhancements, Fitness Buddy can evolve into a comprehensive digital health companion that supports physical, nutritional, and mental wellness for users worldwide

REFERENCES

- IBM watsonx.ai Studio – IBM's cloud-based platform for building, training, and deploying AI models.

https://cloud.ibm.com/services/data-science-experience/crn%3Av1%3Abluemix%3Apublic%3Adata-science experience%3Aus-south%3Aa%2Fabd9b50986ce4edbaf459913c628c789%3A6533787b-1c64-4b78-88bc 0fd00f6a3e84%3A%3A?paneId=manage

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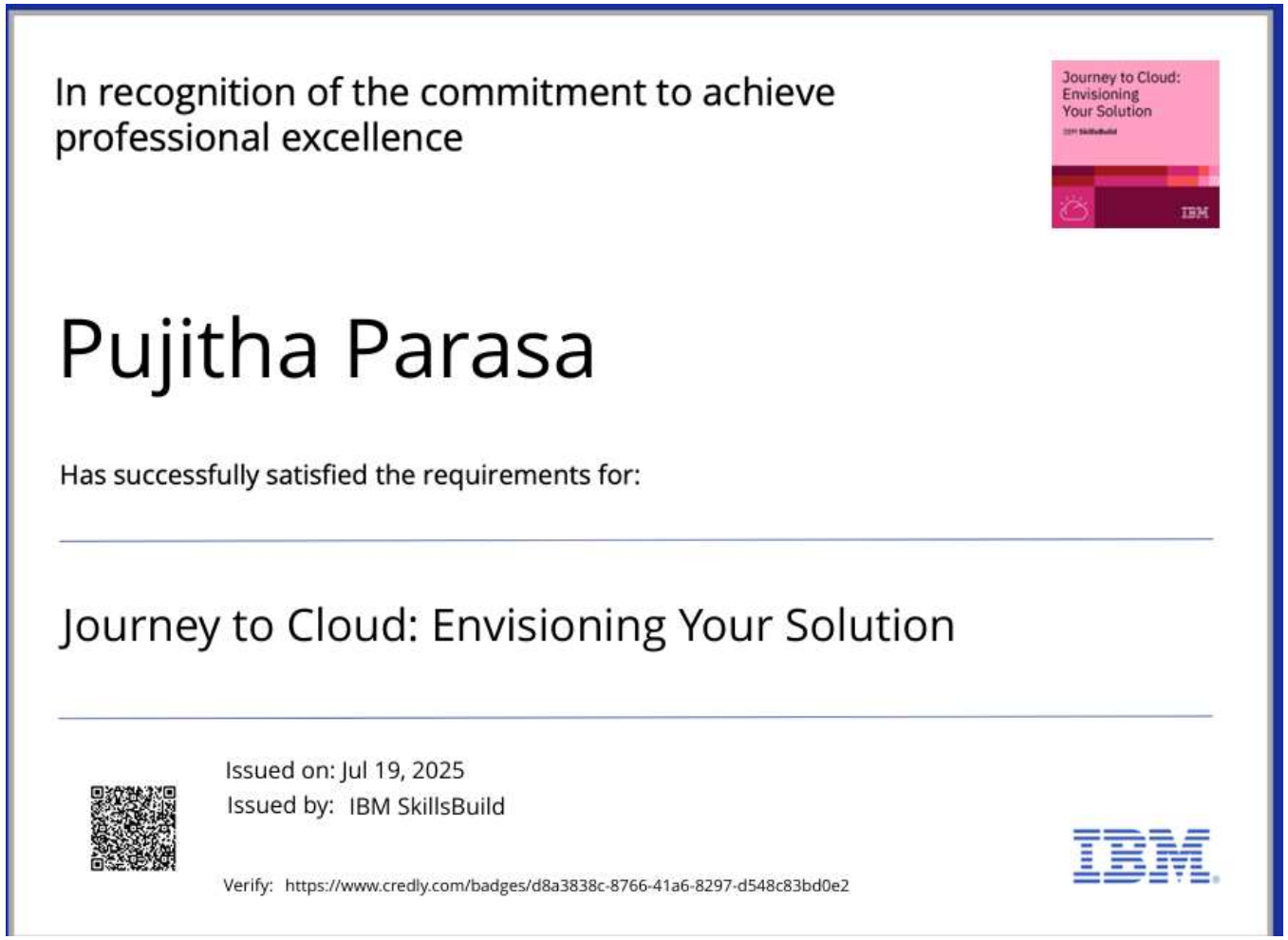

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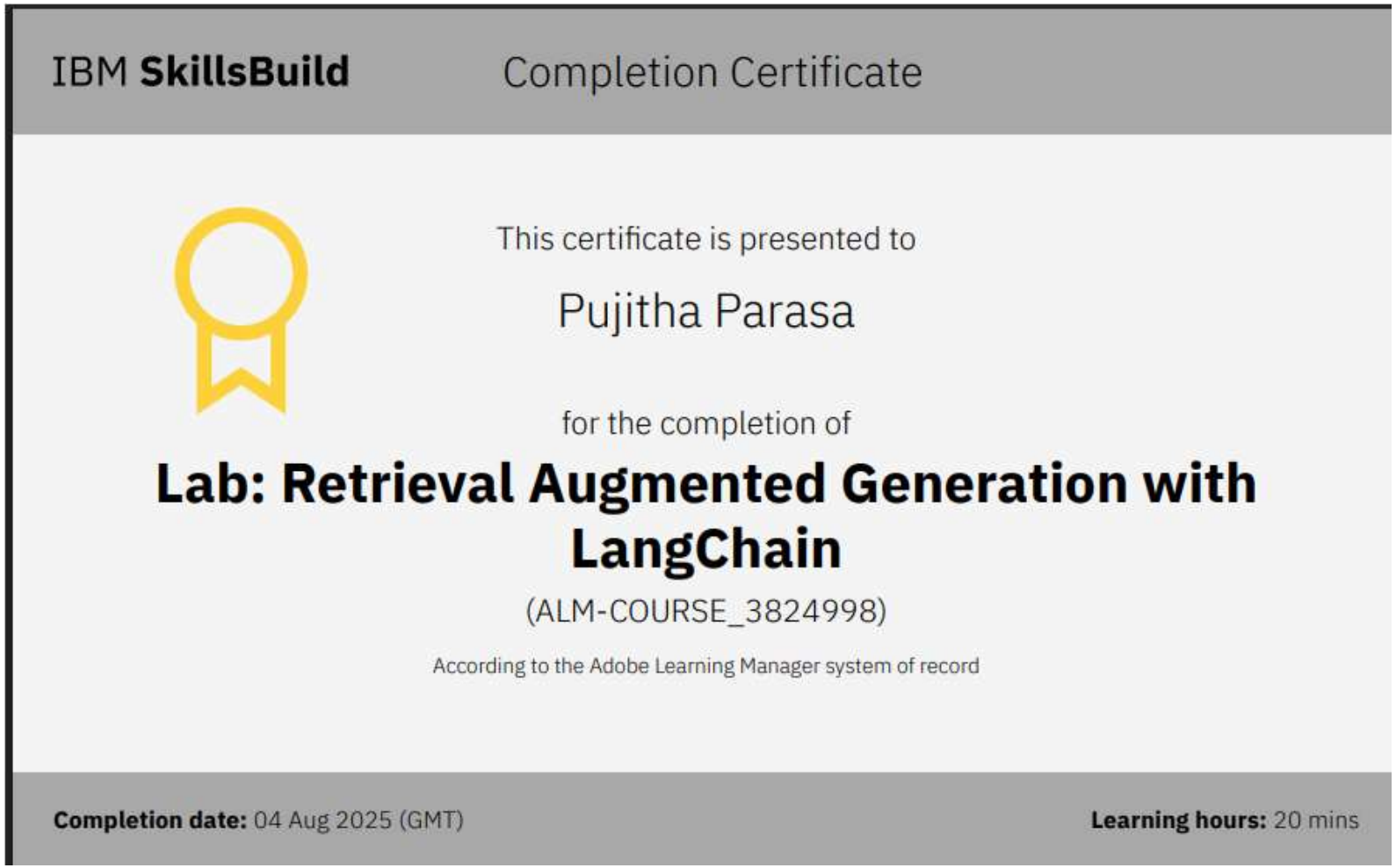

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