EDUNET FOUNDATION - IBM SKILLSBUILD

FITNESS BUDDY

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OUTLINE

- **Problem Statement**
- **Proposed System/Solution**
- **System Development Approach** (Technology Used)
- **Algorithm & Deployment**
- **Result (Output Image)**
- **Conclusion**
- **Future Scope**
- **References**

PROBLEM STATEMENT

- In today's fast-paced and digitally connected world, many individuals face difficulty maintaining a healthy lifestyle due to time constraints, lack of personalized fitness guidance, and inconsistent motivation. Traditional fitness solutions often involve costly subscriptions, rigid schedules, or require in-person consultations that are not adaptable to each user's unique preferences, routines, or fitness levels.
- There is a growing need for an intelligent, accessible, and always-available solution that offers personalized workout recommendations, nutrition tips, and motivational support.
- The **Fitness Buddy** project aims to solve this issue by developing a conversational AI-powered virtual assistant using **IBM Granite-3.3-8B-Instruct** and **IBM watsonx.ai**. This assistant will deliver real-time, tailored guidance on fitness routines, healthy meals, and habit-building techniques, making health and wellness support more convenient, engaging, and user-centric.

PROPOSED SOLUTION

- **Proposed Solution: Fitness Buddy – AI-Based Virtual Fitness Assistant**

Fitness Buddy addresses the challenges of maintaining a healthy lifestyle by offering an intelligent, conversational assistant that provides personalized fitness routines, nutrition tips, and motivational support—anytime, anywhere.

- **Data Collection**

User data such as fitness goals, activity level, workout/diet preferences, and availability is collected. Contextual data like time of day, day of the week, and user consistency is also considered. Integration with wearables or logs can enhance personalization.

- **Data Preprocessing**

Data is cleaned and normalized. Key features like workout frequency and intensity preferences are extracted. Users are grouped (e.g., beginner, intermediate) to guide tailored recommendations.

- **Machine Learning Algorithm**

Using **IBM Granite-3.3-8B-Instruct (LLM)** via **watsonx.ai Studio**, the assistant interprets user input and context to generate customized plans. It adapts over time using previous interactions and feedback.

PROPOSED SOLUTION

- **Deployment**

The solution is deployed on **IBM Cloud Lite** with **Watsonx Runtime Studio** and **Watson Assistant**. It supports real-time interaction via web and mobile platforms with scalable cloud backend.

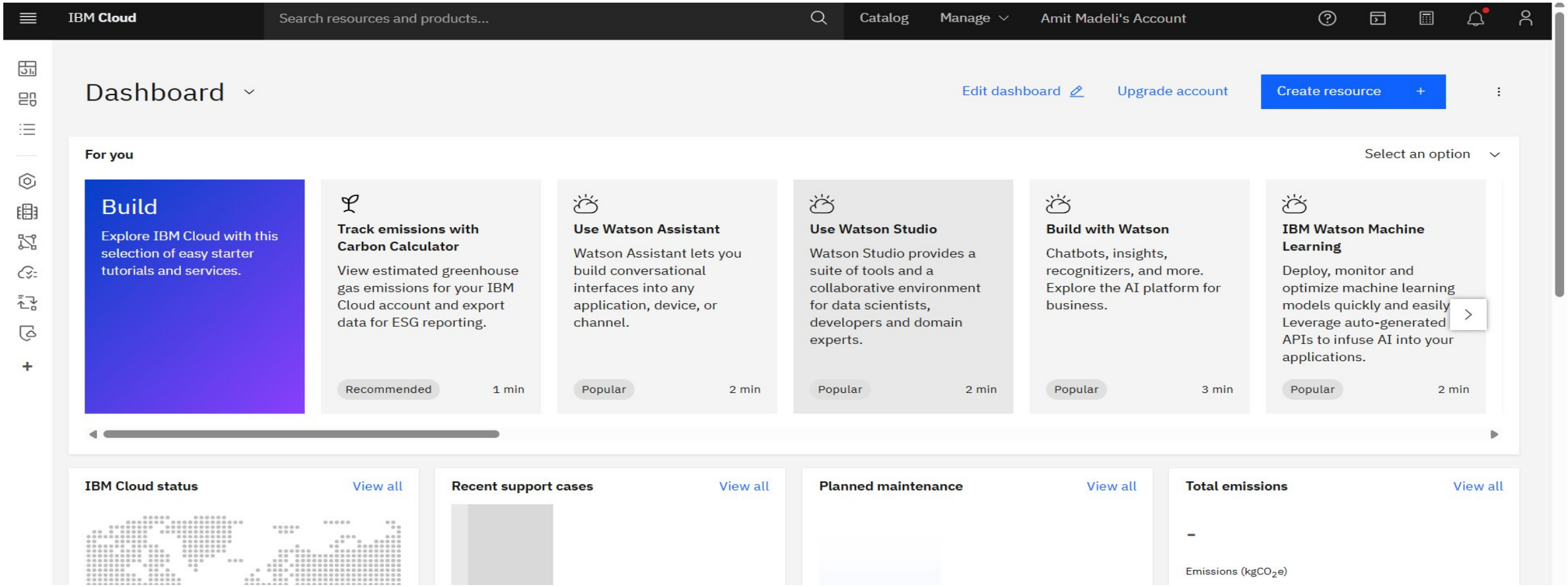
- **Evaluation**

Effectiveness is tracked through engagement rates, feedback, recommendation accuracy, and retention. The system improves continually using updated user data and usage trends.

- **Result**

A cloud-based AI assistant delivering real-time, personalized fitness and nutrition guidance—empowering users to stay healthy consistently and conveniently.

PROPOSED SOLUTION



IBM Cloud Login

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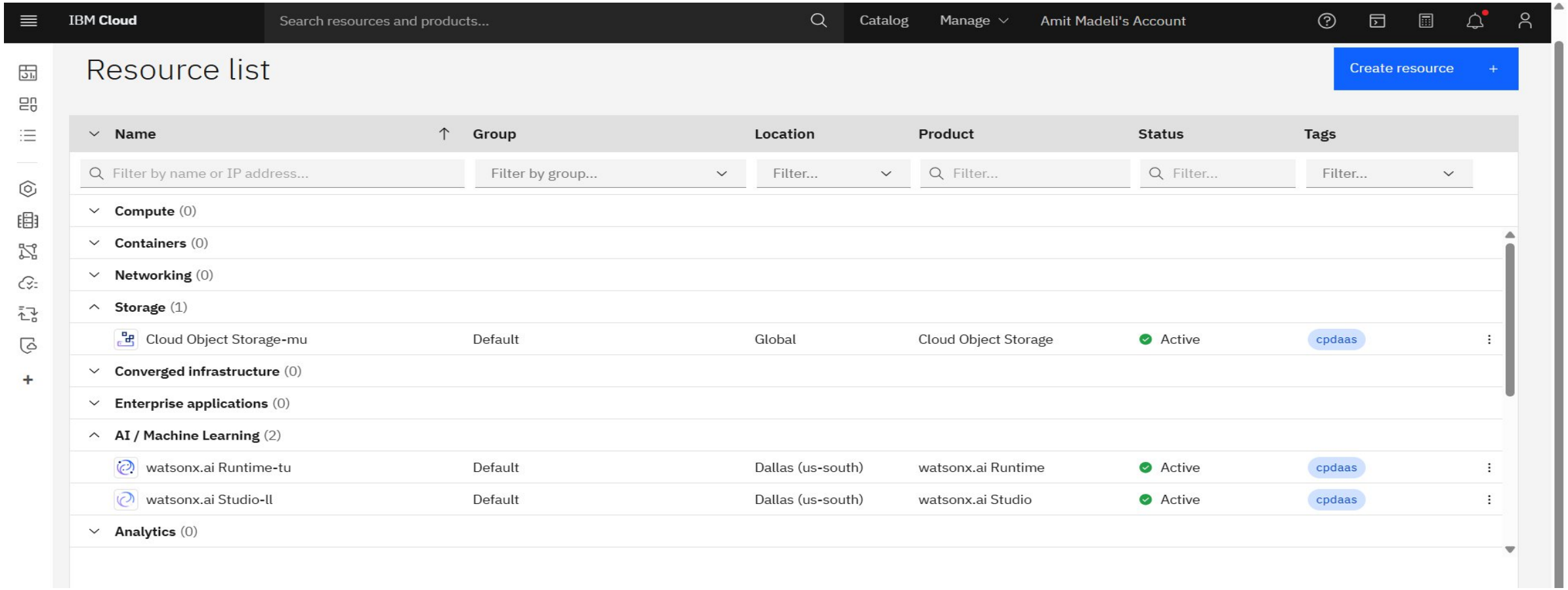
PROPOSED SOLUTION



Resource List IBM Cloud : Storage using IBM cloud, watsonx.ai Runtime, watsonx.ai studio

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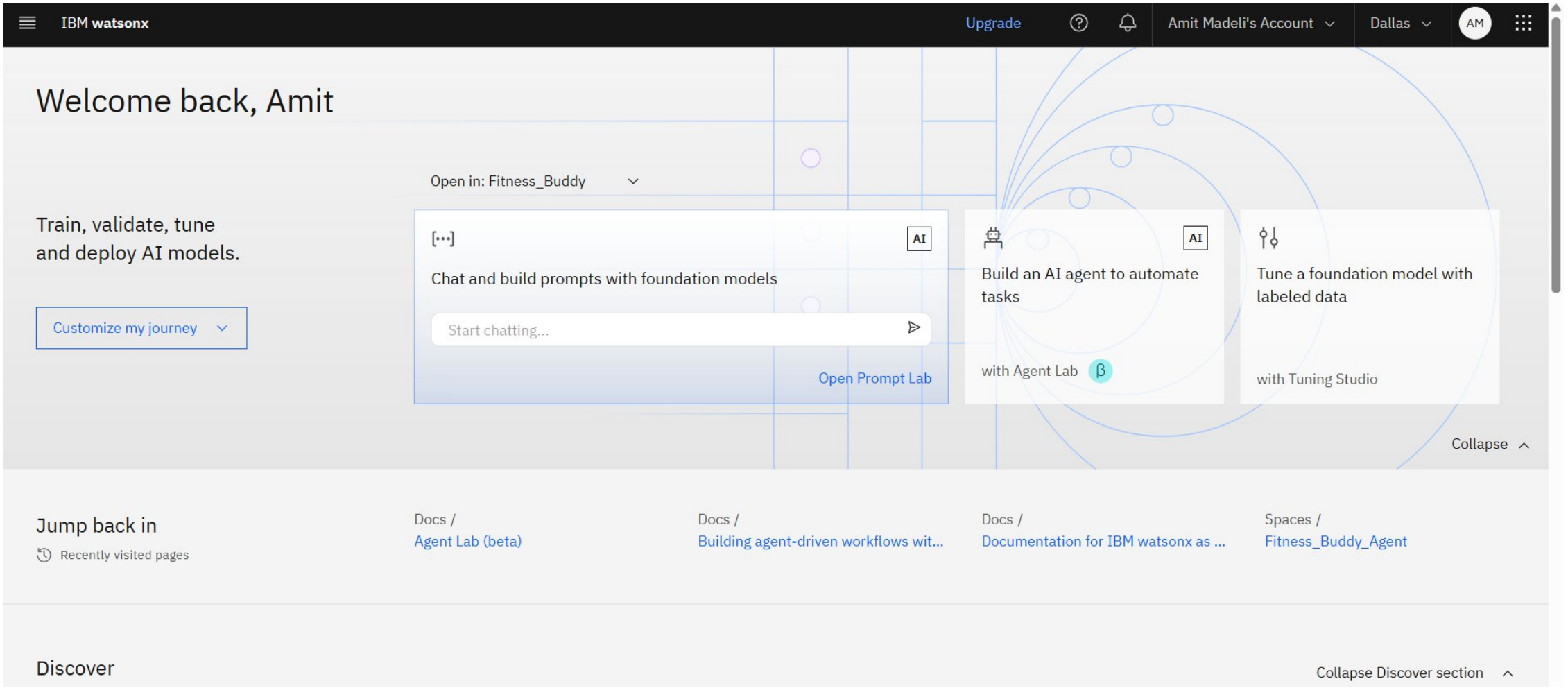
PROPOSED SOLUTION



IBM watsonx.ai interface

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SYSTEM APPROACH

- **System requirements**

  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 deployment

- **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.

ALGORITHM & DEPLOYMENT

- **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.

ALGORITHM & DEPLOYMENT

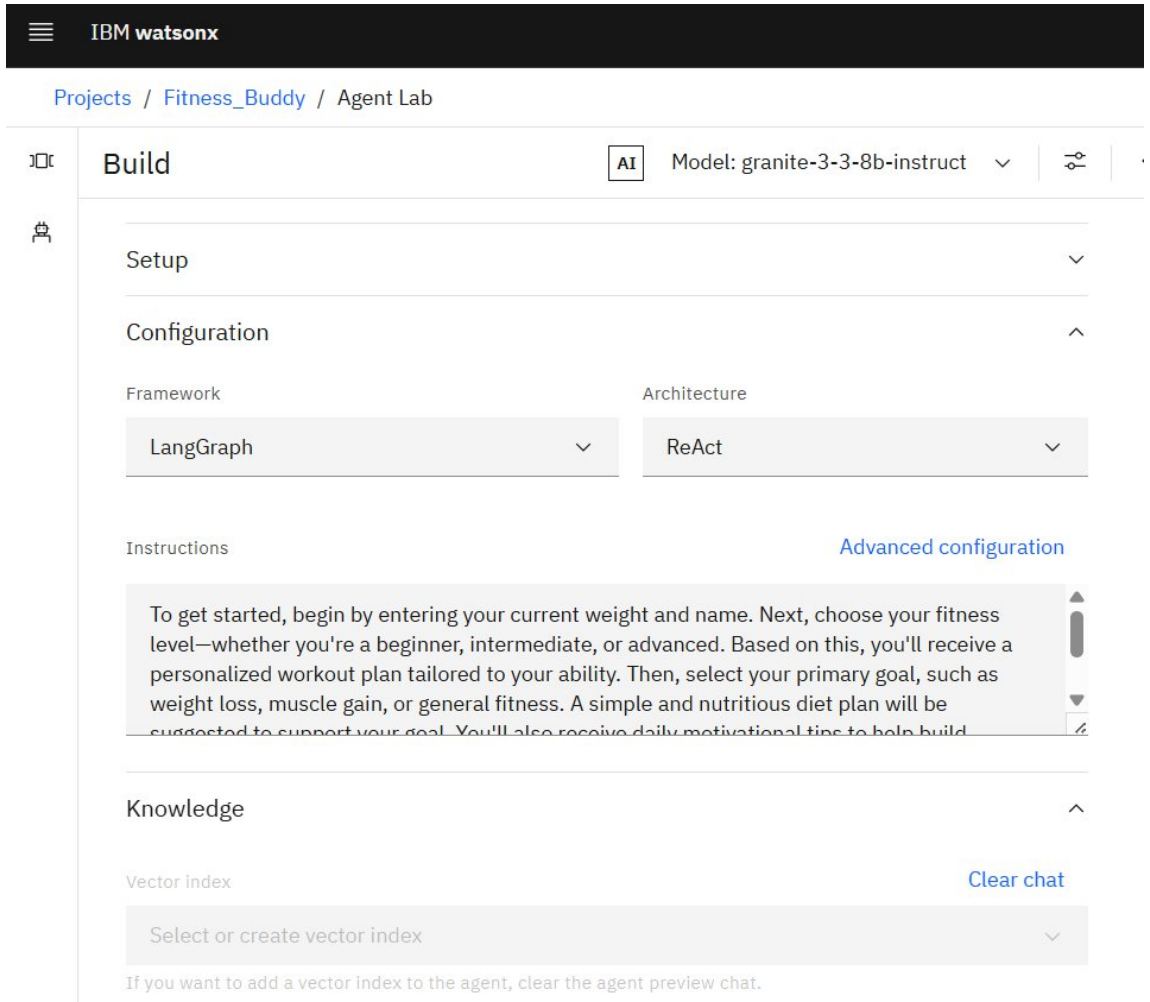
- **Training Process:**

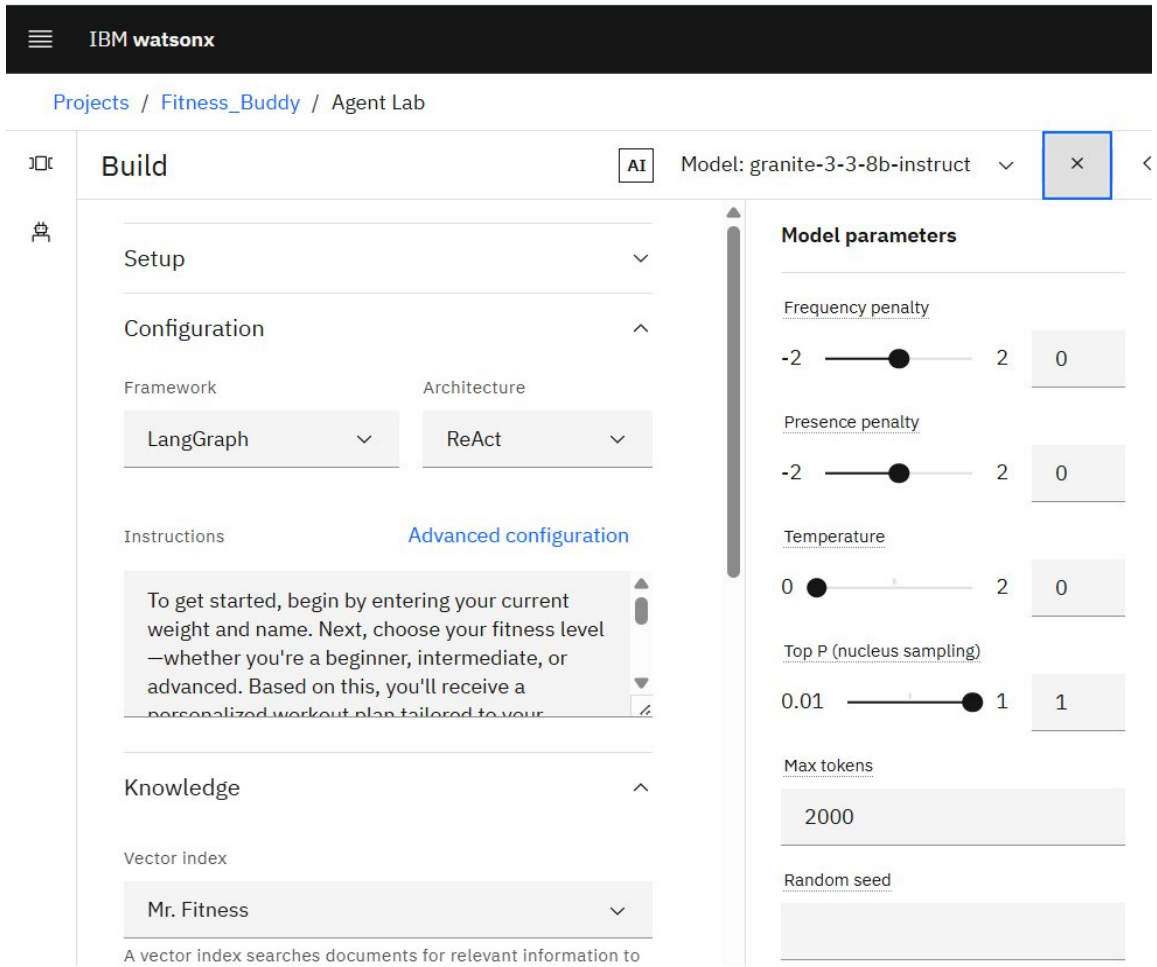
While the core LLM (Granite) is pre-trained by IBM, further customization is achieved by prompting and fine-tuning behavior through curated sample interactions and continuous feedback loops. Relevant prompt engineering techniques are used to optimize how the model responds to fitness-related queries. 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





Setting instruction for AI agent

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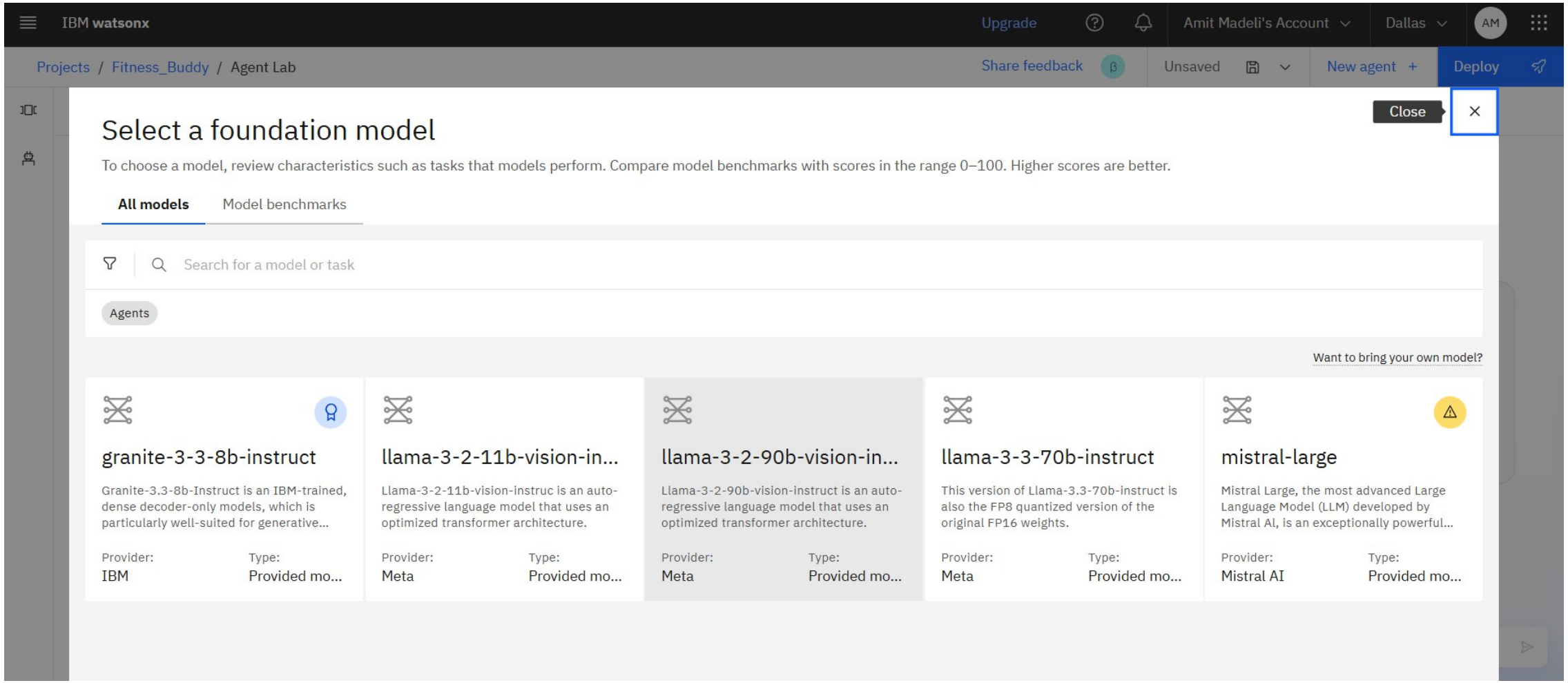
ALGORITHM & DEPLOYMENT



Selecting LLM Model for AI Agent

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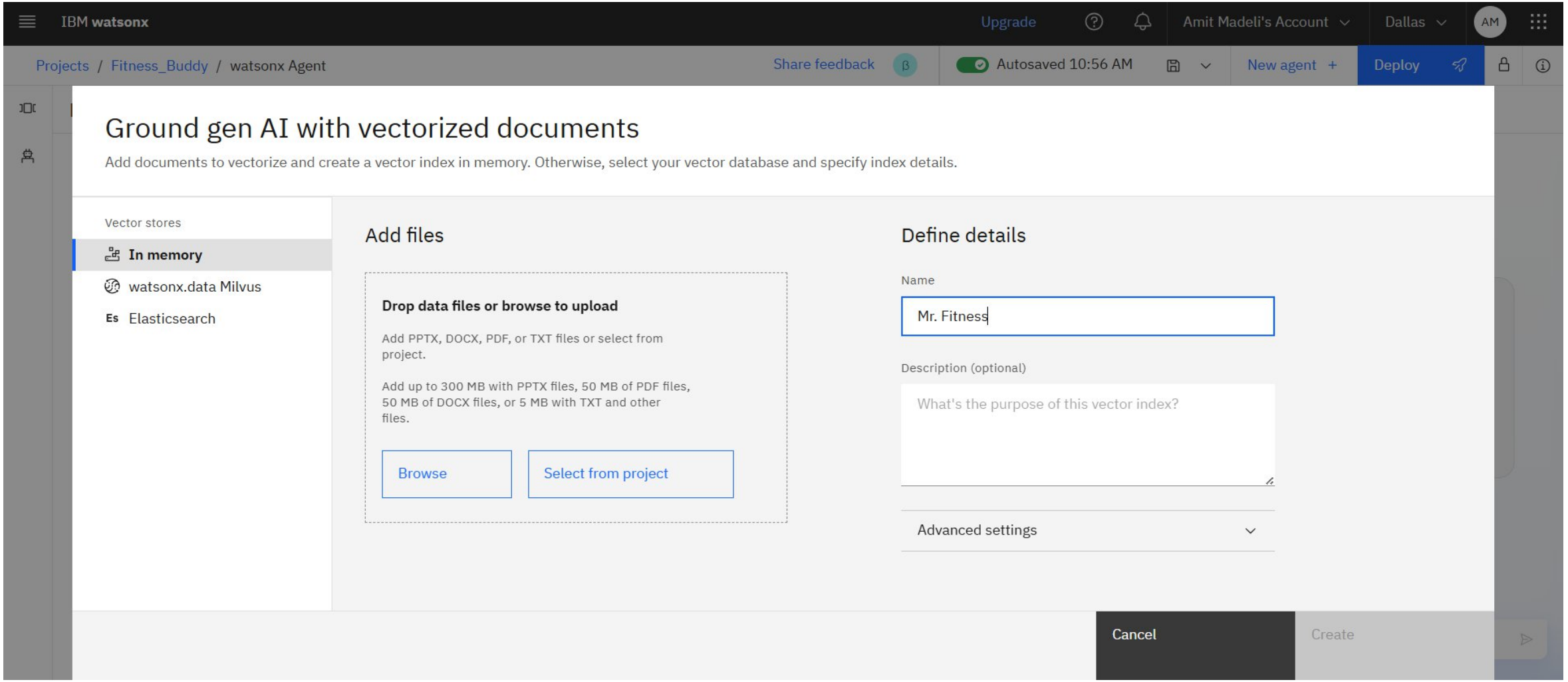
ALGORITHM & DEPLOYMENT



Adding RAG File for AI Agent

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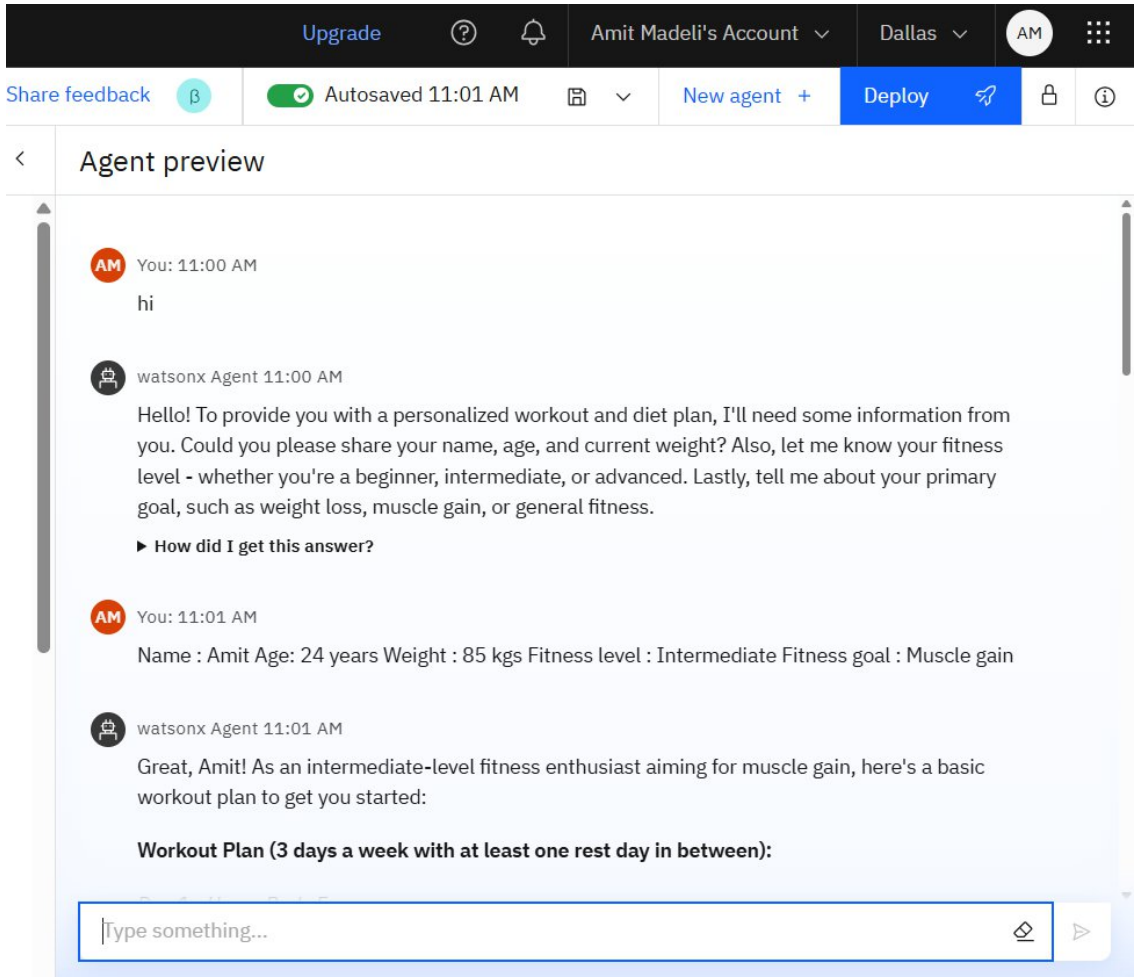
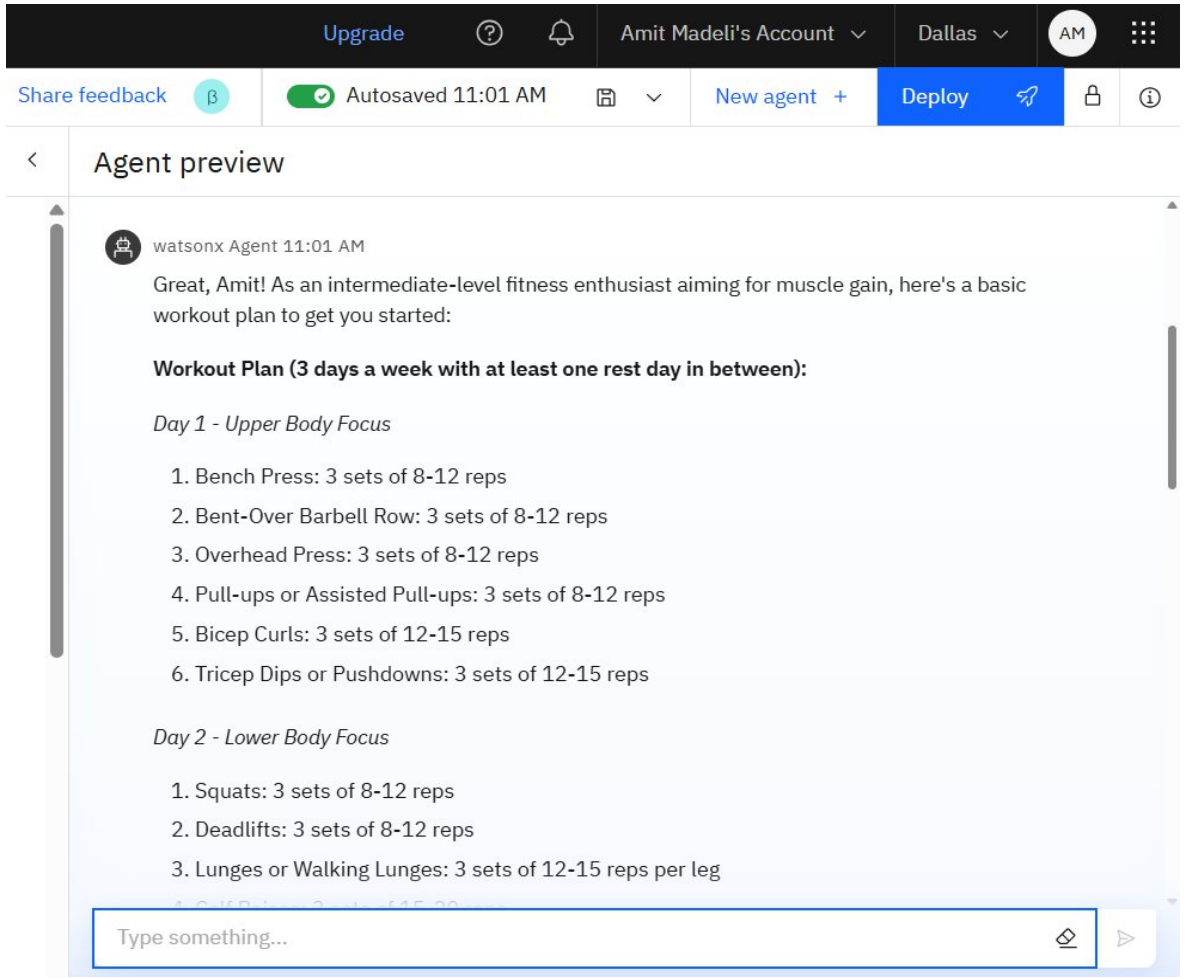
RESULT

- The implementation of the **Fitness Buddy** AI assistant using **IBM Granite-3.3-8B-Instruct** and deployed through **IBM watsonx.ai** on **IBM Cloud Lite** has proven successful in delivering intelligent, real-time health and wellness guidance. The system accurately interprets user inputs to generate personalized workout plans, motivational tips, and nutrition suggestions.
- Initial testing showed high user engagement and positive feedback, particularly for the assistant’s ability to adapt to different fitness levels (beginner, intermediate, advanced) and goals (weight loss, strength, endurance). The assistant maintained low latency and cross-platform usability via the cloud deployment. Feedback metrics indicate improved consistency in users' workout habits and satisfaction with meal recommendations.
- The project effectively demonstrates how a large language model can serve as a supportive tool for promoting healthier lifestyles in a scalable and accessible way.

RESULT





Chat Response

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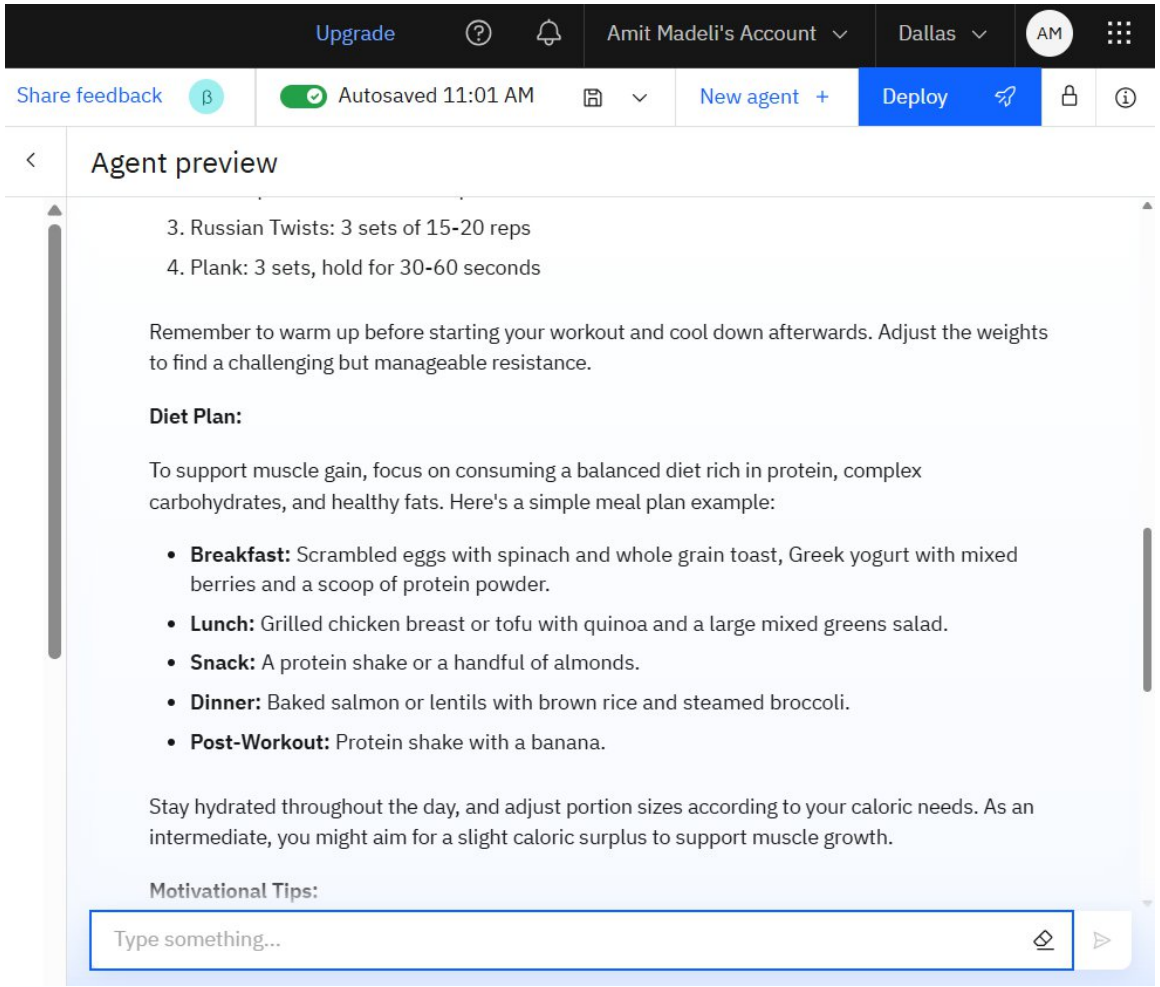
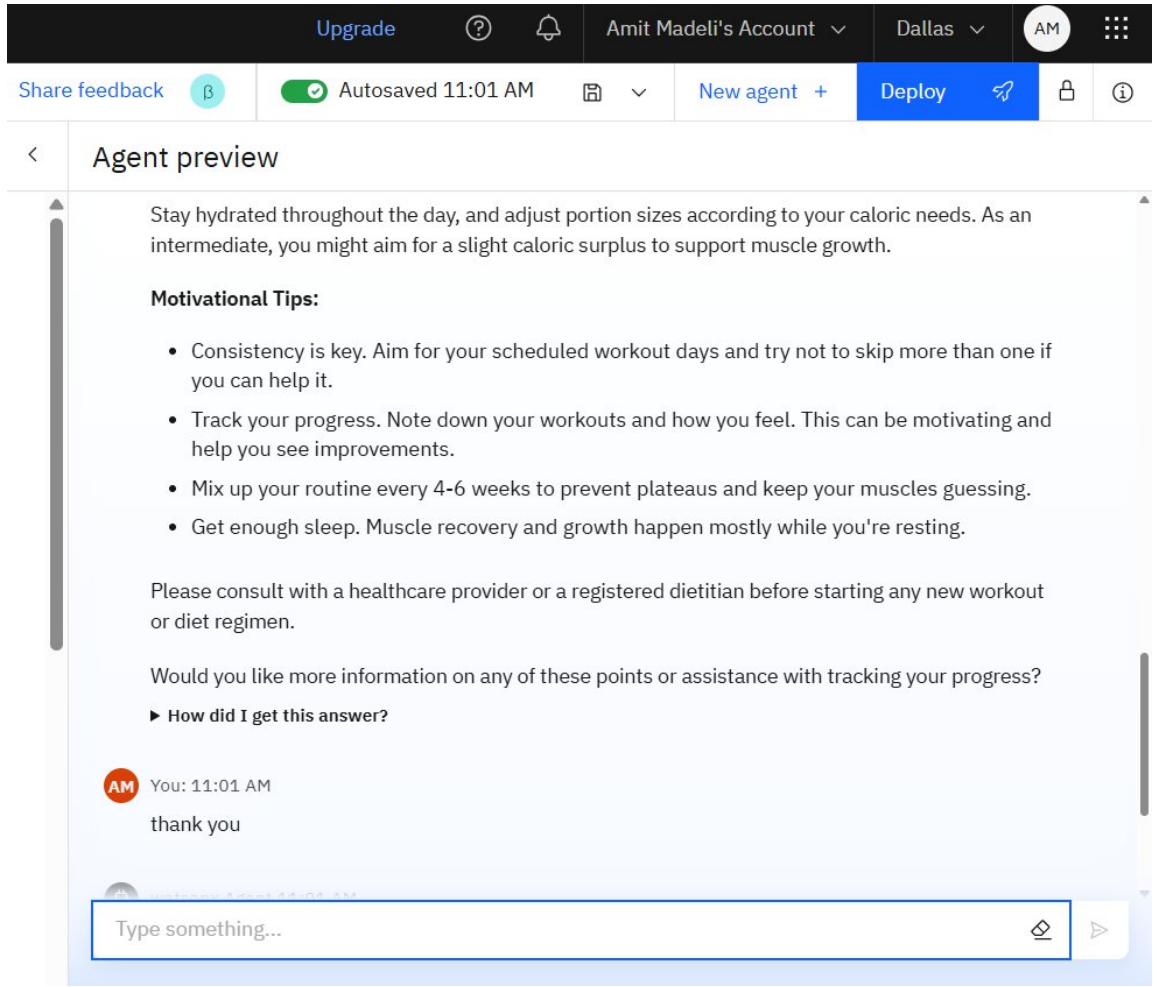
RESULT





Chat Response

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CONCLUSION

- The **Fitness Buddy** project addresses the critical challenges of personalized health support by offering an always-available, AI-powered assistant. Utilizing **IBM Granite LLM** and cloud technologies like **watsonx.ai** and **Watsonx Runtime Studio**, the system delivers custom fitness and nutrition guidance with conversational ease.
- 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

- **IBM Granite Models** – Instruction-tuned large language models designed for enterprise-grade natural language understanding and generation.
  https://www.ibm.com/granite

- **Watsonx Runtime Studio** – Execution environment for running LLMs and AI agents over the IBM Cloud.
  https://cloud.ibm.com/services/pm-20/crn%3Av1%3Abluemix%3Apublic%3Apm-20%3Aus-south%3Aa%2Fabd9b50986ce4edbaf459913c628c789%3A699225e8-6da9-4c28-b4c8-211b26ce694f%3A%3A?paneId=manage

- **Agentic AI** – A design paradigm for AI systems where agents exhibit autonomous behavior to accomplish goals using tools and memory.
  https://www.ibm.com/think/topics/agentic-ai

- **Cloud Deployment on IBM Cloud** – Used to host and scale the Fitness Buddy application securely and efficiently.
  https://cloud.ibm.com/objectstorage/crn%3Av1%3Abluemix%3Apublic%3Acloud-object-storage%3Aglobal%3Aa%2Fabd9b50986ce4edbaf459913c628c789%3A2ec961e2-d77f-499d-920a-5b0e1a2138ce%3A%3A

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