# CAPSTONE PROJECT

# FITNESS BUDDY

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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

In today’s fast-paced lifestyle, many individuals find it challenging to stay healthy due to limited time, lack of motivation, and absence of personalized fitness support. Traditional fitness solutions often come with high costs, rigid routines, or one-size-fits-all plans that don’t adapt to personal preferences. The crucial challenge lies in delivering consistent, personalized, and affordable fitness and nutrition guidance that seamlessly fits into diverse lifestyles without requiring specialized equipment or gym access. This creates a strong need for a smart, accessible, and flexible alternative.

# PROPOSED SOLUTION

- **The proposed system aims to solve the challenge of delivering affordable, personalized, and on-demand fitness and wellness guidance by leveraging AI. Using IBM Watsonx.ai and the Granite model, the solution acts as a conversational virtual assistant that adapts to each user's goals, preferences, and lifestyle.** The solution consists of the following components:
- **1. Watsonx.ai Agent Setup:** Developed using Agent Lab within IBM Watsonx.ai.

  Integrated IBM's **granite-8b-instruct model** for natural language understanding and response generation.
- **2. Instruction-Driven Design:** Custom instruction guide the assistant's behavior. The core instructions given to the agent include:

  **Role definition:** Fitness Buddy, an AI-powered virtual assistant.

  **Response tone:** Supportive, motivating, and accessible.

  **Personalization:** Tailors advice based on fitness goal, level, workout type, available time, dietary preferences, and lifestyle.

  **Responsiveness**: If any key info is missing, the assistant prompts the user gently.
- **3. Chat-Based User Interaction:** Conversations begin by collecting preferences conversationally.

  Responses are generated in real time, based entirely on user input and provided context.
- **4. Tested on Watsonx.ai Agent:** The assistant was deployed and tested using the built-in testing environment.

  Input messages were passed as user role, and output was validated against instruction behavior.
- **5. Output:** The assistant successfully provided: Custom workout plans, Simple and healthy meal suggestions, Motivation and daily tips, Habit-building encouragement.

  All responses were aligned with the instruction and adapted to the user's scenario without requiring rigid plans or expensive equipment.
- **6. Result:** The AI-powered Fitness Buddy demonstrated: Natural, human-like conversation flow, Real-time adaptability to individual preferences, Elimination of the need for costly or static fitness solutions, Scalability as a virtual health coach accessible anytime, anywhere

# SYSTEM APPROACH

The "System Approach" section outlines the overall strategy and methodology for developing and implementing the Fitness Buddy AI assistant. Here's a suggested structure for this section:

- **System requirements: Hardware Requirements:**
- A computer or laptop with a minimum of 4GB RAM and i3 processor or above
- Stable internet connectivity for accessing IBM Cloud services
- **Library required to build the model: Software Requirements:**
- Internet browser (e.g Google Chrome)
- IBM Cloud Lite Account
- IBM Watsonx.ai Studio with Granite LLM
- IBM Cloud object Storage.
- IBM Granite Foundation Model (granite-3-3-8b-instruct) integrated within Watsonx.ai Agent Lab

# ALGORITHM & DEPLOYMENT

- In the Algorithm section, The Fitness Buddy system uses IBM's Watsonx.ai foundation model **granite-3-3-8b-instruct** to simulate a conversational fitness assistant.
- **Algorithm: (Granite-8b-Instruct)**
- **Instruction Setup**: Agent primed to act as a friendly fitness coach.
- **User Inputs**: Collects data on goals, fitness level, available time, workout type, diet, and lifestyle.
- **Response Generation**: Model provides tailored:
  - Home workout routines
  - Meal suggestions
  - Motivation tips
  - Habit-building advice
- **Conversational Flow**: Adaptive follow-ups for clarity and personalization.
- **Deployment:**
- **Platform**: IBM Watsonx.ai Agent Lab
- **Model used**: granite-8b-instruct foundational model
- **Steps**: 1. Create project in Watsonx.ai (Lite plan)

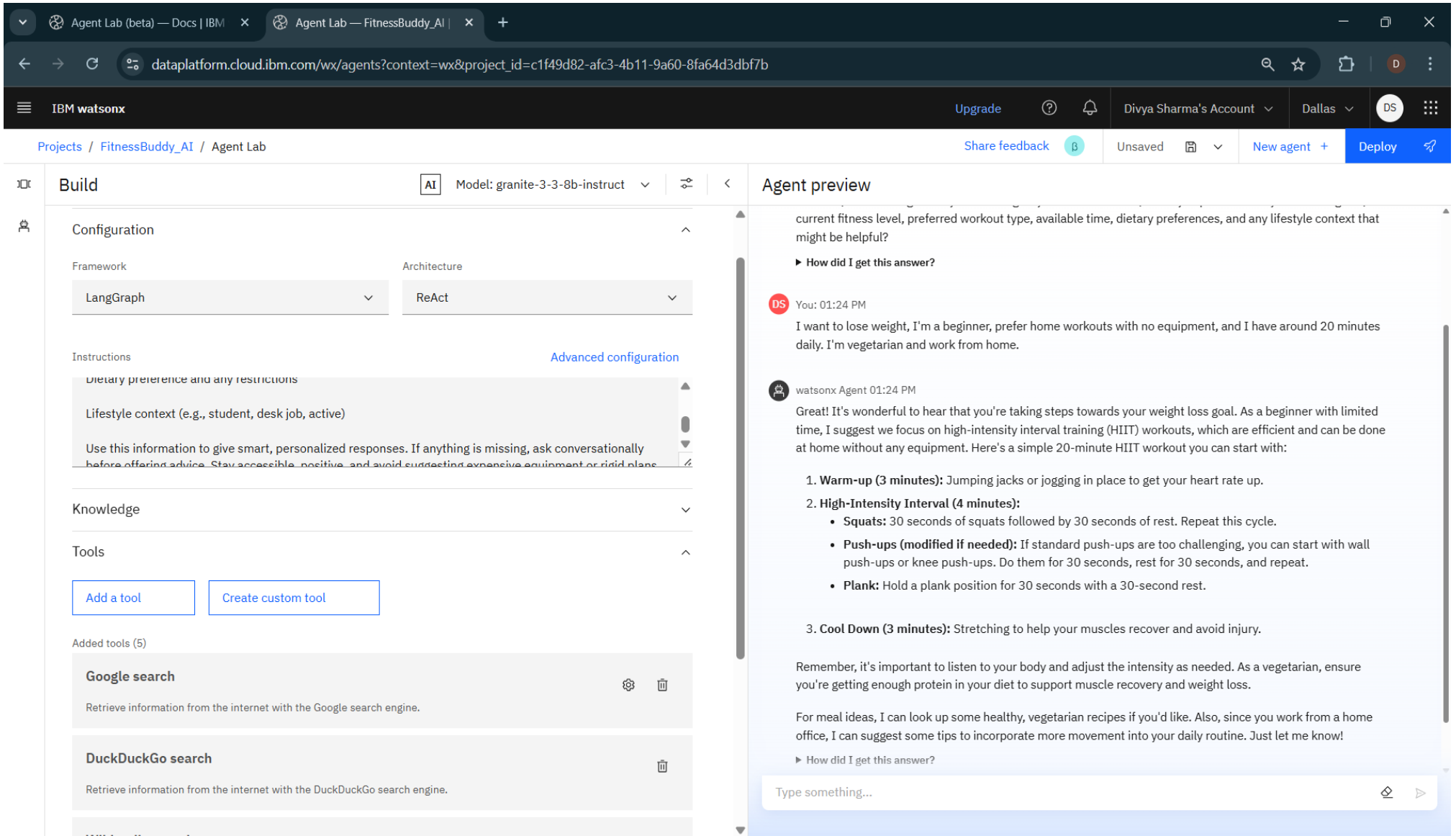
  2. Set up agent in Agent Lab

  3. Choose Granite model

  4. Define instructions and behaviour

  5. Interact and refine responses

# RESULT

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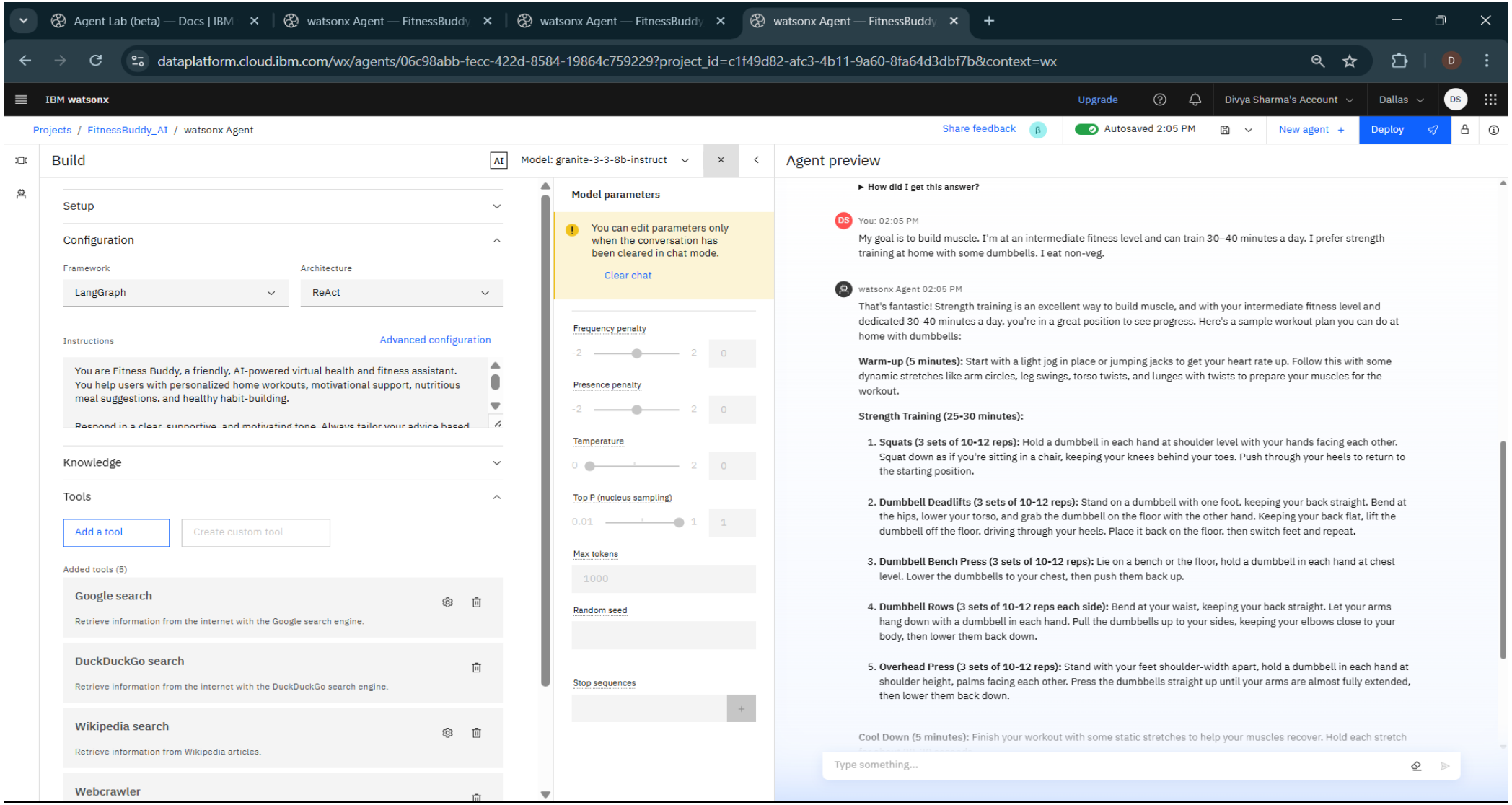
# RESULT

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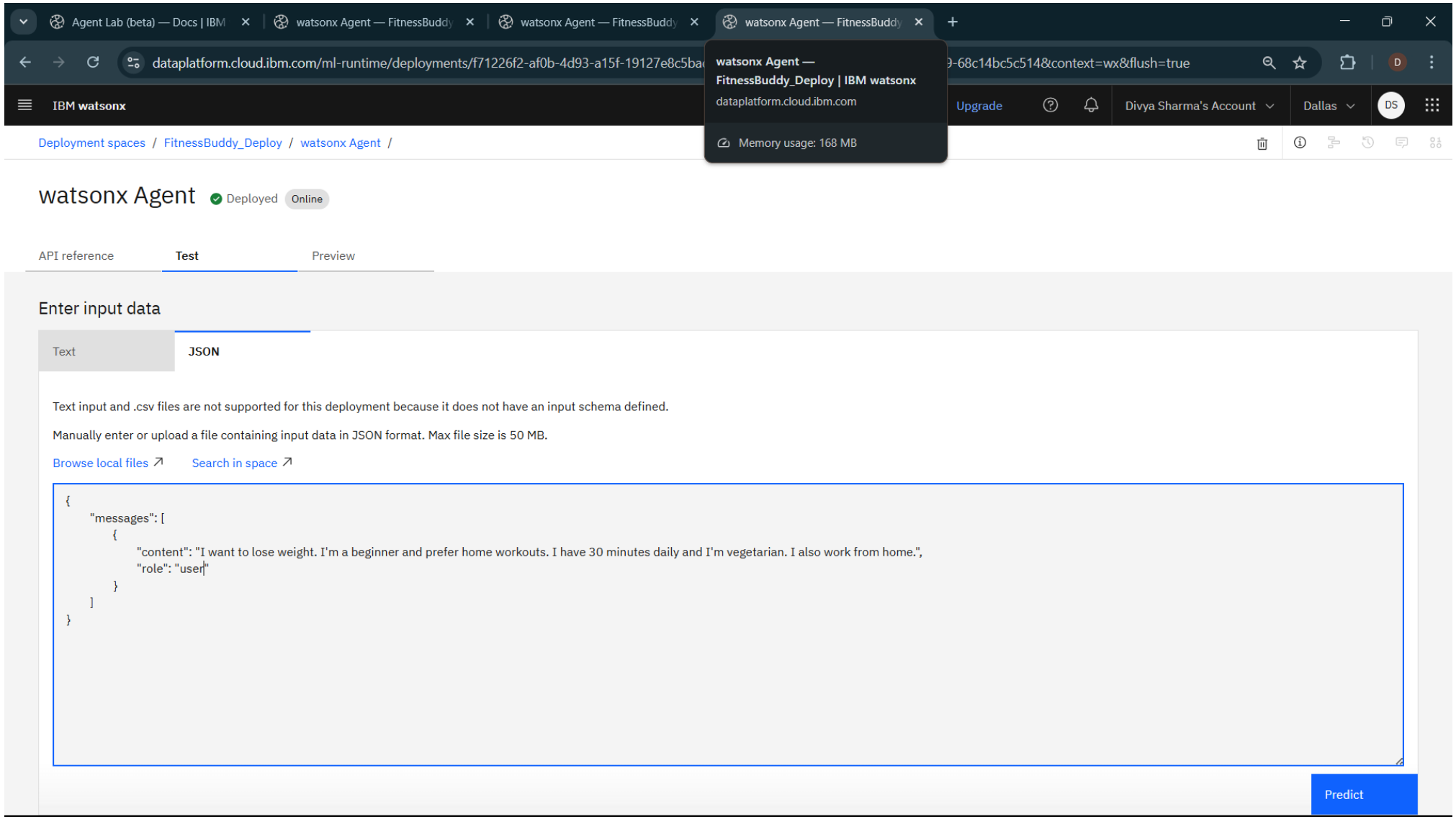
# RESULT

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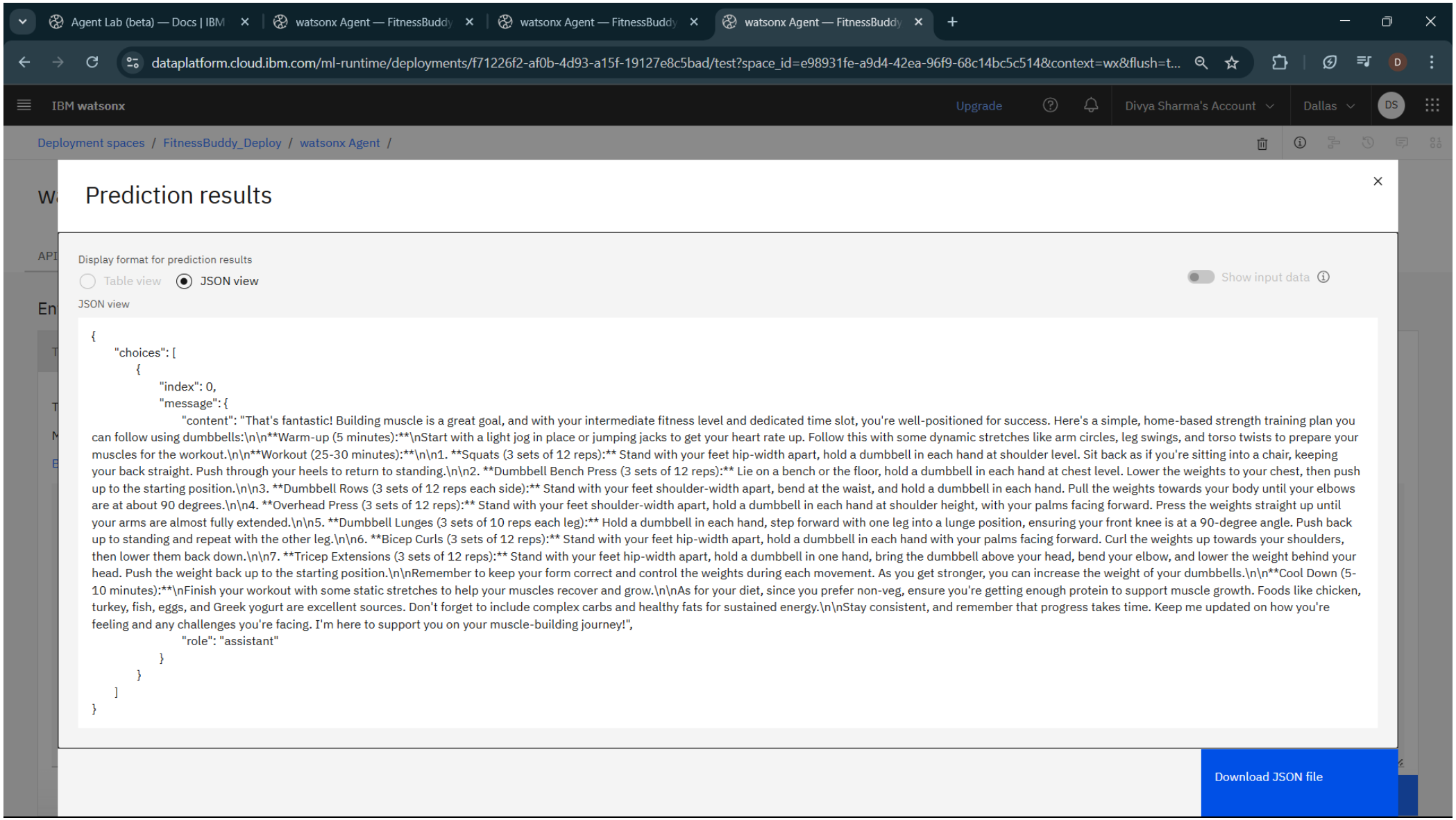
# RESULT

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# CONCLUSION

- **Fitness Buddy** is a conversational AI assistant built using IBM Watsonx.ai service and the **Granite-8b-instruct** model to deliver **personalized fitness, nutrition, and motivation support**.
- It tailors responses based on user inputs like fitness goals, level, available time, and lifestyle—ensuring relevant and accessible guidance.
- **Challenges** included ensuring contextual consistency without external data sources and designing a natural, chat-based interaction.
- **Future improvements** may include user session memory and integration into a mobile/web app for enhanced usability.
- This solution highlights the potential of AI in delivering smart, on-demand wellness support in today's fast-paced world.

# FUTURE SCOPE

- **Personalized Experiences**: Implement user memory to retain fitness goals, history, and progress for tailored coaching.
- **Multilingual Reach**: Support regional languages to enhance accessibility across diverse user groups.
- **Platform Expansion**: Launch as a web/mobile app with push notifications and integrated progress tracking.
- **Wearable Syncing**: Integrate with smartwatches and fitness bands for real-time data-driven recommendations.
- **AI Enhancement**: Adopt advanced models (e.g., fine-tuned transformers, RAG) for more natural, contextual conversations.
- **Edge Computing**: Enable offline or low-latency responses in remote or limited-connectivity environments.

# REFERENCES


- **IBM Watsonx.ai Documentation:** (Used for understanding and deploying foundation models on IBM Cloud).

# IBM CERTIFICATIONS

In recognition of the commitment to achieve professional excellence

Getting Started with Artificial Intelligence
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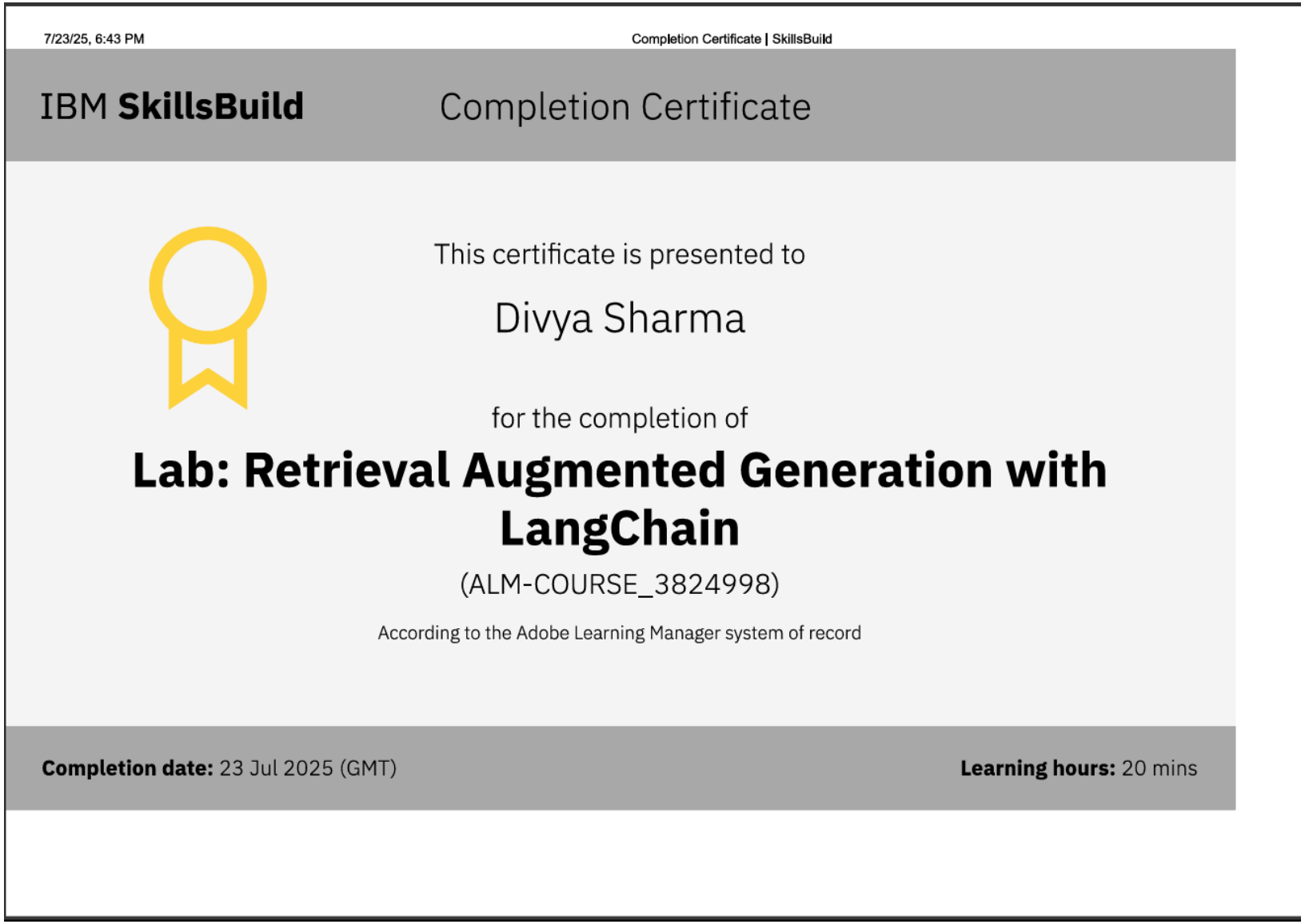

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