CAPSTONE PROJECT

FITNESS BUDDY

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OUTLINE

- **Problem Statement** (Should not include solution)
- **Proposed System/Solution**
- **System Development Approach** (Technology Used)
- **Result (Output Image)**
- **Conclusion**
- **Future Scope**
- **References**

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

The proposed solution, **Fitness Buddy**, leverages Agentic AI to provide a conversational fitness assistant that delivers personalized health, nutrition, and workout guidance through natural language interactions. The system is designed with the following key components:

Agentic AI System (Watsonx + LangGraph):

- Built using **IBM Watsonx Assistant** with the **Granite 3-3-8b Instruct model**.
- Implements the **ReAct architecture** via **LangGraph** to plan, reason, and interact dynamically.
- Responds intelligently to varied user inputs and adapts its behavior in real-time.

User Interaction & Personalization:

- Collects user inputs such as goals, routines, preferences, and constraints.
- Maintains a memory of user context and adapts advice across sessions.
- Offers suggestions on workouts, nutrition, and motivation tailored to individual needs.

Evaluation & Iteration:

- Measures user engagement and satisfaction based on session length and feedback.
- Improves continuously through prompt refinement and monitoring.

Result:

- Delivers a proactive, responsive virtual fitness coach that enhances user experience and commitment to health goals.

SYSTEM APPROACH

- System requirements:

• Cloud Storage:
• Cloud Object Storage (Lite) for storing user session data, preferences, and logs.

• IBM Services:

• watsonx.ai Studio Service – for building and managing the conversational assistant.
• watsonx.ai Runtime Service – for model inference and deployment.

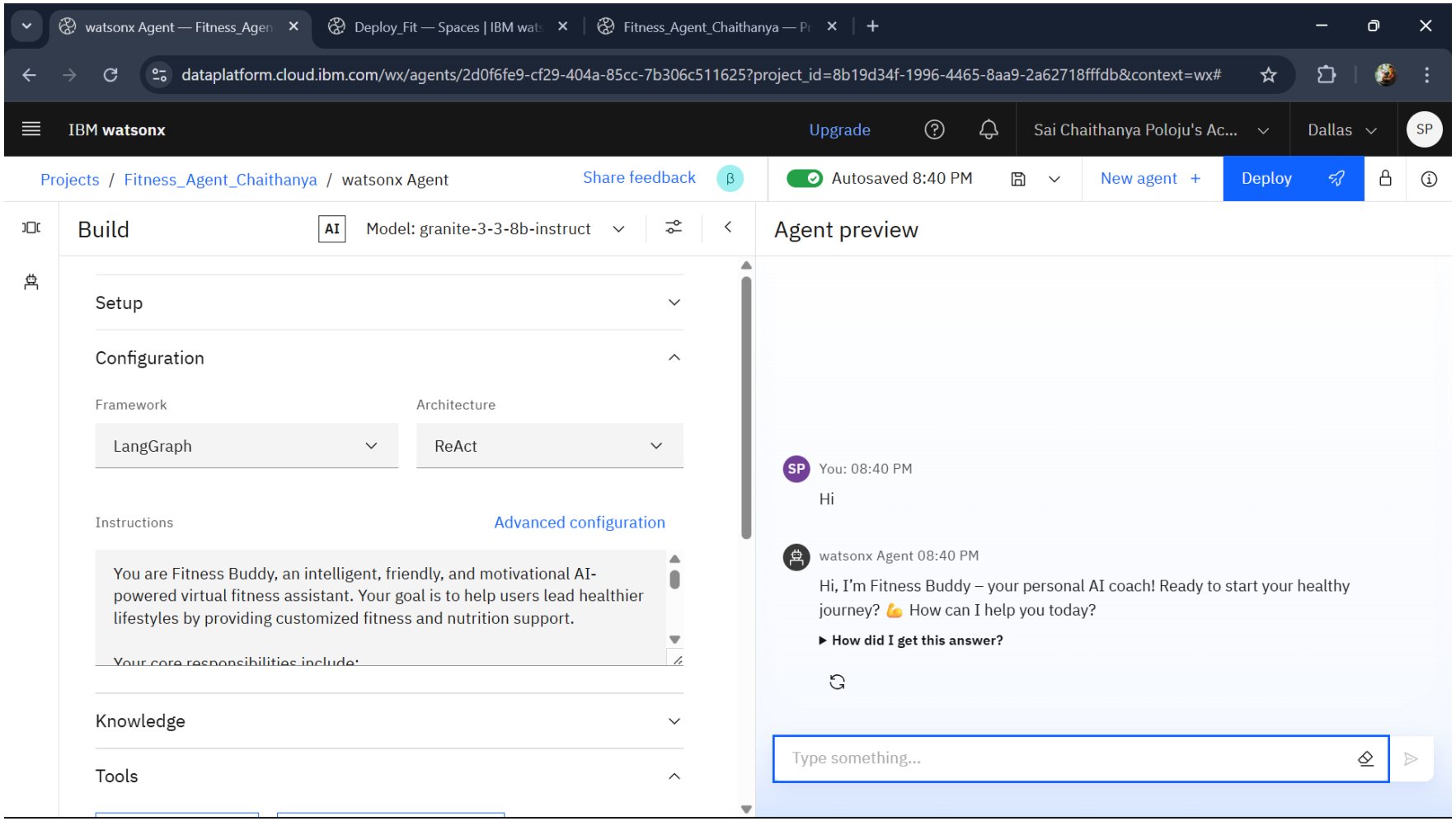
- Core Technologies Used:

LangGraph – Orchestrates agent behavior and memory with dynamic flow control.

ReAct Architecture – Enables the assistant to reason, act, and respond interactively.

LLM – IBM Granite (3-3-8b) or Meta LLama model for generating natural responses

RESULT



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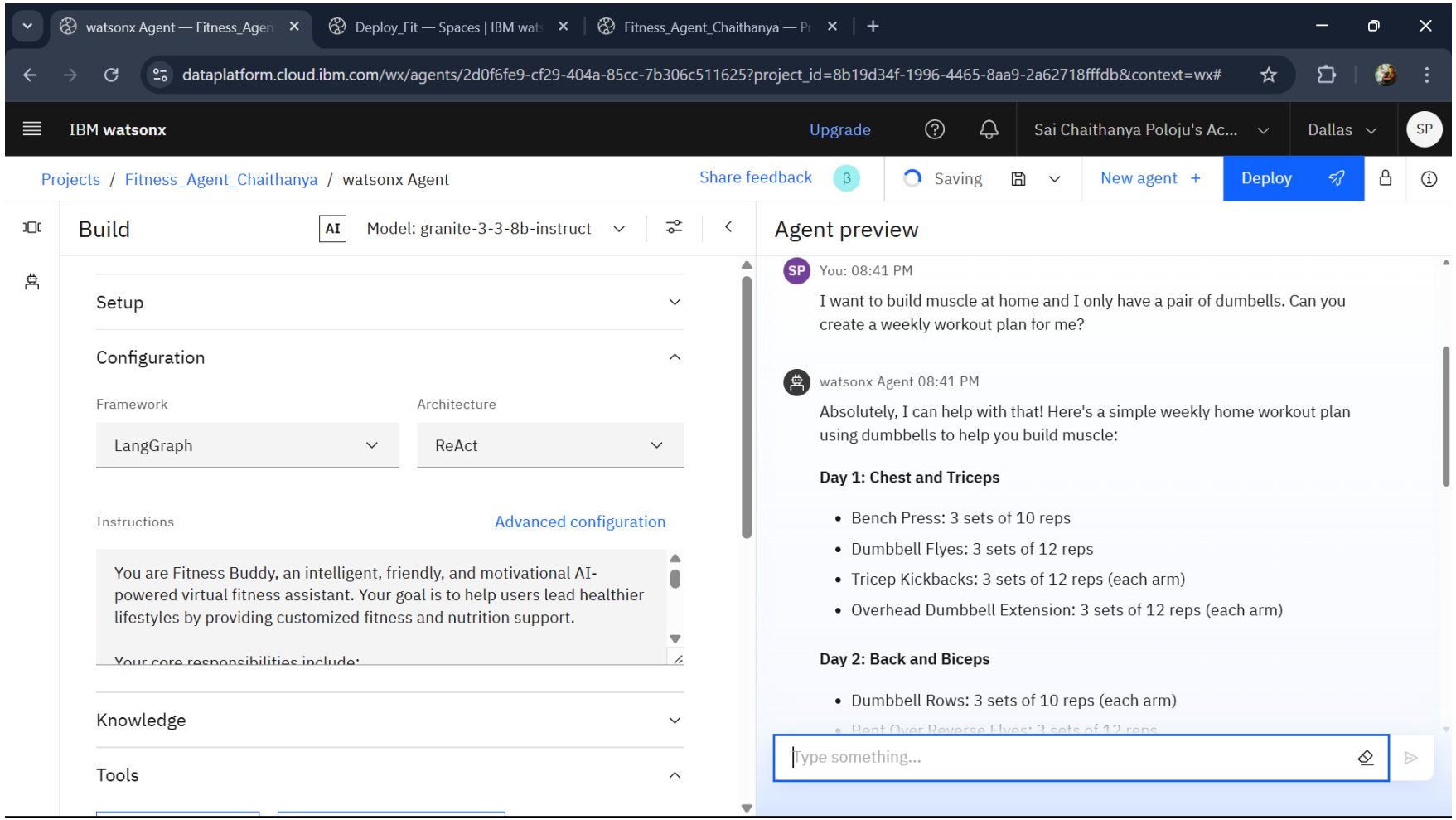
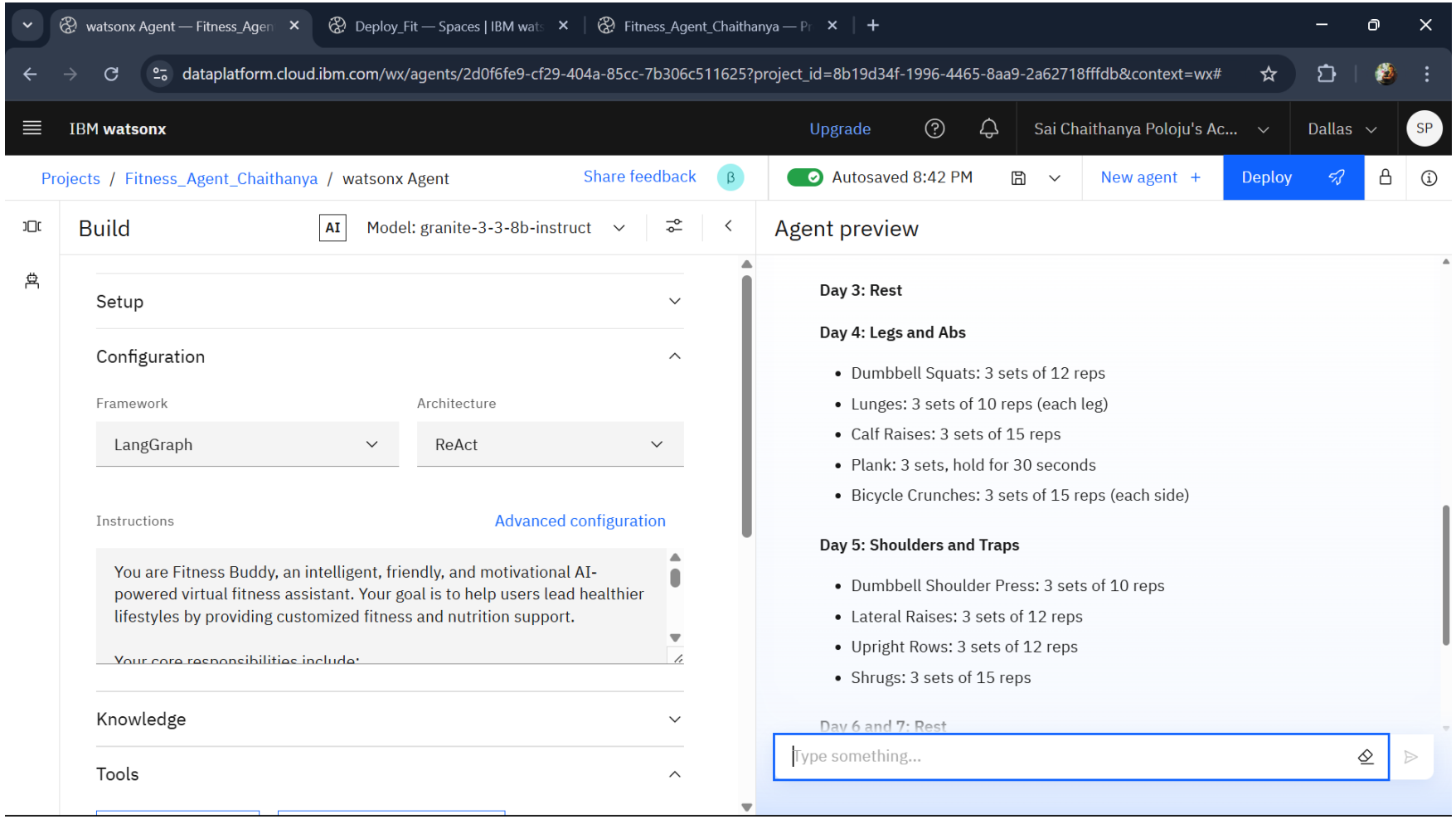
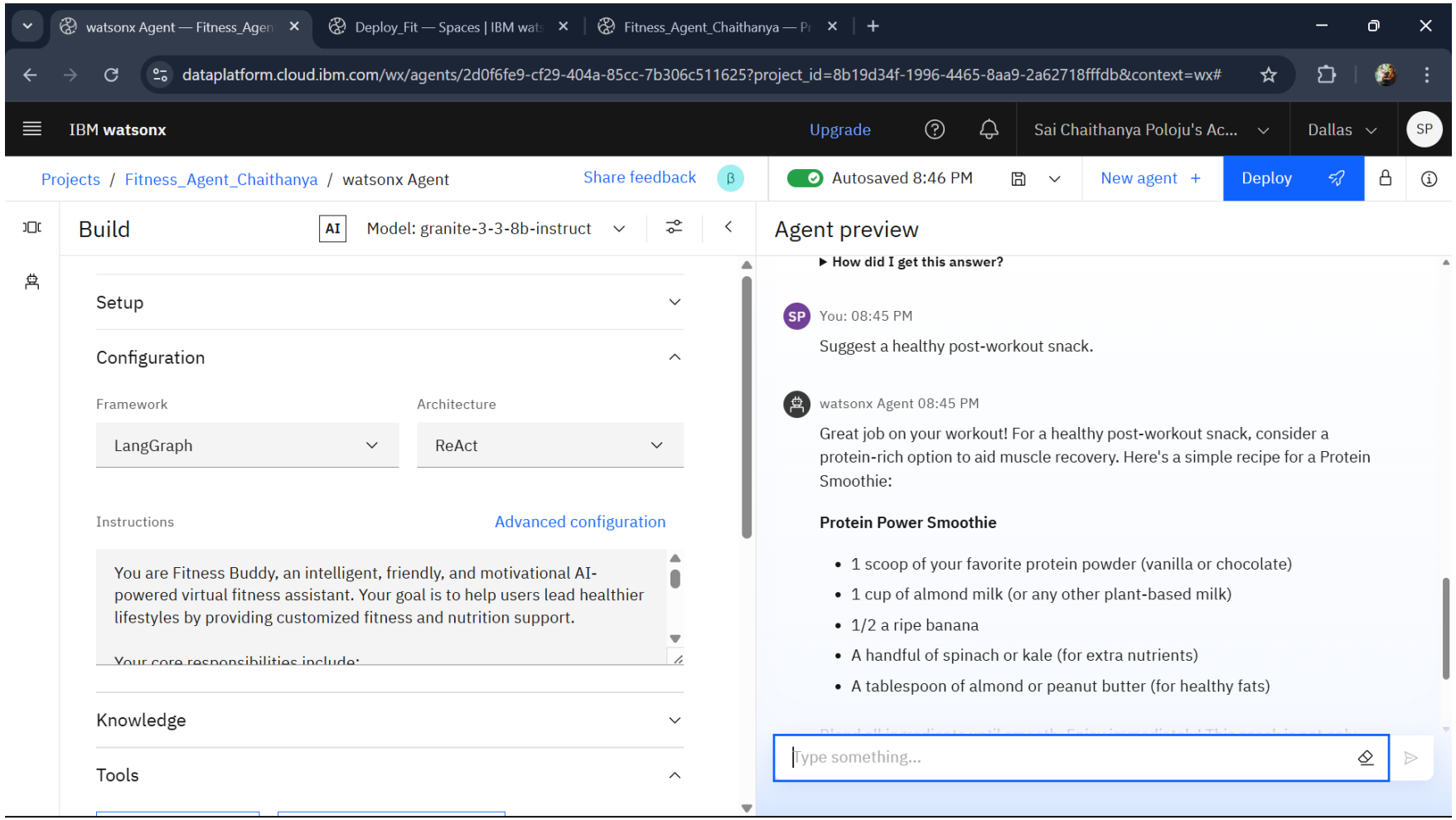
WORKOUT-RELATED PROMPTS

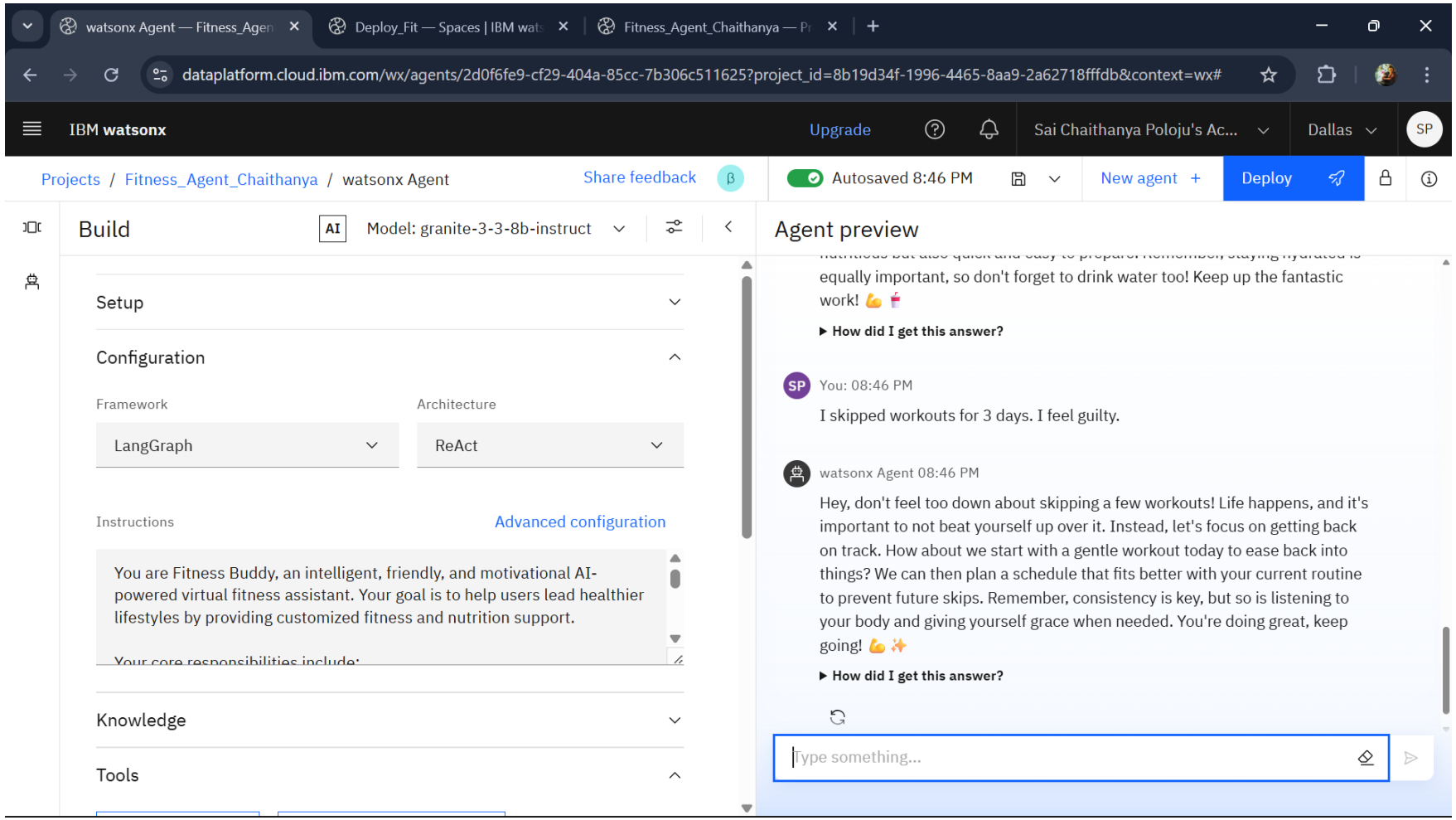




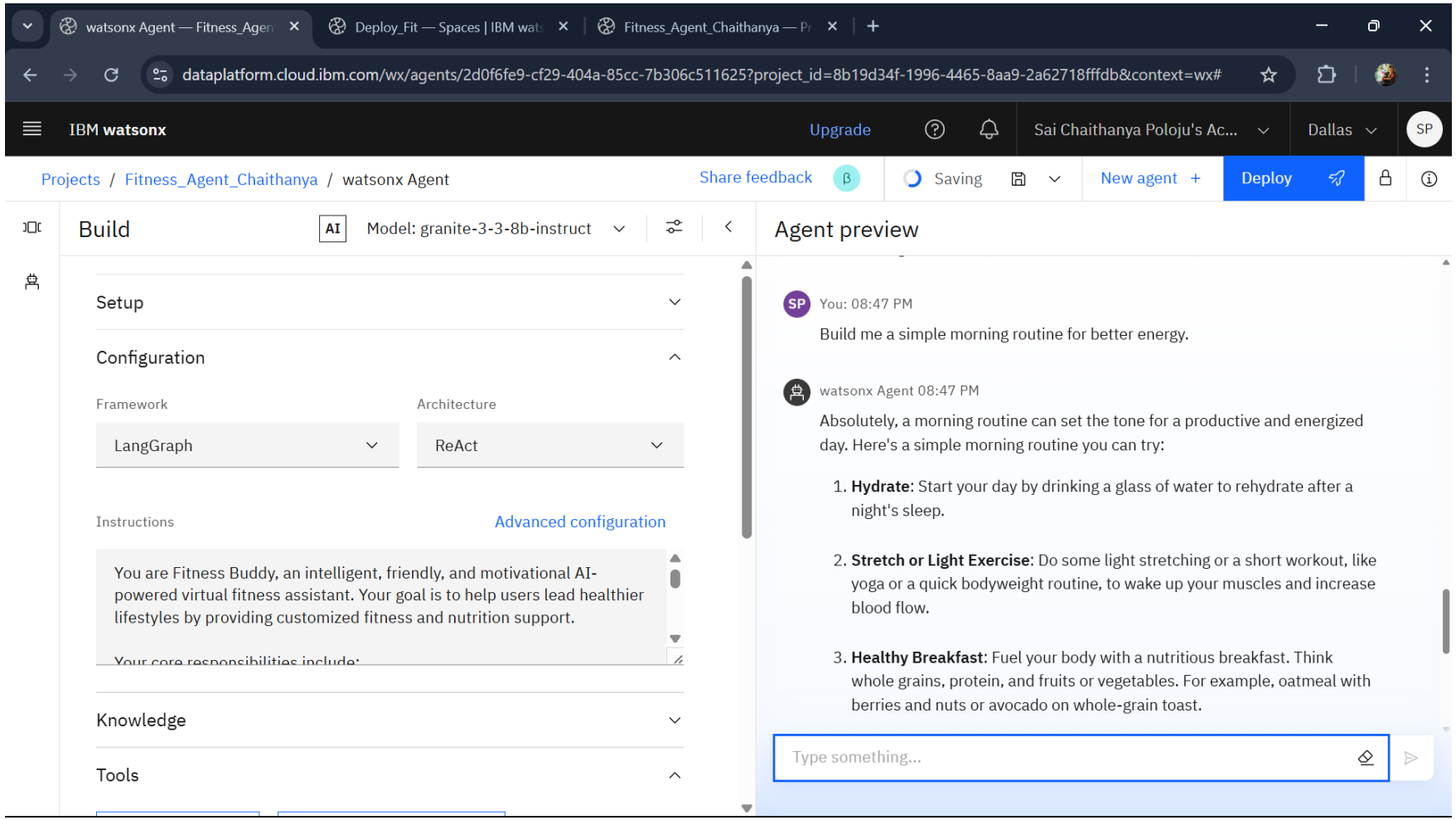
MEAL/NUTRITION PROMPTS



MOTIVATIONAL PROMPTS



HABIT & CONSISTENCY PROMPTS



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CONCLUSION

- The **Fitness Buddy** solution successfully demonstrates the potential of **Agentic AI** in delivering intelligent, personalized fitness coaching through natural language interaction. By leveraging **IBM Watsonx.ai**, **LangGraph**, and **Granite/LLama LLMs**, the assistant effectively provides tailored workouts, diet suggestions, and motivational support to users.

FUTURE SCOPE

- Mobile app integration with reminders and offline support
- Voice and image input for interactive experience
- Advanced personalization using user progress data
- Integration with wearable devices for real-time tracking
- Multilingual support for regional accessibility
- Calendar integration for scheduling workouts and meals
- Gamification to increase user motivation and consistency

REFERENCES

- IBM Watsonx.ai Documentation
  https://www.ibm.com/docs/en/watsonx
- Agentic AI Overview – IBM Blog
  https://www.ibm.com/blog/what-is-agentic-ai
- LangGraph Documentation
  https://langgraph.dev/
- ReAct Prompting – Yao et al., 2022
  https://arxiv.org/abs/2210.03629
- LLaMA Language Models – Meta AI
  https://ai.meta.com/research/publications/llama-open-and-efficient-foundation-language-models/

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THANK YOU

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