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# CAPSTONE PROJECT

## FITNESS BUDDY

**Presented By:**

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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**

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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

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

The screenshot displays the IBM watsonx Agent web interface. The browser address bar shows the URL: `dataplatfom.cloud.ibm.com/wx/agents/2d0f6fe9-cf29-404a-85cc-7b306c511625?project_id=8b19d34f-1996-4465-8aa9-2a62718ffdb&context=wx#`. The page header includes the IBM watsonx logo, an 'Upgrade' button, a help icon, a notification bell, the user profile 'Sai Chaithanya Polaju's Ac...', the location 'Dallas', and a session ID 'SP'.

The main interface is divided into two sections. On the left is the 'Build' tab, which contains configuration options for the AI agent. It shows the 'Model' as 'granite-3-3-8b-instruct'. Under 'Framework', 'LangGraph' is selected. Under 'Architecture', 'ReAct' is selected. The 'Instructions' section contains the text: 'You are Fitness Buddy, an intelligent, friendly, and motivational AI-powered virtual fitness assistant. Your goal is to help users lead healthier lifestyles by providing customized fitness and nutrition support.' Below this is a 'Knowledge' section and a 'Tools' section. On the right is the 'Agent preview' chat window, which shows a conversation history. The first message is from the user: 'Hi'. The second message is from the watsonx Agent: 'Hi, I'm Fitness Buddy – your personal AI coach! Ready to start your healthy journey? 🍌 How can I help you today?'. Below the chat history is a text input field with the placeholder 'Type something...' and a send button.

# WORKOUT-RELATED PROMPTS

The screenshot displays the IBM watsonx Agent interface in a web browser. The browser's address bar shows the URL: `dataplatfrom.cloud.ibm.com/wx/agents/2d0f6fe9-cf29-404a-85cc-7b306c511625?project_id=8b19d34f-1996-4465-8aa9-2a62718fffdb&context=wx#`. The interface includes a top navigation bar with the IBM watsonx logo, an 'Upgrade' button, and user information for 'Sai Chaithanya Poloju's Ac...'. Below this, a breadcrumb trail reads 'Projects / Fitness\_Agent\_Chaithanya / watsonx Agent'. The main interface is divided into two panels. The left panel, titled 'Build', contains sections for 'Setup', 'Configuration', 'Instructions', 'Knowledge', and 'Tools'. Under 'Configuration', 'LangGraph' is selected for the Framework and 'ReAct' for the Architecture. The 'Instructions' section contains the text: 'You are Fitness Buddy, an intelligent, friendly, and motivational AI-powered virtual fitness assistant. Your goal is to help users lead healthier lifestyles by providing customized fitness and nutrition support.' The right panel, titled 'Agent preview', shows a conversation log. It starts with a user prompt: 'I want to build muscle at home and I only have a pair of dumbbells. Can you create a weekly workout plan for me?'. The agent's response is: 'Absolutely, I can help with that! Here's a simple weekly home workout plan using dumbbells to help you build muscle:'. The response is structured with two days of workouts: 'Day 1: Chest and Triceps' and 'Day 2: Back and Biceps', each with a list of exercises and sets/reps. At the bottom of the 'Agent preview' panel, there is a text input field with the placeholder 'Type something...' and a send button.

**Build** AI Model: granite-3-3-8b-instruct

**Setup**

**Configuration**

Framework: LangGraph Architecture: ReAct

**Instructions** [Advanced configuration](#)

You are Fitness Buddy, an intelligent, friendly, and motivational AI-powered virtual fitness assistant. Your goal is to help users lead healthier lifestyles by providing customized fitness and nutrition support.

**Knowledge**

**Tools**

**Agent preview**

**You:** 08:41 PM

I want to build muscle at home and I only have a pair of dumbbells. Can you create a weekly workout plan for me?

**watsonx Agent:** 08:41 PM

Absolutely, I can help with that! Here's a simple weekly home workout plan using dumbbells to help you build muscle:

**Day 1: Chest and Triceps**

- Bench Press: 3 sets of 10 reps
- Dumbbell Flyes: 3 sets of 12 reps
- Tricep Kickbacks: 3 sets of 12 reps (each arm)
- Overhead Dumbbell Extension: 3 sets of 12 reps (each arm)

**Day 2: Back and Biceps**

- Dumbbell Rows: 3 sets of 10 reps (each arm)
- Bent Over Reverse Flyes: 3 sets of 12 reps

Type something...

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IBM watsonx

Upgrade

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Sai Chaithanya Poloju's Ac...

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Dallas

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SP

Projects / Fitness\_Agent\_Chaithanya / watsonx Agent

Share feedback

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Autosaved 8:42 PM

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New agent +

Deploy

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Build

AI

Model: granite-3-3-8b-instruct

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Setup

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Configuration

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Framework

LangGraph

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Architecture

ReAct

▼

Instructions

Advanced configuration

You are Fitness Buddy, an intelligent, friendly, and motivational AI-powered virtual fitness assistant. Your goal is to help users lead healthier lifestyles by providing customized fitness and nutrition support.

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Your core responsibilities include:

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Knowledge

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Tools

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Agent preview

Day 3: Rest

Day 4: Legs and Abs

• Dumbbell Squats: 3 sets of 12 reps

• Lunges: 3 sets of 10 reps (each leg)

• Calf Raises: 3 sets of 15 reps

• Plank: 3 sets, hold for 30 seconds

• Bicycle Crunches: 3 sets of 15 reps (each side)

Day 5: Shoulders and Traps

• Dumbbell Shoulder Press: 3 sets of 10 reps

• Lateral Raises: 3 sets of 12 reps

• Upright Rows: 3 sets of 12 reps

• Shrugs: 3 sets of 15 reps

Day 6 and 7: Rest

Type something...

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# MEAL/NUTRITION PROMPTS

The screenshot displays the IBM watsonx Agent web interface. The browser address bar shows the URL: `dataplatfom.cloud.ibm.com/wx/agents/2d0f6fe9-cf29-404a-85cc-7b306c511625?project_id=8b19d34f-1996-4465-8aa9-2a62718fffdb&context=wx#`. The interface includes a top navigation bar with the IBM watsonx logo, an 'Upgrade' button, and user information for 'Sai Chaithanya Poloju's Ac...'. Below this, a breadcrumb trail reads 'Projects / Fitness\_Agent\_Chaithanya / watsonx Agent', accompanied by a 'Share feedback' link and a 'beta' badge. The main workspace is divided into two panels. The left panel, titled 'Build', contains sections for 'Setup', 'Configuration', 'Instructions', 'Knowledge', and 'Tools'. Under 'Configuration', 'LangGraph' is selected for the Framework and 'ReAct' for the Architecture. The 'Instructions' section contains the text: 'You are Fitness Buddy, an intelligent, friendly, and motivational AI-powered virtual fitness assistant. Your goal is to help users lead healthier lifestyles by providing customized fitness and nutrition support.' The right panel, titled 'Agent preview', shows a conversation log. It begins with a user prompt: 'Suggest a healthy post-workout snack.' The agent's response is: 'Great job on your workout! For a healthy post-workout snack, consider a protein-rich option to aid muscle recovery. Here's a simple recipe for a Protein Smoothie:'. Below this, a section titled 'Protein Power Smoothie' lists the following ingredients: 1 scoop of your favorite protein powder (vanilla or chocolate), 1 cup of almond milk (or any other plant-based milk), 1/2 a ripe banana, A handful of spinach or kale (for extra nutrients), and A tablespoon of almond or peanut butter (for healthy fats). At the bottom of the preview panel is a text input field with the placeholder 'Type something...' and a send button.

IBM watsonx

Upgrade

Sai Chaithanya Poloju's Ac... Dallas SP

Projects / Fitness\_Agent\_Chaithanya / watsonx Agent Share feedback beta Autosaved 8:46 PM New agent + Deploy

**Build** AI Model: granite-3-3-8b-instruct

Setup

Configuration

Framework Architecture

LangGraph ReAct

Instructions [Advanced configuration](#)

You are Fitness Buddy, an intelligent, friendly, and motivational AI-powered virtual fitness assistant. Your goal is to help users lead healthier lifestyles by providing customized fitness and nutrition support.

Your core responsibilities include:

Knowledge

Tools

**Agent preview**

► How did I get this answer?

**SP** You: 08:45 PM

Suggest a healthy post-workout snack.

**watsonx Agent** 08:45 PM

Great job on your workout! For a healthy post-workout snack, consider a protein-rich option to aid muscle recovery. Here's a simple recipe for a Protein Smoothie:

**Protein Power Smoothie**

- 1 scoop of your favorite protein powder (vanilla or chocolate)
- 1 cup of almond milk (or any other plant-based milk)
- 1/2 a ripe banana
- A handful of spinach or kale (for extra nutrients)
- A tablespoon of almond or peanut butter (for healthy fats)

Type something...

# MOTIVATIONAL PROMPTS

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# HABIT & CONSISTENCY PROMPTS

The screenshot displays the IBM watsonx Agent web interface. The browser address bar shows the URL: `dataplatfom.cloud.ibm.com/wx/agents/2d0f6fe9-cf29-404a-85cc-7b306c511625?project_id=8b19d34f-1996-4465-8aa9-2a62718fffdb&context=wx#`. The interface includes a top navigation bar with the IBM watsonx logo, an 'Upgrade' button, and user information for 'Sai Chaithanya Poloju's Ac...'. Below this, a breadcrumb trail reads 'Projects / Fitness\_Agent\_Chaithanya / watsonx Agent'. The main interface is split into two panels. The left panel, titled 'Build', contains sections for 'Setup', 'Configuration', 'Instructions', 'Knowledge', and 'Tools'. Under 'Configuration', 'LangGraph' is selected for the Framework and 'ReAct' for the Architecture. The 'Instructions' section contains the text: 'You are Fitness Buddy, an intelligent, friendly, and motivational AI-powered virtual fitness assistant. Your goal is to help users lead healthier lifestyles by providing customized fitness and nutrition support.' The right panel, titled 'Agent preview', shows a chat history with a user message at 08:47 PM asking for a morning routine, and a response from 'watsonx Agent' at 08:47 PM providing a list of three steps: 1. Hydrate, 2. Stretch or Light Exercise, and 3. Healthy Breakfast. At the bottom of the preview panel is a text input field with the placeholder 'Type something...' and a send button.

Build AI Model: granite-3-3-8b-instruct

Setup

Configuration

Framework Architecture

LangGraph ReAct

Instructions [Advanced configuration](#)

You are Fitness Buddy, an intelligent, friendly, and motivational AI-powered virtual fitness assistant. Your goal is to help users lead healthier lifestyles by providing customized fitness and nutrition support.

Your core responsibilities include:

Knowledge

Tools

Agent preview

SP You: 08:47 PM

Build me a simple morning routine for better energy.

watsonx Agent 08:47 PM

Absolutely, a morning routine can set the tone for a productive and energized day. Here's a simple morning routine you can try:

1. **Hydrate:** Start your day by drinking a glass of water to rehydrate after a night's sleep.
2. **Stretch or Light Exercise:** Do some light stretching or a short workout, like yoga or a quick bodyweight routine, to wake up your muscles and increase blood flow.
3. **Healthy Breakfast:** Fuel your body with a nutritious breakfast. Think whole grains, protein, and fruits or vegetables. For example, oatmeal with berries and nuts or avocado on whole-grain toast.

Type something...

# 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/>

# IBM CERTIFICATIONS

In recognition of the commitment to achieve  
professional excellence



Poloju Sai Chaithanya

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



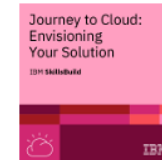
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Issued by: IBM SkillsBuild

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Journey to Cloud: Envisioning Your Solution



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# IBM CERTIFICATIONS

IBM **SkillsBuild**

Completion Certificate



This certificate is presented to  
**Sai Chaithanya Poloju**

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



**THANK YOU**