
CAPSTONE PROJECT

FITNESS BUDDY: AI-POWERED VIRTUAL FITNESS TRAINER

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OUTLINE

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

In today's fast-paced and digitally driven world, maintaining a consistent and healthy lifestyle has become increasingly difficult. Many individuals face challenges such as:

- Lack of personalized fitness guidance
- Limited time for scheduled workouts
- Inaccessibility to professional trainers or nutritionists
- Inconsistent motivation to stay on track with wellness goals

Traditional fitness programs often require costly subscriptions, rigid schedules, or in-person consultations, which are not always feasible for everyone.

PROPOSED SOLUTION

Fitness Buddy is a conversational, AI-powered virtual assistant designed to help individuals lead healthier lifestyles with ease and consistency. The chatbot offers:

- Personalized home workout recommendations based on user input
- Motivational tips and daily wellness inspiration
- Suggestions for simple, nutritious meals
- Support for habit-building and fitness consistency
- Built using IBM Watson Assistant and optionally integrated with IBM Granite AI models, Fitness Buddy provides an intelligent, accessible, and user-friendly experience through platforms like WhatsApp via Twilio.

SYSTEM APPROACH

The Fitness Buddy system is designed as a modular, cloud-based conversational assistant that delivers fitness-related guidance through chat platforms like WhatsApp. It follows a structured flow with the following components:

1. User Interaction Layer:

Users communicate via WhatsApp using the Twilio Sandbox. Messages are forwarded to IBM Watson Assistant for processing.

2. Watson Assistant (Core Engine):

Handles natural language understanding (NLU) and manages conversation flow through predefined Intents and Actions. Triggers context-aware responses for workouts, meals, habits, or motivation.

3. Backend Integration:

For dynamic responses, Watson can trigger webhooks calling a backend server. The backend can use IBM Granite models via Watsonx API to generate personalized advice.

4. Response Delivery:

Watson sends the reply back through Twilio. The user receives a real-time, friendly message on WhatsApp.

ALGORITHM & DEPLOYMENT

- User initiates a message on WhatsApp (e.g., "Give me a workout").
- Twilio Sandbox forwards the message to IBM Watson Assistant.
- Watson Assistant matches the input to a predefined intent using NLP.
- Based on the matched intent, the corresponding action is triggered.
- The action responds in one of two ways:
- The final response is sent back to the user via Twilio.
- Frontend Channel: WhatsApp via Twilio Sandbox
- Core Engine: IBM Watson Assistant (Lite Plan)
- Optional Backend: Node.js Express server for API integration with IBM Granite
- Watson Assistant hosted on IBM Cloud
- Twilio handles message routing

RESULT

The Fitness Buddy AI chatbot was successfully developed and integrated using IBM Watson Assistant and Twilio WhatsApp, enabling users to:

- Interact with a virtual fitness assistant via WhatsApp in real-time
- Receive personalized home workout routines on request
- Get motivational tips and wellness encouragement
- Explore simple, nutritious meal suggestions
- Build healthy fitness habits through daily advice

The system demonstrated high usability, fast response times, and intuitive conversational flow.

It meets the goal of providing accessible, intelligent fitness support anytime, anywhere — without requiring any hardware, subscription, or app installation.



Actions



All items ^

Created by you /

Created by you

Set by assistant

Variables ^

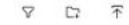
Created by you

Set by assistant

Set by integration

Saved responses

Filter by Title or Display name



New action +

<input type="checkbox"/>	Title	Display name	Last edited	Examples	Steps	Status	
<input type="checkbox"/>	Start	-	4 days ago	3	2		
<input type="checkbox"/>	Suggest Workout	-	4 days ago	6	2		
<input type="checkbox"/>	Example	-	4 days ago	1	1		
<input type="checkbox"/>	suggest a workout	-	4 days ago	1	1		
<input type="checkbox"/>	give me a workout plan	-	4 days ago	1	1		
<input type="checkbox"/>	I want to exercise	-	4 days ago	1	1		
<input type="checkbox"/>	home workout please	-	4 days ago	1	1		
<input type="checkbox"/>	quick fitness routine	-	4 days ago	1	1		
<input type="checkbox"/>	any full body workout?	-	4 days ago	1	1		
<input type="checkbox"/>	exercise routine for beginner	-	4 days ago	1	1		
<input type="checkbox"/>	motivate me	-	4 days ago	1	1		
<input type="checkbox"/>	I feel lazy	-	4 days ago	1	1		
<input type="checkbox"/>	need motivation to workout	-	4 days ago	1	1		
<input type="checkbox"/>	help me get back on track	-	4 days ago	1	1		
<input type="checkbox"/>	I don't feel like exercising	-	4 days ago	1	1		
<input type="checkbox"/>	inspire me to be consistent	-	4 days ago	1	1		
<input type="checkbox"/>	suggest a healthy meal	-	4 days ago	1	1		

Items per page: 50 ^

Showing 1-29 of 29 items

1 ^ 1 of 1 pages





Generative AI

No changes made

Base large language model (LLM)

Select a model

Select the large language model that your assistant uses for Conversational Search.

granite-3-8b-instruct (recommended) ^

granite-3-8b-instruct (recommended) ✓

granite-3-2b-instruct

[Add terms](#)

Add prompt instructions

A default prompt is provided to produce the best general responses. Optionally, you may add instructions to refine the responses from the LLM. These instructions complement the default prompt, but are not integrated as part of it.

[Add instructions](#)

Answer behavior

Specify how your assistant responds to customer requests.

Conversational search



Toggle Conversational search to On or Off to use it through the Base LLM. The Conversational search itself remains enabled and usable by other mechanisms.



Conversational search isn't enabled

Set up the Search integration by setting the conversational search toggle on in your Draft environment to access this feature.

[Set up](#)[Set up your Search integration](#) →

Preview



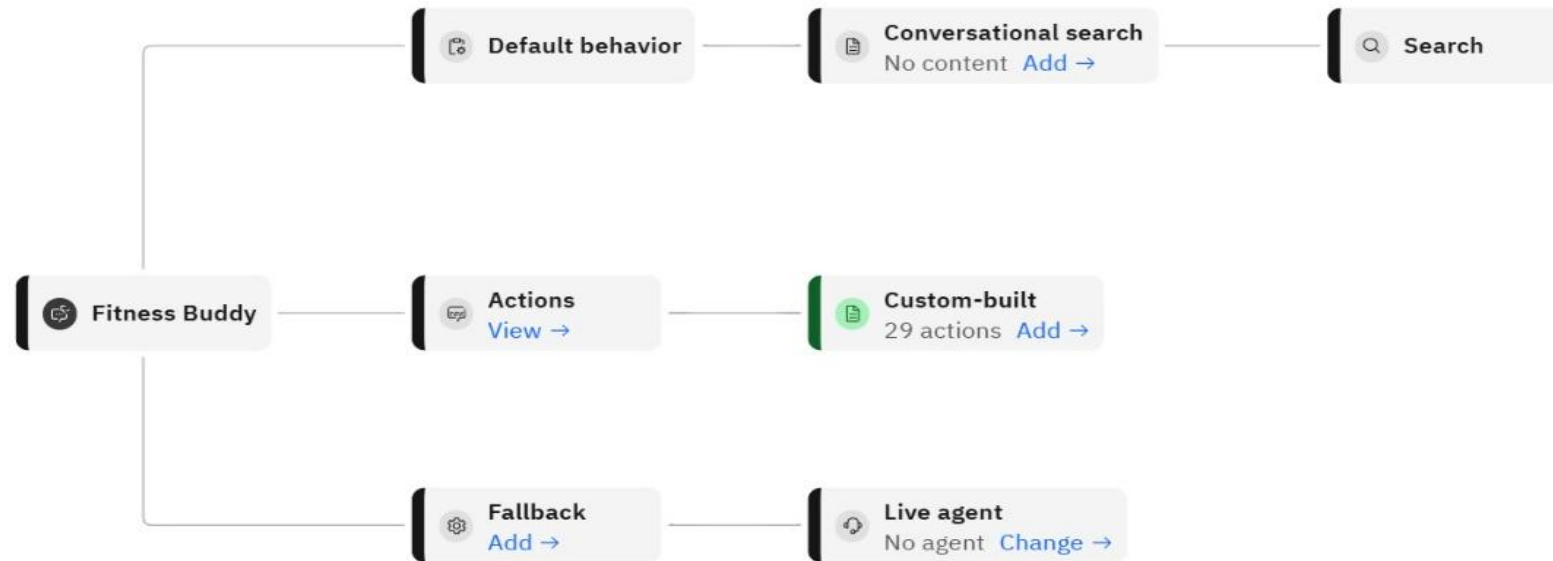
10:28 PM



Welcome, how can I assist you?

Type something...





IBM watsonx Assistant LiteUpgradeFitness Buddy

Learning resources

Environments

DraftLive

Draft environment

Use the draft environment for internal preview at your organization. It contains your in-progress, unpublished content and draft channel integrations.

Channels

Your customers interact with your assistant through these different communication platforms.

Channels

Web chat

WhatsApp with Twilio

Browse catalog

Resolution Methods

Your assistant responds to your users with answers from these sources.

Draft content

Last edited 07/28/2025 10:24PM

Draft

Edit content

Extensions

Search

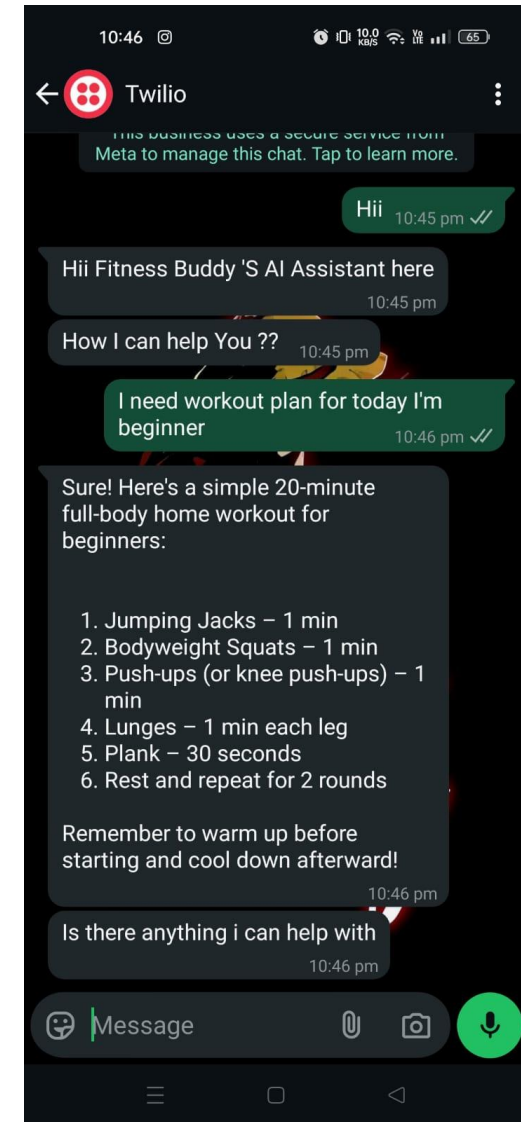
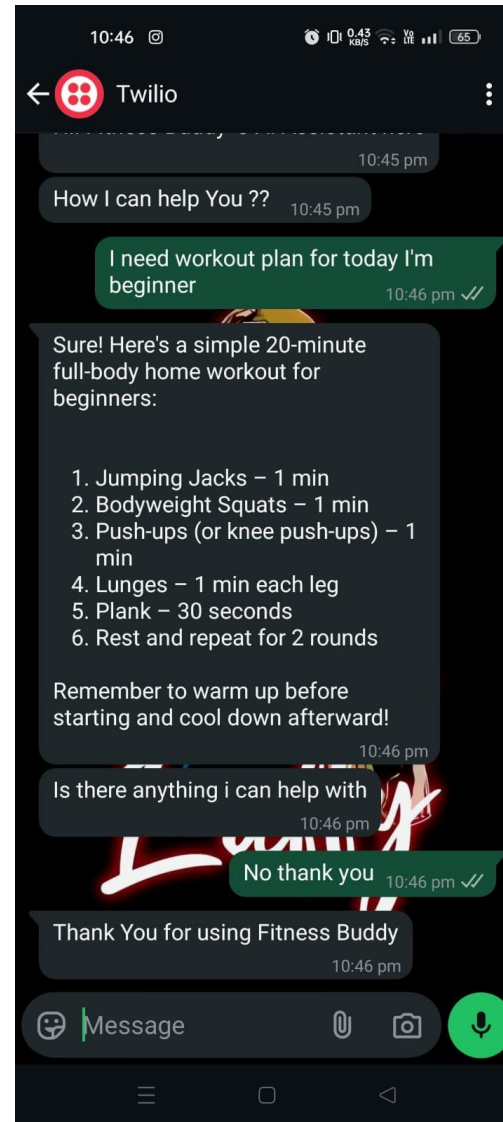
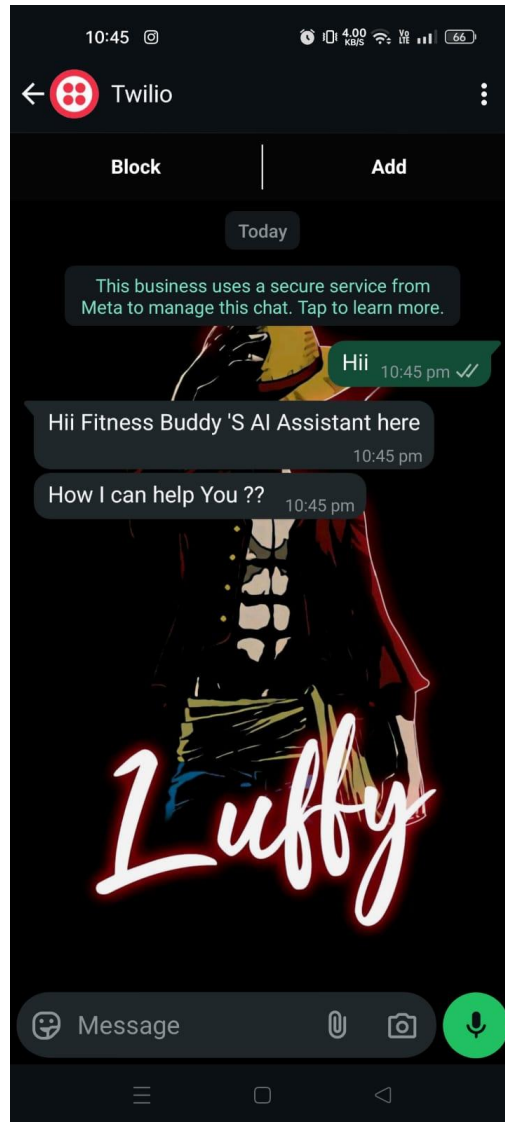
Extend what your assistant can answer by searching your existing documents

Try Plus Plan

Preview this environment

edunet

foundation



CONCLUSION

- Fitness Buddy demonstrates how AI-powered conversational systems can make fitness support more accessible, personalized, and engaging.
- By leveraging IBM Watson Assistant, IBM Cloud, and Twilio WhatsApp, the solution enables users to:
 - Receive on-demand health and fitness advice
 - Stay motivated with daily inspiration
 - Adopt sustainable healthy habits
- The project solves real-world problems like time constraints, lack of guidance, and motivation gaps — using AI for good.

FUTURE SCOPE

The Fitness Buddy chatbot can be enhanced in multiple ways to improve user experience, intelligence, and scalability:

- AI-Driven Personalization : Integrate IBM Granite models or external ML APIs to deliver personalized workouts, meal plans, and motivation based on user history and preferences.
- Health Tracking Integration: Connect with wearable devices or health apps (e.g., Google Fit, Apple Health) to monitor real-time data like steps, sleep, or heart rate.
- Multilingual Support : Enable the chatbot to support multiple languages for broader accessibility across different regions and demographics.
- Calendar & Reminder System : Add scheduling features to remind users about workouts, hydration, or meals with WhatsApp reminders.
- AI Sentiment Detection : Detect user mood or tone and adapt motivational responses dynamically using natural language understanding.
- Mobile App Integration: Embed the chatbot within a mobile app for a more immersive and feature-rich experience.

REFERENCES

- IBM Watson Assistant
- <https://www.ibm.com/cloud/watson-assistant>
- Used for creating the conversational AI chatbot and managing intents/actions.
- IBM Cloud (Lite Plan)
- <https://cloud.ibm.com>
- Platform for hosting Watson services and managing integrations.
- IBM Granite Foundation Models (Watsonx)
- <https://www.ibm.com/products/watsonx>
- Used optionally for AI-generated dynamic responses via API.
- Twilio WhatsApp Sandbox
- <https://www.twilio.com/whatsapp>
- Used for WhatsApp integration and chatbot deployment.
- Node.js & Express.js (Optional)
- Backend server setup to handle API calls for dynamic response generation.
- IBM Watsonx.ai API Docs
- <https://cloud.ibm.com/apidocs/watsonx-ai>
- Documentation for integrating Granite models programmatically.

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This certificate is presented to

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**Lab: Retrieval Augmented Generation with
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(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 24 Jul 2025 (GMT)

Learning hours: 20 mins



THANK YOU