
CAPSTONE PROJECT

FITNESS BUDDY – AI HEALTH COACH

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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

- People struggle with:
 - Choosing the right workout for their fitness level
 - Planning healthy meals
 - Staying motivated & consistent
- Need for a **personalized coach** that is:
 - Available anytime
 - Adaptive to goals, preferences & feedback
 - Free and easy to access

PROPOSED SOLUTION

- **AI-Powered Personal Coach** - A conversational AI agent built on **IBM Watsonx.ai** that acts as a friendly fitness and lifestyle coach, available anytime.
- **Personalized Workout Plans** - Generates home-friendly workout routines tailored to the user's **fitness level, goals, time availability, and past progress**.
- **Smart Nutrition Guidance** -Suggests **balanced meals and healthy snacks** based on dietary preferences (e.g., vegetarian) and caloric needs.
- **Motivation & Habit Tracking** -Provides **daily encouragement, streak reminders, and habit tips** to keep users consistent and motivated in their fitness journey.
- **Adaptive & Feedback Driven** - Learns from **user feedback and previous interactions**, improving recommendations overtime to create a more personalized experience.
- **Accessible & Cost-Free** - Deployed using **IBM Cloud Lite free services**, ensuring the solution is **affordable, scalable, and accessible to anyone** without premium tools.

SYSTEM APPROACH

- **Technology Used:-**

1. **IBM Watsonx.ai Agent Lab** – agent creation & deployment
2. **IBM Watson Machine Learning** – inference & endpoint
3. **Voice Input** – browser speech-to-text (Web Speech API)
4. **Image Input** – Watsonx multimodal tool or descriptive text

- **System Requirements**

- **1.. Hardware Requirements**

1. A standard laptop/desktop with internet access
2. Minimum: 4 GB RAM, Dual-core processor
3. Webcam/Microphone (optional, for voice input demos)

- **2 .Software Requirements**

1. IBM Cloud Lite account (free tier)
2. Watsonx.ai Agent Lab for building and testing the AI agent
3. Web browser (Chrome/Edge recommended) for preview and interaction

ALGORITHM & DEPLOYMENT

■ Algorithm (Approach Used)

- 1) **Input Collection** – User provides query via text/voice/image.
- 2) **Context Building** – Agent combines system prompt, user profile (goals, level, diet), and past feedback.
- 3) **AI Processing** – Watsonx.ai foundation model generates personalized workout, nutrition, or motivation response.
- 4) **Feedback Loop** – User feedback is considered for refining future recommendations.
- 5) **Output Delivery** – Personalized response (workout plan, meal suggestion, or motivational message) is displayed to the user.

■ Deployment

- 1) **Agent Creation** – Designed in **Watsonx.ai Agent Lab** with role prompt and tools.
- 2) **Testing** – Verified through **Agent Lab Preview** using sample queries.
- 3) **Deployment Space** – Agent deployed to **IBM Cloud Lite Deployment Space**.
- 4) **Endpoint Generation** – A public API endpoint created for real-time access.
- 5) **User Access** – Users can interact with the agent through **Watsonx Preview interface** (and optionally via future frontend integration).

RESULT

IBM watsonx

Projects / FitnessBuddy / Agent Lab

Build

AI Model: mistral-large

Tools

Add a tool

Create custom tool

Added tools (5)

Google search

Retrieve information from the Internet with the Google search engine.

DuckDuckGo search

Retrieve information from the Internet with the DuckDuckGo search engine.

Wikipedia search

Retrieve information from Wikipedia articles.

Webcrawler

Retrieve information from a website.

Weather

Retrieve the weather of a city.

<

Agent preview

SP

You: 09:42 PM

I have 20 minutes and I'm a beginner. Suggest a home workout and a motivational tip

watsonx Agent

09:42 PM

Sure! Here's a quick 20-minute home workout for beginners:

Warm-up (5 minutes)

1. **Jumping Jacks** - 2 minutes

2. **Arm Circles** - 1 minute

3. **Hip Rotations** - 1 minute

4. **Leg Swings** - 1 minute

Workout (10 minutes)

Perform each exercise for 45 seconds, followed by 15 seconds of rest. Complete 2 rounds.

1. **Squats**

2. **Push-ups** (on knees if needed)

3. **Lunges** (alternating legs)

4. **Plank**

5. **Bicycle Crunches**

Cool-down (5 minutes)

Type something...

IBM watsonx

Upgrade ? Bell Subhasmit

Deployment spaces / FitnessBuddy / Fitness Buddy – AI Health Coach /

Fitness Buddy – AI Health Coach

Deployed Online

API reference

Test

Preview

New chat +

S

You 11:13 PM

Motivate me to not skip my morning exercise

Fitness Buddy – AI Health Coach

11:13 PM

Sure! Here are some motivational tips to help you stick to your morning exercise routine:

1. **Set Clear Goals:** Having specific, achievable goals can give you a sense of purpose and direction. Whether it's to improve your fitness, lose weight, or just feel better, knowing your "why" can be a powerful motivator.

2. **Make It a Habit:** Consistency is key. Try to exercise at the same time every morning to make it a habit. Over time, it will become a natural part of your routine.

3. **Find Something You Enjoy:** If you dread your workouts, you're less likely to stick with them. Experiment with different types of exercise until you find something you genuinely enjoy.

4. **Prepare the Night Before:** Lay out your workout clothes and any equipment you'll need. This can make it easier to get started in the morning.

Type something...

edunet
foundation


RESULT

– AI Health Coach

Share feedback 8

Ne

I want to start exercise for muscle pain and I am a beginner what exercises I should start with and what is the diet plan as a beginner and what will keep me motivated

 Fitness Buddy – AI Health Coach 11:02 PM

Sure! Here's a simple 15-minute beginner home workout that you can do without any equipment:

Warm-up (3 minutes)

1. **Marching in Place** - 1 minute
2. **Arm Circles** - 30 seconds forward, 30 seconds backward
3. **Hip Rotations** - 30 seconds clockwise, 30 seconds counterclockwise
4. **Leg Swings** - 30 seconds forward, 30 seconds backward

Workout (10 minutes)

Perform each exercise for 45 seconds, followed by 15 seconds of rest. Complete the circuit twice.

1. **Jumping Jacks**
2. **Squats**
3. **Push-ups** (on knees if needed)
4. **Lunges** (alternate legs)
5. **Plank**
6. **Bicycle Crunches**
7. **Glute Bridges**

Type something...

2. **Squats**

3. **Push-ups** (on knees if needed)

4. **Lunges** (alternate legs)

5. **Plank**

6. **Bicycle Crunches**

7. **Glute Bridges**

8. **Mountain Climbers**

9. **Side Plank** (30 seconds each side)

10. **High Knees**

Cool-down (2 minutes)

1. **Deep Breathing** - 1 minute
2. **Gentle Stretching** - 1 minute (focus on major muscle groups)

Tips:



- Make sure to listen to your body and modify exercises as needed.
- Stay hydrated before, during, and after your workout.
- Consistency is key! Aim to do this workout 3-4 times a week for best results.

Would you like more details on any of the exercises or additional workout ideas?


► How did I get this answer?

Type something...

Deployment spaces / FitnessBuddy / Fitness Buddy – AI Health Coach /

Fitness Buddy – AI Health Coach  Deployed  Online

API reference Test Preview



Quick start samples

Suggest a 15-minute beginner home workout

Give me a simple post-workout snack idea

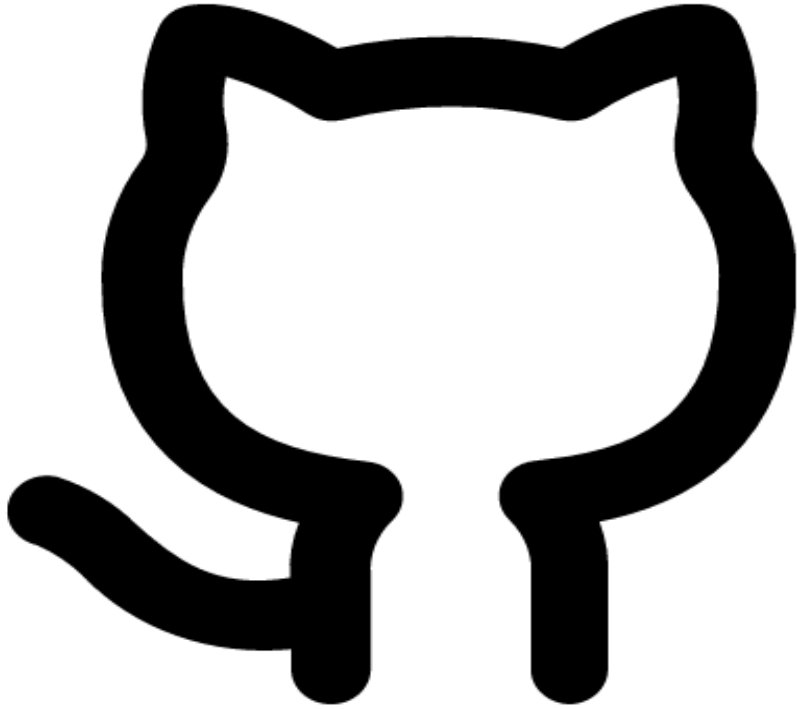
Motivate me to not skip my morning exercise

Turn on automatic punctuation in settings.

Got It

give me 15 minutes beginner home workout

PROJECT LINK



<https://github.com/SubhasmitaPal/IBM-Cloud-and-Skillsbuild.git>

CONCLUSION

- **Fitness Buddy AI Coach** successfully delivers **personalized workouts, nutrition advice, and motivation** using IBM Watsonx.ai.
- The solution is **accessible anytime** through IBM Cloud Lite, making it cost-effective and scalable.
- It adapts to **user goals, preferences, and feedback**, offering a more tailored fitness experience.
- Demonstrates the potential of **AI-powered personal assistants** in promoting a healthy and active lifestyle.

FUTURE SCOPE

- **Mobile and web app-** Easy user access anytime, anywhere
- **Advanced Feedback System-** Auto adjusts plans based on user progress.
- **Wearable Device Integration-** Real-time fitness and health-tracking.
- **Multilingual and Voice Support-** Wider reach and hands-free interaction.

REFERENCES

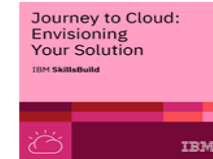
- **IBM Watsonx.ai Documentation** – <https://www.ibm.com/watsonx/ai>
- **IBM Cloud Lite Services** – <https://www.ibm.com/cloud/free>
- **IBM Watson Machine Learning** – <https://cloud.ibm.com/catalog/services/machine-learning>
- Research articles and resources on **AI in Fitness & Nutrition**

IBM CERTIFICATIONS



IBM CERTIFICATIONS

In recognition of the commitment to achieve
professional excellence



Subhasmita Pal

Has successfully satisfied the requirements for:

Journey to Cloud: Envisioning Your Solution



Issued on: Jul 17, 2025
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THANK YOU