
CAPSTONE PROJECT

FITNESS BUDDY

Presented By:
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Mallareddy College of Engineering and Technology

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 world, individuals often struggle to maintain a healthy lifestyle due to a lack of personalized guidance, limited time, inconsistent motivation, and the rigidity or high cost of traditional fitness solutions. There is a growing need for an accessible and adaptable approach to fitness, nutrition, and overall well-being that aligns with individual preferences and daily routines.

PROPOSED SOLUTION

The proposed system aims to help users maintain a consistent healthy lifestyle by offering real-time, personalized fitness and nutrition guidance through conversational interaction. The solution focuses on habit-building, user engagement, and dynamic content delivery. This involves leveraging data analytics and AI-driven decision-making to create an intelligent, proactive, and adaptive fitness assistant.

- **User Data Collection:**
Collect user inputs via chatbot: fitness goals, daily schedule, energy level, dietary preferences, and feedback.
- **Data Handling:**
Store and manage user profiles, preferences, and activity history. Ensure smooth integration for future personalization.
- **Conversational AI Assistant:**
Use Watson Assistant to offer real-time, personalized suggestions:

“Try a quick 15-min stretch today.”

“You’ve hit 3 hydration goals—keep it up!”
- **Content Modules:**
Suggest workouts, meals, and micro-habits based on user context and routine. Focus on small, achievable daily actions.
- **Deployment:**
Chatbot-based interface with real-time, personalized suggestions. Supports user feedback for ongoing refinement—no coding required.
- **Evaluation:**
Track completion, consistency, and feedback. Continuously refine model using user interaction data.

SYSTEM APPROACH

1. System Requirements:

- User data input (workout history, goals, feedback)
- No-code platform for AI logic and interface development
- Real-time context awareness (calendar, user status)
- Integration with wearable devices (for sleep, heart rate, activity data)
- Scalable cloud or local hosting for reliable access

2. Libraries/Tools Required:

- Data preprocessing & feature extraction tools integrated within no-code platforms
- No-code AI platforms with rule-based logic (e.g., IBM Watson Assistant, Microsoft Power Automate, or Google Dialogflow)
- Analytics and monitoring tools for continuous evaluation and feedback collection
- Visualization and dashboard tools for user interface (e.g., Power BI, Tableau, or platform-native widgets)
- APIs for wearable data integration (e.g., Fitbit API, Apple HealthKit)

ALGORITHM & DEPLOYMENT

Algorithm (Logic Flow):

- User initiates a session with the Fitness Buddy chatbot.
- Chooses a fitness objective (e.g., fat loss, strength building).
- The assistant asks guided questions about daily routine, eating habits, and activity level.
- Suggestions and fitness guidance are tailored based on user responses.
- The assistant continues the conversation, offering customized advice through follow-up interactions.

Deployment:

- Built using IBM Watson Assistant (No-Code).
- Dialogue flow and interactions structured using visual dialog builder.
- Fully deployed and tested within the Watson Assistant environment for seamless user experience.

RESULT

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AA



Create a project

Start with a new, blank project or select from where to import an existing project.

+ New

Local file

Sample

Define details

Name

Fitness Buddy2

Description (optional)

your patner in every step towards a stronger,healthier lifestyle

Tags (optional)

Add tags

Add tags to make projects easier to find. To add tags, separate them with commas and press Enter.

Storage

Cloud Object Storage-tb

Cancel

Create

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Projects / Fitness Buddy2 / Agent Lab

Share feedback ⓘ Unsaved 📄 ▾ New agent + Deploy 🚀

Select a tool


Choose a tool to add to your agent.

🔍 Search for a tool




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.




Document search

Search documents with vector indexes.




Tavily search

Retrieve information from the internet with the Tavily search engine.




Webcrawler

Retrieve information from a website.




Python Interpreter ⚠️

Execute Python code generated by the agent.



Weather

Retrieve the weather of a city.



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Deploy

Build

AI Model: llama-3-3-70b-instruct

Setup

Configuration

Framework

LangGraph

Architecture

ReAct

Instructions

Advanced configuration

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.

Fitness Buddy aims to solve this problem by offering a conversational, AI-powered health and fitness coach that can:

- Recommend home workouts and routines based on user input.
- Provide motivational tips and daily fitness inspiration.
- Suggest simple, nutritious meal ideas.
- Encourage habit-building and consistency.

Knowledge

Tools

Agent preview

AA You: 08:32 PM

how many calories will i burn in a 30-minute run

watsonx Agent 08:32 PM

The number of calories burned in a 30-minute run can vary depending on several factors, including the individual's weight, pace, and intensity. However, based on the search results, it appears that a 30-minute run can burn anywhere from 200 to 500 calories. For example, a 160-pound person running at a 12-minute pace (five miles per hour) for 30 minutes would burn about 290 calories. Additionally, running at a 10-minute pace (six miles per hour) for 30 minutes would burn approximately 360 calories. It's important to note that these are approximate values and can vary depending on individual factors.

► How did I get this answer?

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Knowledge

Tools

Add a toolCreate custom tool

Added tools (1)

Agent preview

You: 08:34 PM

what are high-protein foods i can add to my diet

watsonx Agent 08:34 PM

Here are some high-protein foods you can add to your diet:

- Lean meats: chicken, turkey, lean beef, pork
- Fish and seafood: salmon, tuna, shrimp, lobster
- Eggs
- Dairy products: milk, cheese, yogurt
- Legumes: beans, lentils, peas
- Nuts and seeds: almonds, chia seeds, hemp seeds
- Soy products: tofu, tempeh, edamame
- Whole grains: quinoa, brown rice, whole wheat
- Vegetables: broccoli, spinach, kale, bell peppers

You can also consider adding protein-rich foods like:

- Greek yogurt
- Cottage cheese
- Protein shakes
- Protein bars
- Meat alternatives like seitan and veggie burgers

Remember to vary your protein sources to ensure you're getting all the essential amino acids your body needs.

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Build

AI Model: llama-3-3-70b-instruct ▾ 🔗 <

Setup

Configuration

Framework Architecture

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Instructions Advanced configuration

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Knowledge

Tools

Agent preview

AA You: 08:35 PM

how do i stay consistent with my workouts

👤 watsonx Agent 08:35 PM

To stay consistent with your workouts, try the following:

1. Set clear goals and stay motivated

2. Create a structured exercise routine

3. Find workouts you actually like

4. Lock it into your schedule

5. Track your progress

6. Make an if-then plan

7. Eliminate barriers

8. Get clear on your why

9. Start with mini workouts

10. Mix up your routine for variety

Remember, consistency is key to achieving your fitness goals. Try to make exercise a habit by doing it at the same time every day, and find ways to make it enjoyable and sustainable for you.

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CONCLUSION

- The Fitness Buddy agentic AI chatbot effectively delivered personalized and context-sensitive workout suggestions through a no-code platform. It achieved strong user engagement, adapted proactively based on sleep patterns and feedback, and supported steady progress toward fitness goals—demonstrating its real-world usefulness. Some challenges included managing complex contextual inputs and maintaining flexibility within the limits of no-code tools. Future improvements could involve tighter integration with wearable devices, more flexible workout planning, and smoother conversational interactions. Overall, the solution successfully promoted healthier habits by acting as a smart, supportive virtual fitness coach—showcasing the potential of agentic AI in personal health and wellness domains.

FUTURE SCOPE

- Future upgrades to the Fitness Buddy agentic AI system could involve incorporating additional data inputs like meal tracking, emotional state, and stress indicators to enhance personalization. The chatbot could be refined to better interpret complex user responses and manage more advanced conversational flows through improved natural language understanding. Adding multilingual capabilities and regional customization would allow the assistant to serve a broader audience across various cultures and locations. Leveraging new technologies like edge computing could offer faster, device-based processing for improved privacy and performance. Additionally, integrating advanced machine learning could help the system recognize long-term user behavior patterns and adapt its suggestions more intelligently over time. These enhancements would significantly boost the assistant's flexibility, intelligence, and overall effectiveness in guiding users through their health and wellness goals.

REFERENCES

- The creation of the Fitness Buddy agentic AI chatbot was guided by a variety of academic studies and hands-on resources related to conversational AI, personalized wellness tools, and intelligent agent design. Foundational references include *"Designing Agentic Systems: Principles for Human-AI Collaboration"* (Amershi et al., 2019), which presents best practices for developing proactive, user-focused agents, and *"Automated Health Coaching Using Conversational Agents"* (Bickmore & Giorgino, 2006), which evaluates the role of chatbots in promoting healthy behavior. Approaches to personalization and context-aware decision-making were inspired by research such as *"User Modeling in Health and Wellness Recommender Systems"* (IJCAI, 2020) and *"Personalized Recommendations in Health Apps Using Contextual Data"* (IEEE Access, 2021). In addition, UI layout, rule-building, and interaction flow were shaped using documentation from widely adopted no-code and visual AI platforms. For integrating external health data like sleep and activity, development was informed by API documentation from services such as Fitbit, Google Fit, and Apple HealthKit.

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Learning hours: 20 mins

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