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# **CAPSTONE PROJECT**

## **FITNESS BUDDY: AI-POWERED VIRTUAL FITNESS ASSISTANT**

**Presented By:**

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# OUTLINE

- Problem Statement
- Proposed System/Solution
- System Development Approach
- Algorithm & Deployment
- Result (Output Image)
- Conclusion
- Future Scope
- References

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# PROBLEM STATEMENT

Currently, many individuals face challenges in maintaining a healthy lifestyle due to the fast-paced nature of daily life. Lack of personalized fitness guidance, inconsistent motivation, and limited time make it difficult to follow regular workout routines or healthy eating habits. Traditional fitness solutions often involve high costs, rigid schedules, or in-person consultations that are not always accessible. Therefore, providing users with a flexible, intelligent, and accessible fitness support system becomes a major concern. The crucial part is creating a virtual assistant that can offer on-demand fitness advice, meal suggestions, and motivation tailored to individual needs.

# PROPOSED SOLUTION

- The proposed system aims to address the challenge of maintaining a healthy lifestyle by introducing Fitness Buddy—an AI-powered virtual assistant that provides personalized fitness guidance. It delivers home workout routines, healthy meal suggestions, and daily motivational tips through a conversational interface. The solution will consist of the following components:
- **User Input Collection:**  
Gather user inputs such as fitness goals, workout duration, dietary preferences, and motivation needs.  
Enable queries like “Suggest a 15-minute workout” or “Give me a healthy meal idea.”
- **Knowledge Integration:**  
Use built-in prompts and real-time tools like Google Search to generate dynamic and relevant responses.  
Incorporate health and nutrition guidelines to tailor suggestions.
- **AI Processing:**  
Utilize the Mistral-large foundation model in IBM Watsonx.ai to process prompts and return smart, context-aware responses.  
Handle fitness, nutrition, and motivation queries via a single unified agent.
- **Deployment:**  
Deploy the assistant using IBM Watsonx.ai Runtime, Cloudant DB, and Cloud Functions.  
Ensure a user-friendly interface is available via web or app access.
- **Evaluation:**  
Assess agent performance based on accuracy, relevance, and user engagement.  
Continuously refine prompts and tools to enhance response quality.

# SYSTEM APPROACH

- The "System Approach" section outlines the overall strategy and methodology for developing and implementing the Fitness Buddy virtual fitness assistant. The system leverages IBM Cloud services to provide real-time, personalized fitness and nutrition support through an AI chatbot.
- **System Requirements:**
  - IBM Cloud Lite account
  - Stable internet connection
  - Web or mobile interface for user interaction
  - IBM Watsonx.ai access and enabled runtime environment
- **Libraries and Services Required:**
  - IBM Watsonx.ai – To build and manage the AI agent
  - **Watsonx Runtime Service** – To execute and deploy the agent
  - IBM Cloudant (NoSQL DB) – For storing user data and preferences

# ALGORITHM & DEPLOYMENT

- **Algorithm Selection:**
- Uses Mistral-large model via IBM Watsonx.ai
- Chosen for natural language understanding and real-time response generation
- **Data Input:**
- User prompts (e.g., “Suggest a workout”, “Healthy lunch idea”)
- Google Search tool for live content
- No structured training data needed
- **Processing Logic:**
- Prompt-based interaction
- Responses tailored using agent instructions and tools
- No traditional training; relies on pre-trained foundation model
- **Deployment:**
- Deployed using Watsonx Runtime
- Backend via IBM Cloud Functions

# RESULT

- Deployed using Watsonx.ai with Mistral-large model
- Responds to fitness, nutrition, and motivation queries in real-time
- Integrated with Google Search for dynamic suggestions
- Stores user preferences via Cloudbant DB
- **Example Outputs:**
  - “Suggest a 10-minute workout” → Full-body HIIT routine
  - “Healthy lunch idea” → Chickpea salad recommendation
  - “Motivate me” → Encouraging quote or tip

# SCREEN SHOTS

IBM watsonx

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Fitness Buddy

Deployed Online


API reference Test Preview

New chat +

Fitness Buddy 04:23 AM

Welcome to Fitness Buddy

AI fitness coach for personalized workouts, healthy meals, and daily motivation.



Quick start samples

Suggest a quick home workout for today

Give me a healthy meal idea

Type something...

About this deployment

Name

Fitness Buddy

Description

AI fitness coach for personalized workouts, healthy meals, and daily motivation.

Deployment Details

Deployment ID: 92345525-dca8-41...

Serving name: No serving name.

Software specification: runtime-24.1-py3.11

Hardware specification: Extra extra small: 1 CPU and 2 GB RAM

Copies: 1

Tags

wx-agent

Associated asset

Fitness Buddy

7ee357ee-ef19-4f2b-88ba-36d99d192373

Last modified

1 minute ago

Created on

Aug 1, 2025



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Fitness Buddy ✓ Deployed Online

API reference Test **Preview**

New chat +

S You 04:25 AM

Suggest a quick home workout for today

⚡ Fitness Buddy 04:25 AM

Sure! Could you please tell me your fitness level (beginner, intermediate, advanced) and how much time you have for the workout?

S You 04:25 AM

I am a beginner and I have about one hours for workout.

⚡ Fitness Buddy 04:25 AM

Great! Here's a beginner-friendly full-body workout that you can do at home in about an hour:

**Warm-up (5 minutes)**

- Jumping Jacks** - 2 minutes
- Arm Circles** - 1 minute
- Hip Rotations** - 1 minute

About this deployment

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# CONCLUSION

- Fitness Buddy proves to be an effective solution for delivering personalized fitness, nutrition, and motivational support through a conversational interface. Developed using IBM Watsonx.ai and Cloud services, it offers users an accessible and flexible way to maintain a healthy lifestyle. While challenges like prompt tuning and tool integration were encountered, they were resolved through testing and configuration. Overall, the project showcases the potential of AI in promoting daily wellness and healthy habits.

# FUTURE SCOPE

- The Fitness Buddy system can be expanded with additional features to enhance user experience and engagement. Voice interaction can be integrated using IBM Watson Speech services to make the assistant more accessible. Progress tracking and visual analytics can be introduced to help users monitor their fitness journey. Gamification elements such as badges or streak rewards can encourage consistency. In the future, the system can also include support for specific health conditions like diabetes or hypertension, and offer multilingual capabilities to reach a wider audience. These improvements will make the solution more interactive, inclusive, and impactful.

# REFERENCES

- IBM Watsonx.ai Documentation
- IBM Cloud Lite Services – [cloud.ibm.com](https://cloud.ibm.com)
- Healthline – [www.healthline.com](https://www.healthline.com)
- WebMD – [www.webmd.com](https://www.webmd.com)
- Google Search Tool (used via Watsonx Agent Lab)
- Credly – IBM Certifications (AI, Cloud, RAG Lab)

# IBM CERTIFICATIONS

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LangChain**

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**Completion date:** 25 Jul 2025 (GMT)

**Learning hours:** 20 mins



**THANK YOU**