
CAPSTONE PROJECT

FITNESS BUDDY

Presented By:

Name- Azhari Jasmine. H

College- Panimalar Engineering College

Department- Electrical and Electronical Engineering

OUTLINE

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

PROBLEM STATEMENT

In today's busy world, many individuals struggle to stay fit due to lack of time, motivation, and personalized guidance. Traditional fitness methods are often costly and rigid. There is a need for an accessible, intelligent assistant that offers personalized workouts, motivation, and healthy tips on demand. The crucial part is delivering consistent, tailored support to help users build lasting fitness habits.

PROPOSED SOLUTION

- The proposed solution aims to help users maintain consistent fitness habits through an intelligent and interactive chatbot system. The chatbot, developed using IBM watsonx, leverages advanced NLP models and external tools to provide personalized workout plans, nutritional tips, real-time information, and motivational support. The system is designed for scalability, accuracy, and user engagement. The following are the core components of the solution:
- **User Input & Preferences:**
 - Collect user data such as **age, gender, fitness goals, dietary preferences and location**.
 - Track real-time parameters like **daily mood, availability, and motivation levels** to offer adaptive responses.
- **External Tool Integration:**
 - **Wikipedia Search and Google Search:** Fetch detailed explanations for user queries related to health, nutrition, and fitness.
 - **Weather Report:** Suggest weather-specific workouts and hydration tips for the user's location.
- **AI/ML Model Usage:**
 - Use the **LLaMA language model** for advanced natural language understanding and contextual conversation.
 - Implement **LangGraph** for structured flow management, enabling seamless conversation paths (e.g., fitness → food → motivation).
- **Deployment:**
 - Deploy the chatbot using **IBM watsonx.ai studio** on a secure, scalable platform.
 - Ensure 24/7 availability via web and mobile interfaces.
- **Evaluation:**
 - Analyze chatbot performance using user feedback, engagement level, and token analytics.
 - Continuously improve response quality through model retraining and data updates.
 - Result: The chatbot successfully engaged users **with personalized and context-aware responses**.

SYSTEM APPROACH

This section outlines the strategy used to develop and implement the AI-powered fitness chatbot using IBM watsonx.ai studio.

- **System requirements:**

OS: Windows 10 / Ubuntu 20.04+

RAM: 8 GB (16 GB recommended)

Platform: IBM watsonx.ai Studio

Internet: Required for API integration

- **Libraries & Tools Used:**

LLaMA Model – For generating responses

LangGraph – For workflow and tool routing

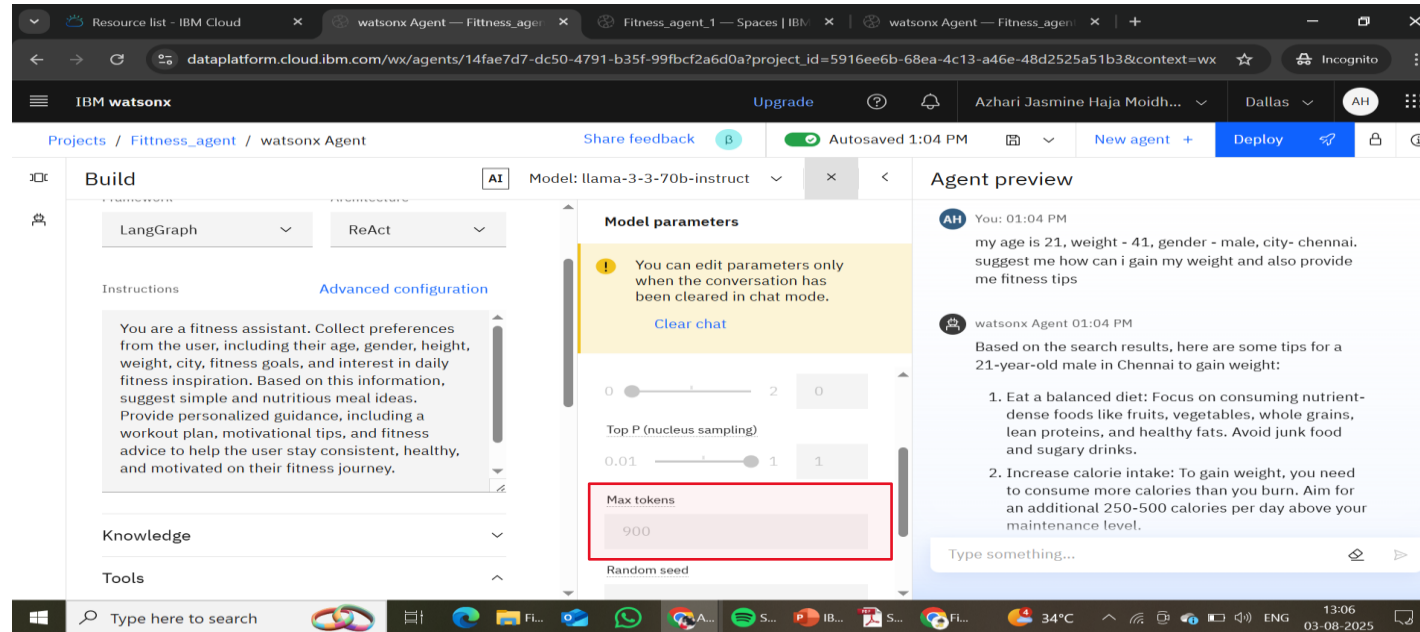
LangChain – To use Wikipedia, Google Search, and weather tools

APIs – OpenWeatherMap for weather updates.

ALGORITHM & DEPLOYMENT

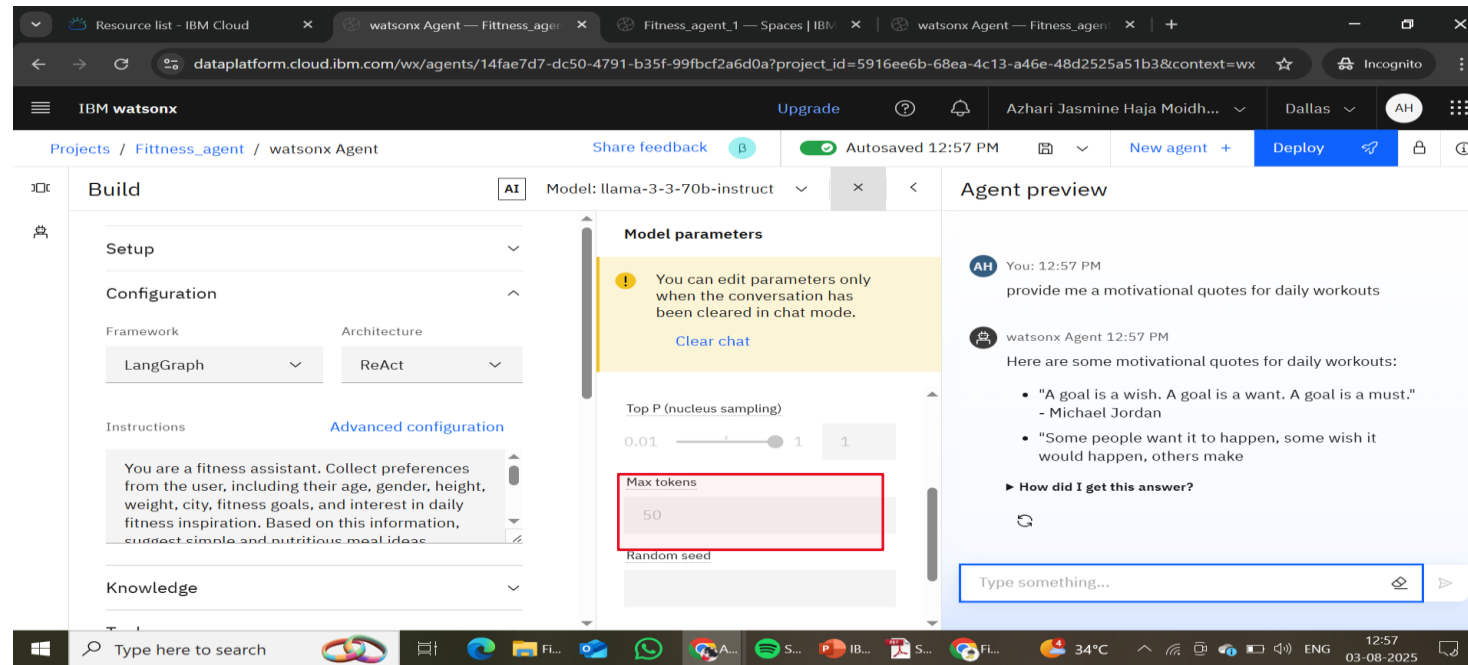
- This section outlines the AI model used to build the chatbot and the deployment strategy:
- **Algorithm Selection:**
 - The LLaMA model was selected for its efficiency in handling large language understanding tasks, enabling intelligent chatbot responses through context-aware processing and compatibility with LangGraph routing.
- **Data Input:**
 - The chatbot uses user queries as inputs and enhances them with real-time external sources like Wikipedia search, Google search, and weather reports to improve answer relevance and accuracy.
- **Training Process:**
 - The model was fine-tuned with prompt-response data using LangGraph architecture and token variations (50, 100, 1000) were tested to evaluate performance, optimize cost, and ensure contextual accuracy.
- **Prediction Process:**
 - Upon receiving user queries, the deployed model dynamically selects tools and routes interactions through LangGraph to generate contextually accurate responses using IBM watsonx.ai infrastructure.

RESULT



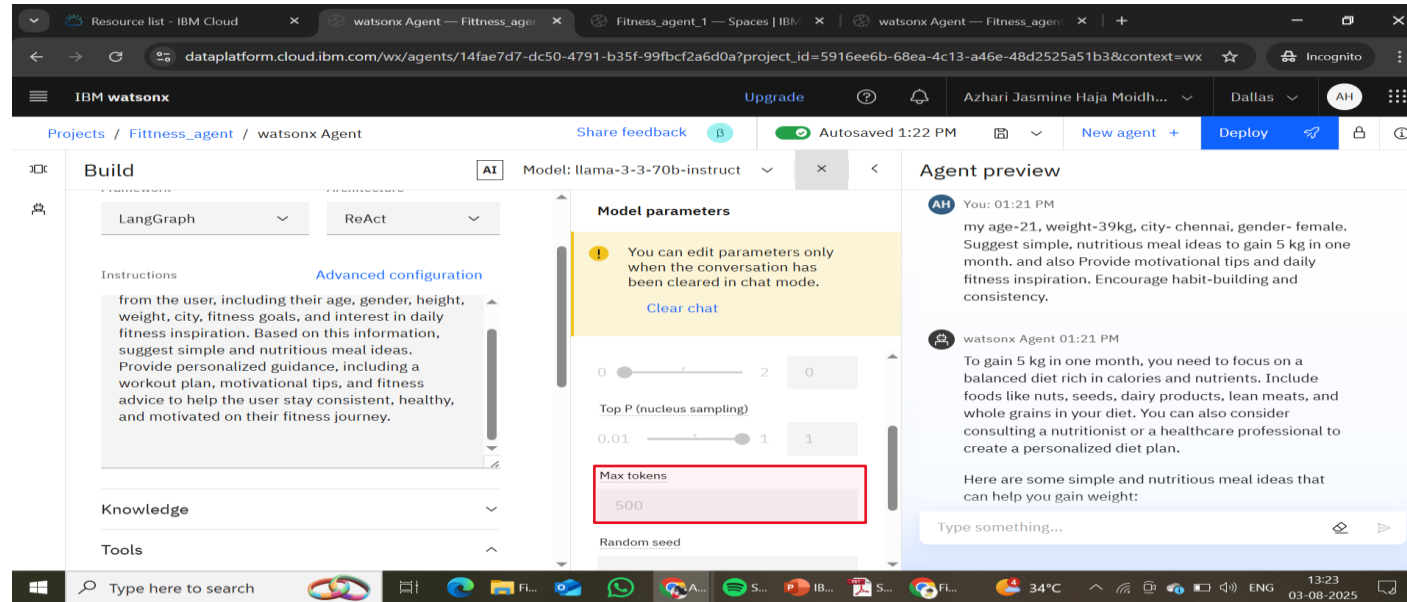
Here I have instructed my agent and used 900 tokens. And I have provided details like age, weight, gender and asked my fitness agent to suggest , how I can gain my weight and also provide me the fitness tips “. So, my output is within 900 words

RESULT



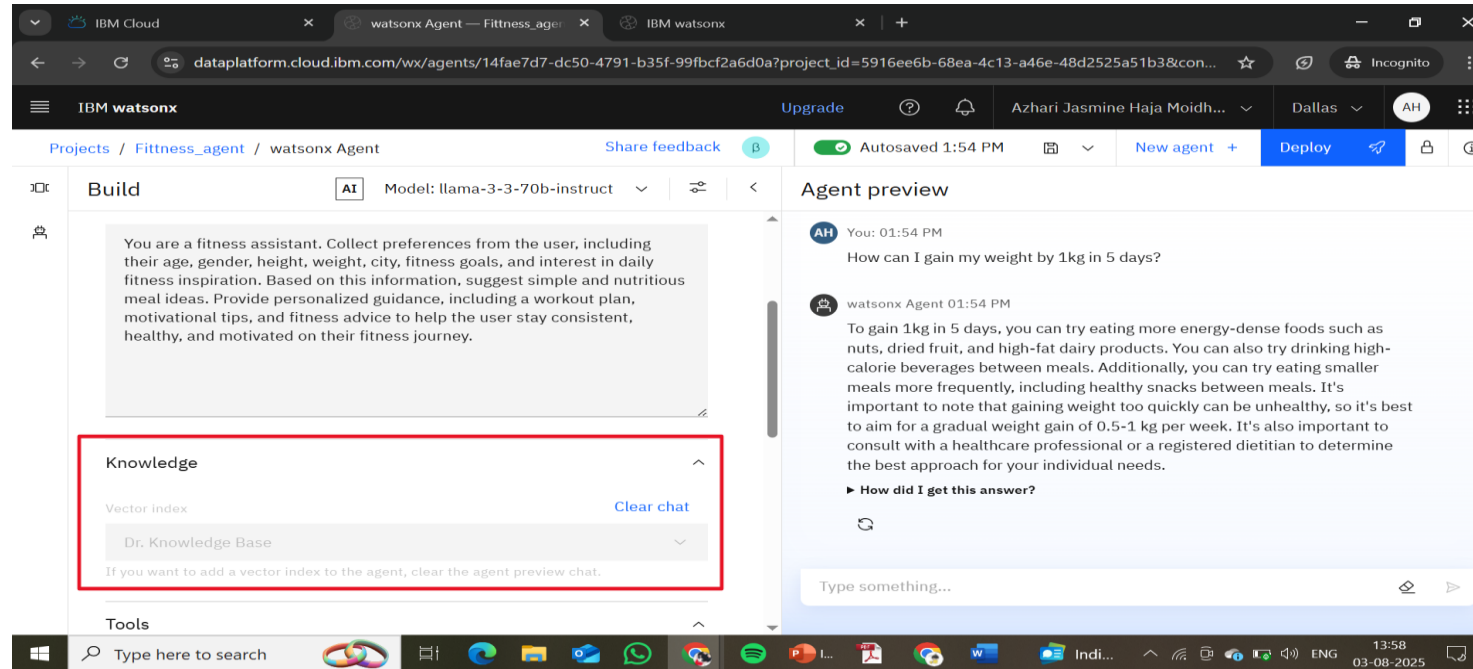
Here I have instructed my agent and used 50 tokens. And asked “to provide some motivational quotes to do my workout “. So, my output is within 50 words

RESULT



Here I have instructed my agent and used 500 tokens. And I have provided details like age, weight, gender and asked my fitness agent to suggest , how I can gain 5kg weight in one month and aslo provide me the daily fitness inspiration to maintain consistency“. So, my output is within 500 words

RESULT



Here I have instructed my agent and along with that I have also provided the additional knowledge to it. And I asked my fitness agent “how can I gain my weight by 1 kg in 5 days”

RESULT

- You are a fitness assistant. Collect preferences from the user, including their age, gender, height, weight, city, fitness goals, and interest in daily fitness inspiration. Based on this information, suggest simple and nutritious meal ideas. Provide personalized guidance, including a workout plan, motivational tips, and fitness advice to help the user stay consistent, healthy, and motivated on their fitness journey.

CONCLUSION

- This intelligent chatbot solution demonstrates how **AI-powered virtual fitness assistants** can bridge the gap between busy schedules and healthy lifestyles. By combining **personalized responses**, **external tool integration**, and **advanced language models**, the system effectively motivates users to build sustainable fitness habits. The token-based evaluation and modular design allow it to scale efficiently and adapt to user needs, making it a practical alternative to costly and rigid traditional fitness plans.

FUTURE SCOPE

- Explore potential enhancements by integrating more advanced tools like sentiment analysis, voice input, and real-time language translation to improve user interaction. Optimize the model using adaptive token usage based on query complexity to boost performance. Extend the system for multilingual support, domain-specific queries (e.g., healthcare, education), and global accessibility. Future iterations can also include federated learning for secure user personalization and edge computing to enable offline or low-latency deployment.

REFERENCES

- Recorded class sessions and hands-on labs provided by the instructor on chatbot development using IBM watsonx.
- IBM watsonx official documentation and tutorials.LangGraph and Llama model implementation guides.
- Online resources and toolkits for integrating Wikipedia, Google Search, and Weather APIs.

IBM CERTIFICATIONS



IBM CERTIFICATIONS

In recognition of the commitment to achieve
professional excellence



Azhari Jasmine H

Has successfully satisfied the requirements for:

Journey to Cloud: Envisioning Your Solution



Issued on: Jul 19, 2025
Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/6fdac0f8-0a2c-48a1-8c8b-102c2e49be88>



IBM CERTIFICATIONS

IBM **SkillsBuild**

Completion Certificate



This certificate is presented to

Azhari Jasmine H

for the completion of

Lab: Retrieval Augmented Generation with LangChain

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 19 Jul 2025 (GMT)

Learning hours: 20 mins



THANK YOU