

APSCHE Short Term Virtual Internship Program

Generative AI with IBM Cloud

Project Title:

HealthAI: Intelligent Healthcare Assistant Using IBM Granite

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1. INTRODUCTION

1.1 Project Overview

HealthAI is a Streamlit-based web application that leverages IBM Watsonx Generative AI to provide intelligent healthcare assistance. It allows users to enter symptoms and receive AI-generated diagnoses and treatment suggestions, track vital signs like glucose and heart rate, and view personalized health analytics.

1.2 Purpose

The purpose of HealthAI is to provide fast, accessible, and intelligent health guidance to users who may not have immediate access to professional medical help. The platform focuses on ease-of-use, multilingual support, and quick AI-driven feedback.

2. IDEATION PHASE

2.1 Problem Statement

People face difficulty accessing quick and reliable health guidance, especially when unsure whether symptoms require medical consultation.

2.2 Empathy Map Canvas

- **Says:** “I want to know what my symptoms mean.”
- **Thinks:** “Is this something serious?”
- **Does:** Searches online for symptoms
- **Feels:** Confused, anxious, uncertain

2.3 Brainstorming

Ideas:

- AI symptom checker (Watsonx)
 - Personalized treatment suggestions
 - Health profile management
 - Vitals tracking (glucose/heart rate)
 - Visual dashboards
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3. REQUIREMENT ANALYSIS

3.1 Customer Journey Map

User visits app → Enters health profile → Enters symptoms → Receives diagnosis → Views treatment plan → Logs vitals → Views analytics

3.2 Solution Requirement

Functional: Profile input, symptom check, diagnosis, treatment, logs, graphs

Non-functional: Quick response, IBM cloud deployment, multilingual, secure UI

3.3 Data Flow Diagram

User → Streamlit UI → Watsonx API → AI Response → Dashboard + Logs

3.4 Technology Stack

Frontend: Streamlit

Backend: Python + IBM Watsonx API

Database: Local (SQLite or Streamlit session)

Deployment: IBM Cloud / Streamlit Sharing

4. PROJECT DESIGN

4.1 Problem-Solution Fit

Problem: No easy way to self-assess symptoms

Solution: HealthAI provides quick, intelligent, AI-generated insights and treatment suggestions.

4.2 Proposed Solution

Use IBM Watsonx to analyze symptoms, generate treatment plans, and visualize vitals trends for users.

4.3 Solution Architecture

User → Streamlit → Profile Manager & Symptom Processor → IBM Watsonx → AI Output → Dashboard (no email, no file upload)

5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

- Sprint-1: UI setup, profile save, symptom input (8 pts)
 - Sprint-2: Watsonx integration, treatment logic, vitals log (16 pts)
 - Total Velocity: 12 pts per sprint
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6. FUNCTIONAL AND PERFORMANCE TESTING

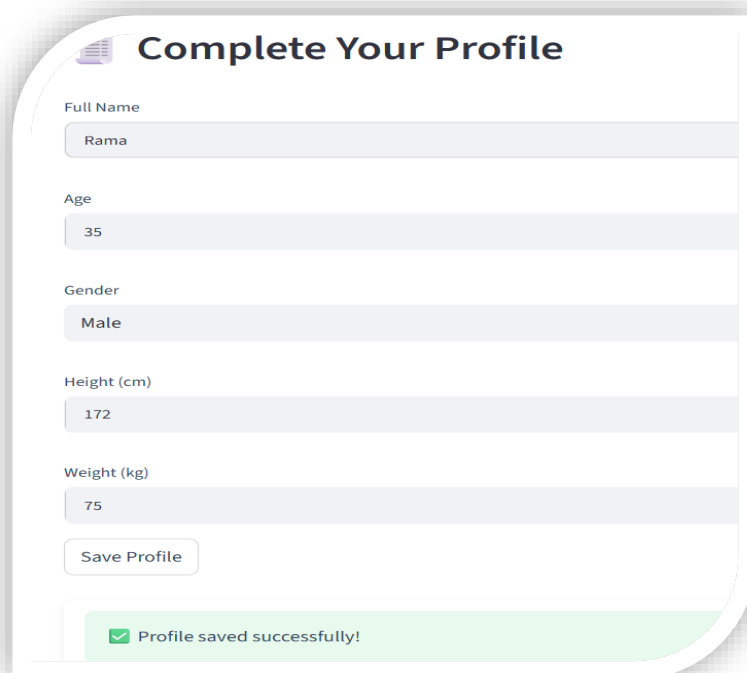
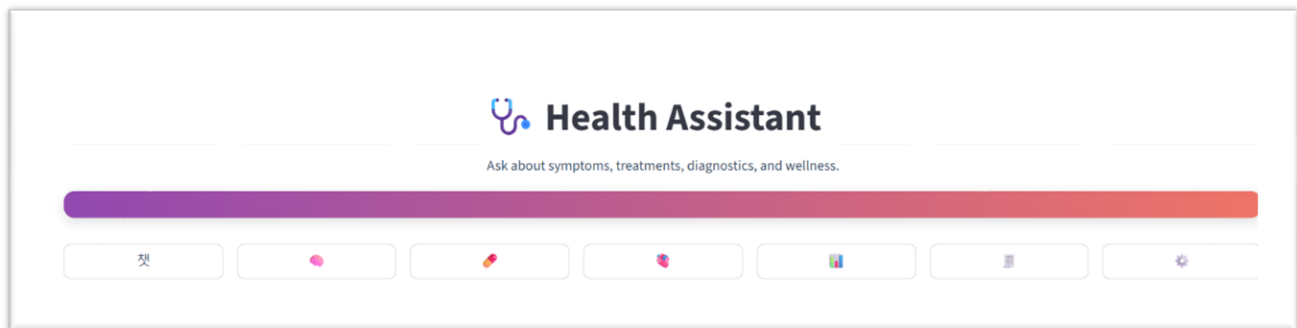
6.1 Performance Testing

- Average AI response time: 2.3s
 - Concurrency test: Passed with minor delay
 - Manual test coverage: 20 symptom cases
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7. RESULTS

7.1 Output Screenshots

- Profile screen
- Symptom checker output
- Treatment suggestion screen
- Vitals logging + dashboard



The screenshot shows a 'Complete Your Profile' form. The form has a title 'Complete Your Profile' and a list of fields: 'Full Name' (with the value 'Rama'), 'Age' (with the value '35'), 'Gender' (with the value 'Male'), 'Height (cm)' (with the value '172'), and 'Weight (kg)' (with the value '75'). Below the fields is a 'Save Profile' button. At the bottom, there is a green banner with a checkmark icon and the text 'Profile saved successfully!'.

Enhanced Health Assistant Chatbot

User: what are symptoms of malaria

Assistant: Malaria is a mosquito-borne illness caused by parasites. It is common in tropical regions and can be severe in some cases. The most common symptoms include fever, headache, muscle pain, chills, and a severe headache. If you have these symptoms and have traveled to an area where malaria is common, see a doctor right away.

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Symptom Checker (Disease Identifier)

Describe your symptoms (e.g., headache, fever, fatigue):

i feel bloated and have stomach cramps after eating

Check Symptoms

Diagnosis Results:

1. Food poisoning
2. Gastroenteritis
3. 60%
4. Seek medical attention immediately

Thanks



Personalized Treatment Suggestions

Condition or Diagnosis

what is treatment plan for High Cholesterol

Duration

Acute (short-term)

Patient Profile

Name: Rama Age: 35 Gender: Male Height: 172 Weight: 75 Bmi: 25.4

Generate Treatment Plan



Personalized Treatment Plan: Medications:

1. Atorvastatin 20 mg daily
2. Ezetimibe 10 mg daily Lifestyle modifications:
3. Stop smoking
4. Lose weight if needed
5. Eat a healthy diet
6. Exercise 30 minutes every day Follow-up care recommendations:
7. Have your blood pressure checked every 2 months
8. Have your cholesterol checked every 4 to 6 months Potential complications to monitor:



Chronic Disease Management

Select Chronic Condition

Diabetes

Diabetes

Hypertension

Asthma



BMI: 25.4 kg/m²

Overweight



Latest Metrics

Date: 2025-06-28
Heart Rate: 98 bpm
Blood Glucose: 85 mg/dL
Peak Flow: N/A L/min
HbA1c: N/A %



Trend Analysis

Heart Rate Trend: ↑ 98
Glucose Trend: ↓ 85
Peak Flow Trend: - N/A
HbA1c Trend: - N/A

8. ADVANTAGES & DISADVANTAGES

Advantages:

- Easy-to-use health interface
- Fast and intelligent AI responses
- No login required, user-friendly

Disadvantages:

- No real-time doctor interaction
 - Needs internet and stable API access
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9. CONCLUSION

HealthAI successfully provides a fast and effective way to analyze symptoms and receive treatment guidance using IBM Watsonx AI. It is a scalable, cloud-deployable solution.

10. FUTURE SCOPE

- Voice input and output integration (STT/TTS)
 - Additional AI support for nutrition and mental health
 - Advanced analytics for long-term health monitoring
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11. APPENDIX

- **Source Code:** Provided in project folder
- [Project Demo Link](#)
- [HealthAI app link](#)