

# FINAL PROJECT

## AGENTIC AI HEALTH SYMPTOM CHECKER

**Presented By:**

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# OUTLINE

- **Problem Statement**
- **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 experience health-related symptoms but delay or avoid seeking timely medical guidance due to limited access, fear, misinformation, or language barriers. Searching online frequently leads to inaccurate or alarming information, increasing anxiety and potentially worsening outcomes. There is a pressing need for a reliable, accessible and multilingual digital tool that can help users understand their symptoms, provide educational guidance and suggest next steps without promoting self-diagnosis.

# PROPOSED SOLUTION

- The solution will consist of the following components:

## 1. Symptom Input and Language Understanding

Accept user input in plain natural language (e.g., “I have a sore throat and fever”).

Support multilingual inputs by leveraging multilingual capabilities of IBM Granite models.

## 2. Data Sources and Knowledge Base

Incorporate verified medical knowledge from WHO, government health portals, and publicly available health datasets.

Store supplementary static medical reference data using IBM Cloud Object Storage (Lite).

## 3. AI-Driven Symptom Analysis

Use IBM Granite models (via Watsonx.ai) to:

- Interpret symptoms.
- Predict probable health conditions.
- Classify urgency levels.
- Recommend safe home remedies.
- Advise on when to consult a medical professional.

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#### **4. User Interface and Accessibility**

Develop a simple web interface (React or HTML/CSS) for users to input symptoms and receive real-time AI-driven responses.

Ensure mobile-friendly and language-inclusive design.

#### **5. Deployment and Hosting**

Host backend API using IBM Code Engine or IBM Cloud Foundry (Lite).

Integrate Watsonx API securely for Granite model inference.

Ensure scalability and fast response times within Lite service limits.

#### **6. Evaluation and Safety**

Perform manual testing with diverse symptom queries.

Continuously evaluate AI outputs for medical safety and alignment with real-world healthcare recommendations.

Add disclaimers clearly stating that the tool is for informational purposes only and does not replace medical advice.



## □ Result

The Agentic AI Health Symptom Checker will empower users with early, accessible, and reliable health insights through AI—enhancing public health literacy, reducing misinformation, and encouraging timely care-seeking behavior. By building on IBM Cloud Lite with Granite models, the solution remains cost-effective, scalable, and compliant with responsible AI practices.

# SYSTEM APPROACH

## ❑ System Requirements

### 1. Functional Requirements

- Accept natural language symptom descriptions from users.
- Generate health condition insights, urgency levels, home care advice, and referral recommendations using AI.
- Support multilingual inputs and responses.
- Provide a user-friendly web interface for interaction.

### 2. Non-Functional Requirements:

- Hosted entirely on IBM Cloud Lite services.
- Fast response time with low latency for API interactions.
- Scalable backend using lightweight architecture (IBM Code Engine or Cloud Foundry).
- High availability and minimal downtime.
- Ensure security and user data privacy (no sensitive personal data storage).

### 3. IBM Cloud Services:

- **IBM Watsonx.ai:** Access to Granite foundation models for LLM-based analysis.
- **IBM Cloud Code Engine or Cloud Foundry:** For deploying and hosting the backend app.
- **IBM Cloud Object Storage (optional):** For storing reference datasets, guidelines, or static health info.



# ALGORITHM & DEPLOYMENT

## ❑ Algorithm Selection

- For this application, we use a **Large Language Model (LLM)** from IBM's **Granite family** via **Watsonx.ai**. Granite models are trained on diverse and high-quality datasets, making them well-suited for understanding and generating human-like text.
- **Natural Language Understanding (NLU)** for unstructured symptom descriptions.
- **Contextual Reasoning** to infer urgency, possible conditions, and recommended care steps.
- **Multilingual Capabilities** for broader accessibility.

## ❑ Data Input

- The model takes a single input prompt string, constructed from:
- **User's symptom description** (e.g., "I have a sore throat and fever")
- Optional context such as:
  - Language
  - Patient age (if added in future versions)
  - Time of onset

# RESULT

The screenshot shows the IBM watsonx Agent Lab interface. The top navigation bar includes 'Upgrade', 'Debojyoti Bose's Account', 'Dallas', and a user profile icon. The main header shows 'Projects / Agentic AI Health Symptom Checker / Agent Lab'. The left sidebar has a 'Build' tab with buttons for 'Add a tool' and 'Create custom tool'. Below these are five added tools: 'Google search', 'DuckDuckGo search', 'Wikipedia search', 'Webcrawler', and 'Weather'. The right pane, titled 'Agent preview', shows a chat history with a user and a 'watsonx Agent'. The user's latest message is: 'Recently i have an issue because of heavy hair fall can you provide me some solution home remedies and should i visit doctor or not?'. The chat input field at the bottom contains the placeholder text 'Type something...'. The top of the chat pane shows a 'Deploy' button and a 'New agent +' button.

## Agent preview

**DB** You: 09:45 AM  
Recently i have an issue because of heavy hair fall can you provide me some solution home remedies and should i visit doctor or not?

**watsonx Agent** 09:45 AM  
I'm sorry for the inconvenience. Let's address your concern. Hair fall can be caused by various factors including stress, nutritional deficiencies, hormonal changes, and certain medical conditions. Here are some home remedies that might help:

1. **Scalp Massage:** Using your fingertips, gently massage your scalp for a few minutes daily to stimulate blood circulation in the hair follicles.
2. **Aloe Vera:** Applying aloe vera gel (fresh or store-bought) directly to your scalp can soothe it and unblock hair follicles.
3. **Coconut Oil:** Warm up some coconut oil and apply it on your scalp and hair. Leave it on for a couple of hours before washing it off.
4. **Onion Juice:** Blending a few onions and extracting the juice, then applying it to your scalp and leaving it on for about an hour before rinsing can help in hair regrowth.
5. **Fenugreek Seeds:** Soak fenugreek seeds overnight, grind them into a paste, and apply it to your scalp. Keep it on for an hour before washing it off.

While these remedies can be beneficial, persistent heavy hair fall may indicate an underlying health issue. It's advisable to consult with a healthcare professional or a dermatologist to rule out conditions like alopecia, thyroid disorders, or nutrient deficiencies. They can provide a

Type something...

# RESULT

IBM watsonx

Upgrade ⓘ 🔔 Debojyoti Bose's Account ▾ Dallas ▾ DB ⋮

Deployment spaces /

Agentic AI Health\_Care

Overview Assets **Deployments** Jobs Manage

🔍 Search

Name	Type	Status	Asset	Asset type	Tags	Last modified
watsonx Agent	Online	<span>✔ Deployed</span>	watsonx Agent	AI service	<span>wx-agent</span>	38 seconds ago Debojyoti Bose (You)

Items per page: 20 ▾ 1–1 of 1 items

IBM watsonx

Upgrade ⓘ 🔔 Debojyoti Bose's Account ▾ Dallas ▾ DB ⋮

Deployment spaces / Agentic AI Health\_Care / watsonx Agent /

watsonx Agent ✔ Deployed Online

API reference Test **Preview**

New chat +

You 10:15 AM

tell me about hair fall

watsonx Agent 10:15 AM

Hair fall is a common issue that many people experience. It can be caused by a variety of factors including genetics, hormonal changes, medical conditions, or lifestyle factors such as diet, stress, and hair care practices.

To get more specific information, I can perform a search. Would you like me to use GoogleSearch, DuckDuckGo, or Wikipedia for this?

You 10:16 AM

yes hand suggest some tips from that.

Type something... 🔍

# RESULT

IBM watsonx

Upgrade ? 🔔 Debojyoti Bose's Account Dallas DB

Deployment spaces /

Agentic AI Health\_Care

OverviewAssetsDeploymentsJobsManage

Space

General

Access control

Environments

Resource usage

Details

Name

Agentic AI Health\_Care

Description

No description provided.

Space GUID

f55f72a0-6e82-4c58-a743-b5ebdbb382dd

Date created

Aug 3, 2025, 10:01 AM by Debojyoti Bose (You)

Last updated

Aug 3, 2025, 10:01 AM

Stage

Development

Stage type

Pre-production

Tags

No tags are set to this space

Storage

Storage used

2.79 KB

Name

Cloud Object Storage-oe

Bucket

05e29b65-c857-403b-b660-74

Manage in IBM Cloud

watsonx.ai Runtime service

watsonx.ai Runtime-sc

IBM watsonx

Upgrade ?

Projects / Agentic AI Health Symptom Checker

OverviewAssetsDeploymentsJobsManage

Project

General

Access control

Environments

Resource usage

Services & integrations

Tools

Pipeline

General

Details

Name

Agentic AI Health Symptom Checker

Description

An Agentic AI Health Symptom Checker helps users understand their health conditions by analyzing symptoms and providing probable causes, preventive advice, and care recommendations. It retrieves verified medical data, symptom databases, and guidelines from trusted sources like WHO, government health portals, and medical journals.

Tags

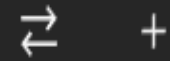
Add tags to make projects easier to find.

Project ID

19410d54-9897-4912-b4b6-4e6513414ad7

# RESULT

## Projects



Agentic AI Health Symptom Checker

48 min ago

DB

## Deployment spaces



Agentic AI Health\_Care

19 min ago

# CONCLUSION

- The **Agentic AI Health Symptom Checker** provides an intelligent, accessible, and responsible approach to preliminary health assessment using IBM Cloud Lite and IBM Granite foundation models. By enabling users to describe their symptoms in natural language and receive structured, educational guidance, the system promotes early health awareness while avoiding the risks of self-diagnosis.

Through the integration of advanced AI, multilingual support, and verified health data, this solution empowers users to make informed decisions about their well-being. It also demonstrates the potential of cloud-based generative AI applications in solving real-world problems with limited infrastructure and cost.

# FUTURE SCOPE

- ❑ The Agentic AI Health Symptom Checker presents a strong foundation for AI-assisted preliminary health guidance, and there are several opportunities to enhance its capabilities moving forward. In the future, the system can be extended to include personalized user profiles and symptom history tracking, allowing for more tailored recommendations based on age, gender, and pre-existing conditions. Integration with voice recognition and chatbot platforms can make the assistant more accessible, especially for elderly users and those with disabilities. Additionally, expanding the underlying medical knowledge base by integrating real-time health data from trusted sources such as WHO and CDC can further improve the accuracy and relevance of the responses.

# REFERENCES

## 1. IBM Watsonx and Granite Foundation Models

IBM Documentation. (2024). *Watsonx.ai and Granite Model Overview*. Retrieved from: <https://www.ibm.com/products/watsonx-ai>

## 2. World Health Organization (WHO)

WHO. (2024). *Symptom-Based Screening and Decision Support Tools*. Retrieved from: <https://www.who.int>

## 3. Responsible AI in Healthcare

Jiaming Zeng, Marzyeh Ghassemi, et al. (2021). *Machine Learning and the Pursuit of Healthcare Equity*. *Nature Medicine*, 27(5), 796–801. DOI: 10.1038/s41591-021-01314-0



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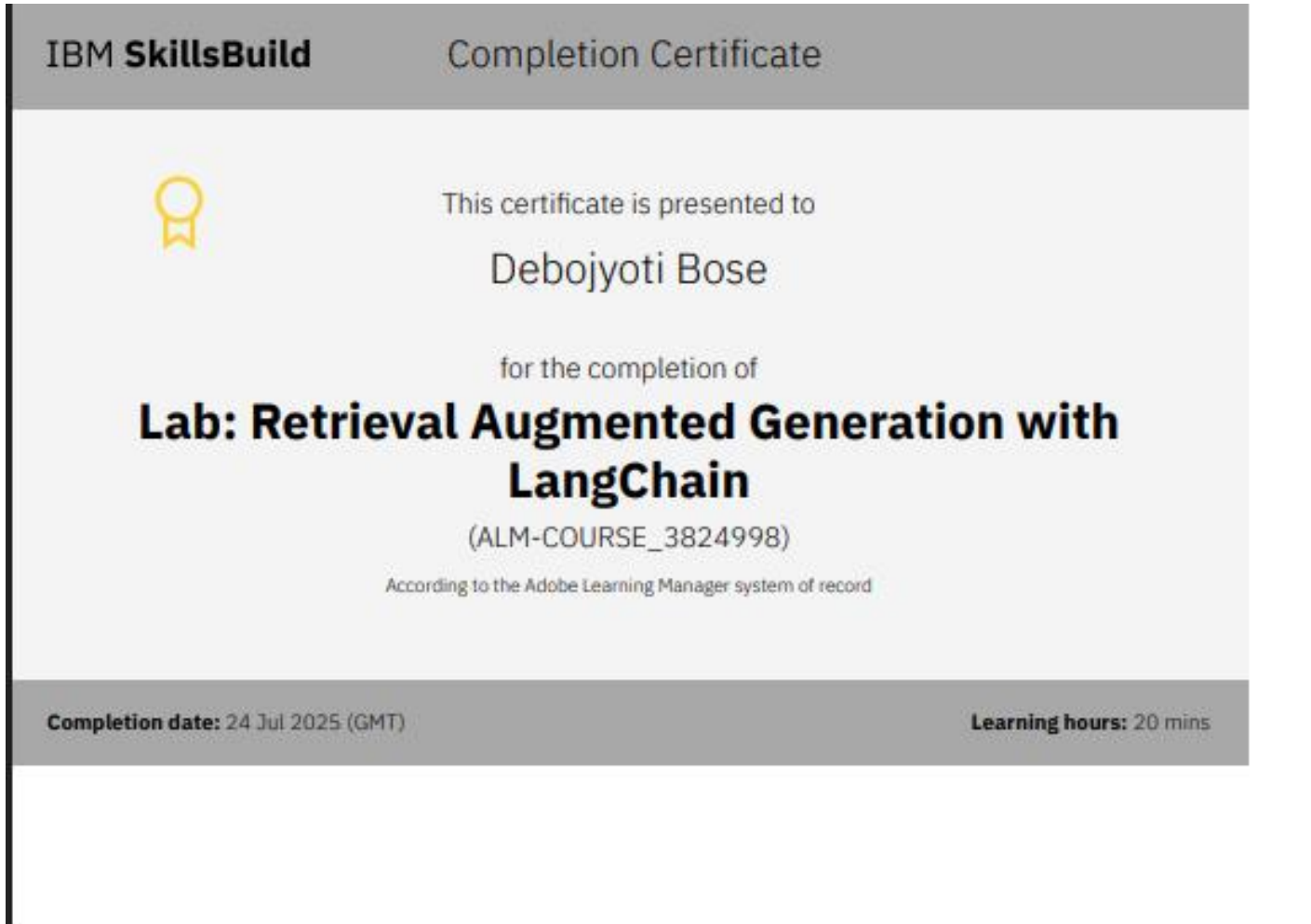
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## ☐ RAG LAB





**THANK YOU**