
CAPSTONE PROJECT

AGENTIC AI HEALTH SYMPTOM CHECKER

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OUTLINE

- **Problem Statement** (Should not include solution)
- **Proposed System/Solution**
- **System Development Approach** (Technology Used)
- **Result (Output Image)**
- **Conclusion**
- **Future Scope**
- **References**

PROBLEM STATEMENT

Many individuals face difficulty in accessing reliable health guidance. Searching symptoms online often results in misinformation and confusion. Language barriers and limited healthcare access worsen the challenge. Current symptom checkers lack accuracy, context, and trusted data sources.

PROPOSED SOLUTION

- The proposed system aims to address the challenge of providing accurate, accessible, and safe health guidance by analyzing user-reported symptoms in natural language. This involves leveraging verified medical databases, AI-driven health symptom analysis, and multilingual support to deliver reliable, educational, and referral-based health recommendations. The solution will consist of the following components:
- Data Collection:
 - Collect user symptom descriptions via chat or voice, prompting follow-up questions to clarify more details.
 - Retrieve verified medical data from trusted sources like WHO, CDC, and government health portals by embedding Google search and provide evidence-based suggestions.
- Data Preprocessing:
 - Convert unstructured user descriptions into structured health data, handling typo errors, incomplete sentences, and multilingual inputs.
 - Extract key features such as symptom severity, duration, and related health factors for deeper analysis.
- AI Symptom Analysis & Instruction Engine:
 - Provide step-by-step, instruction-led guidance including probable causes, home remedies, urgency level, self-care tips, and when to consult a doctor.
- Deployment:
 - Build a multilingual, user-friendly chatbot interface available on mobile and web platforms.
 - Integrate privacy, security, and compliance standards (HIPAA, GDPR) to protect sensitive health information.
- Evaluation:
 - Measure accuracy, clarity of instructions, and user satisfaction against expert medical assessments.
 - Continuously improve the AI model and instruction logic with new medical data based on user feedback.
 - Result

SYSTEM APPROACH

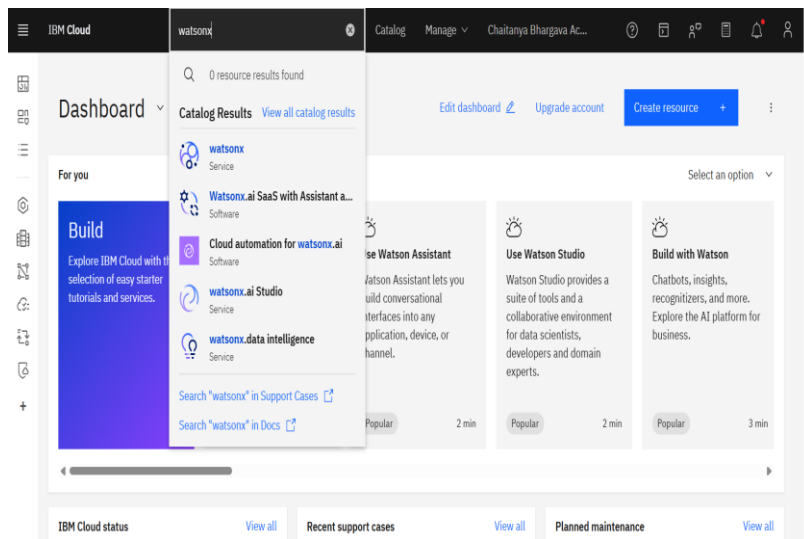
The "System Approach" section outlines the overall strategy and methodology for developing and implementing the Agentic AI Health Symptom Checker. Here's a suggested structure for this section:

- **System requirements**
- **Hardware Requirements (for development & testing):**
 - Processor: Intel i5 / AMD Ryzen 5 or higher
 - RAM: 8 GB minimum (16 GB recommended)
 - Storage: 256 GB SSD or higher
- **Software Requirements:**
 - IBM Cloud Lite account (free tier for development)
 - Web browser (Chrome/Edge/Firefox latest version)
 - Python 3.8+ (optional if integrating with custom backend)
 - Internet connection (required to access IBM Cloud services)
- **Library required to build the model**
 - Python
 - IBM Watsonx
 - LangChain

RESULT

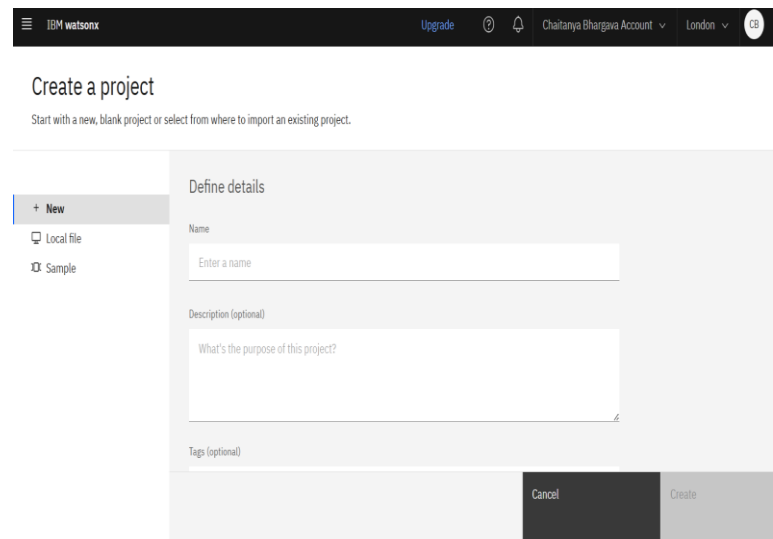
Step 1: Search for Watsonx in IBM Cloud Console

Log in to your IBM Cloud account at cloud.ibm.com. On the dashboard, click the search bar at the top and type "watsonx". A list of related services such as **watsonx.ai**, **watsonx.data intelligence**, and **watsonx.ai Studio** will appear under *Catalog Results*. Select "watsonx" from that list.



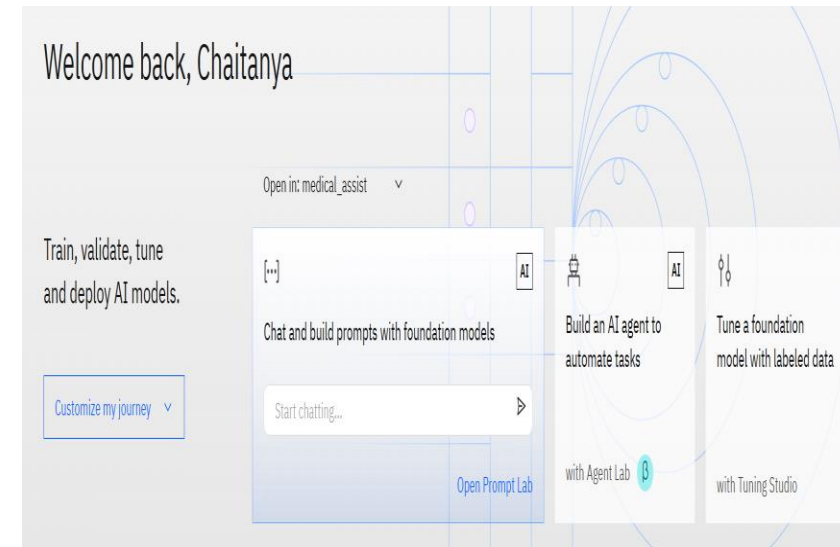
Step 2: Create a New Project in Watsonx

After selecting **Watsonx** from the catalog, you will be directed to the project creation page. Click on **New** in the left sidebar to start a blank project.



Step 3: Open Agent Lab

On the Watsonx welcome page, click "Build an AI agent to automate tasks" to open **Agent Lab**.



RESULT

Step 4: Explore Build Options in Agent Lab

- In the **Build** section of Agent Lab, you'll find four key configuration areas:
- Setup:** Define your agent's name, description, and basic settings.
- Configuration:** Choose and customize the foundation model and system instructions.
- Knowledge:** Add documents or data sources your agent can reference.
- Tools:** Connect APIs or functions your agent can call during conversations.

Projects / medical_assist / Agent Lab

Build

AI

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

Setup

Configuration

Knowledge

Tools

Step 5: Instruction - Role: You are a professional virtual health assistant.

Task: Based on the given user-reported symptoms, analyze and respond with clear, structured health guidance.

Input: User Symptoms: {{user_input}}

Output Format:

Probable Condition(s): Provide 2–3 possible conditions that match the symptoms, ranked from most likely to less likely.

Urgency Level: Categorize as Low, Moderate, or High urgency, with a short explanation.

Home Remedies & Self-Care Tips: Suggest safe, evidence-based remedies that can be tried at home (if applicable).

When to Consult a Doctor: Clearly specify warning signs or symptom progression that should prompt medical consultation.

Safety Disclaimer: Always include — "This is general health information and not a substitute for professional medical advice. Consult a qualified healthcare provider for personalized diagnosis and treatment."

Input & Output of AI AGENT

Agent preview

CB You: 11:44 AM
i have a sore throat

medical_assist1 11:44 AM
Given your symptoms of a sore throat, I would recommend the following:

Probable Condition(s):

1. Pharyngitis (most likely) - This is an inflammation of the pharynx, which can be caused by a viral or bacterial infection.
2. Tonsillitis - This is an inflammation of the tonsils, which can be caused by a viral or bacterial infection.
3. Laryngitis - This is an inflammation of the larynx, which can be caused by a viral or bacterial infection.

Agent preview

Urgency Level: The urgency level for a sore throat is generally low, but it can be moderate or high if the symptoms are severe or if there are other underlying health conditions.

Home Remedies & Self-Care Tips:

- Stay hydrated by drinking plenty of fluids, such as water, tea, or soup.
- Gargle with warm salt water several times a day to help reduce swelling and kill bacteria.
- Use a humidifier to add moisture to the air, which can help soothe a sore throat.
- Rest your voice as much as possible.
- Avoid smoking and secondhand smoke.
- Try throat lozenges or cough drops to help soothe a sore throat.

Agent preview

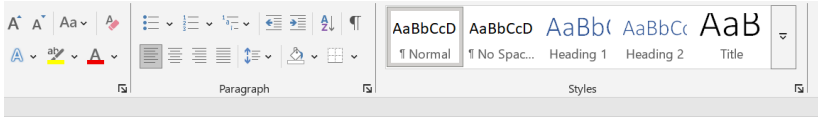
When to Consult a Doctor:

- If your symptoms are severe or last longer than a few days.
- If you have a fever over 101.5°F (38.6°C).
- If you have difficulty swallowing or breathing.
- If you have a sore throat and a rash.
- If you have a weakened immune system.

Safety Disclaimer: This is general health information and not a substitute for professional medical advice. Consult a qualified healthcare provider for personalized diagnosis and treatment.

RESULT

Step 6: RAG File



Q. i am having stomach pain

Ans. The most common causes of abdominal pain or upset stomach can be classified into three general categories: digestive problems, inflammation and female reproduction.

RAG Output

Agent preview

CB You: 12:08 PM
i am having stomach pain

medical_assist1 12:08 PM
The function call to the RAGQuery function with the input "stomach pain" provides information on the common causes of abdominal pain or upset stomach, which can be classified into three general categories: digestive problems, inflammation, and female reproduction.

► How did I get this answer?

Step 7: Deployment

Deploy as an AI service

Create an online deployment. If you want to edit code in notebook format before deploying, save as a deployment notebook. [Learn more.](#)

Define details

Deployment name
medical_assist1

Target deployment space
[New deployment space](#) [Reload](#)

Why don't I see all of my deployment spaces? ⓘ

[Cancel](#) [Deploy](#)

Create a deployment space

Use a space to collect assets in one place to create, run, and manage deployments

+ New

☐ Local file

Define details

Name

Profile Git integrations **User API key**

✓ User API key is successfully created.
Your new key is stored in IBM watsonx and IBM Cloud.

User API key

A user API key is required to authenticate runtime operations in IBM watsonx. Rotate keys as needed to create a new key and phase out the current key. [Learn more](#)

Overview Assets Deployments Jobs Manage							
🔍 Search ↻							
Name	Type	Status	Asset	Asset type	Tags	Last modified	↓
🔗 medical_assist1	Online	✓ Deployed	medical_assist1	AI service	wx-agent ✎	6 minutes ago Chaitanya Bhargava (You)	⋮

CONCLUSION

- The Agentic AI Health Symptom Checker, built using IBM Watsonx, successfully interprets user-reported symptoms, accesses verified medical data, and delivers structured and detailed, multilingual health guidance. It helps users understand probable conditions, home remedies, urgency levels, and self-care measures while promoting timely medical consultation.
- Key challenges included integrating trusted health data, ensuring privacy compliance, and fine-tuning and improving symptom analysis across languages. Future improvements could include wearable device integration, expanded medical datasets, and advanced predictive analytics.
- This solution enhances health awareness, reduces misinformation, and provides safe, AI-led health guidance for diverse populations.

FUTURE SCOPE

- The Agentic AI Health Symptom Checker can be further enhanced by integrating additional health data sources, such as wearable device readings, regional disease trends, and real-time public health alerts. The symptom analysis algorithm can be optimized for faster, more accurate results through continuous AI model refinement and fine-tuning by inclusion with advanced medical datasets.
- The system can expand to support more languages, regional medical guidelines, and integration with telemedicine services for direct doctor consultations. Future upgrades could leverage emerging technologies like **edge AI** for offline health guidance, **predictive analytics** for early disease detection, and **advanced conversational AI** for more human-like, context-aware interactions.
- By evolving in these directions, the solution can become a comprehensive, globally accessible, and trustworthy digital health companion.

REFERENCES

- IBM Watsonx Documentation – Build AI solutions with IBM watsonx
<https://cloud.ibm.com/watsonx/overview>
- Wang, Y., & Kung, L. (2020). “AI in healthcare: Opportunities and challenges” – *Journal of Medical Systems*, 44(9), 1-12.
- Rajpurkar, P., Chen, E., Banerjee, O., & Topol, E. J. (2022). “AI in health and medicine” – *Nature Medicine*, 28, 31–38.

IBM CERTIFICATIONS

- Screenshot/ credly certificate(getting started with AI)



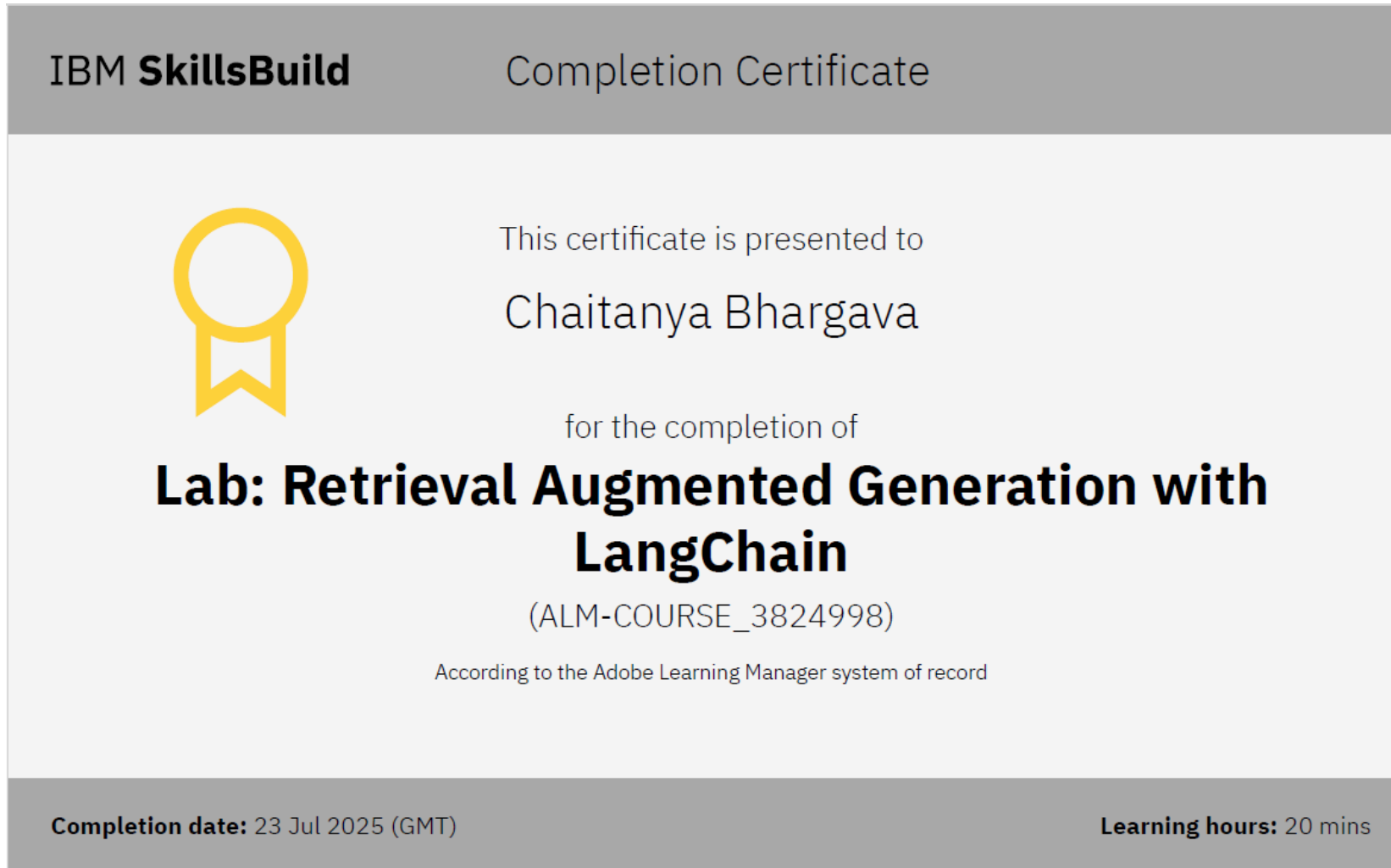
IBM CERTIFICATIONS

- Screenshot/ credly certificate(Journey to Cloud)



IBM CERTIFICATIONS

- Screenshot/ credly certificate(RAG Lab)





THANK YOU