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# CAPSTONE PROJECT

## AGENTIC AI HEALTH SYMPTOM CHECKER

**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

## Problem statement no. 28

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.

# PROPOSED SOLUTION

The proposed system aims to address the challenge of helping users understand their health conditions by analyzing symptoms provided in natural language. It leverages agentic AI techniques to deliver accurate, personalized health insights, including possible causes, urgency levels, and self-care recommendations.

- **Data Collection:**

Retrieve medical guidelines and symptom-condition mappings from trusted sources like WHO, CDC, and peer-reviewed journals..

- **Preprocessing:**

Standardize symptom language, handle synonyms (e.g., "fever" vs "high temperature"), and match input to known symptom profiles

- **Agent Building:**

Use IBM watsonx Agent Lab with Llama model and LangGraph framework to create a ReAct-based AI agent that processes user input, reasons over the symptom set, and generates context-aware health responses.

- **Functionality:**

- Provide real-time suggestions such as:
  - Likely conditions (e.g., cold, flu, food poisoning)
  - Urgency level (e.g., monitor at home, consult doctor)
  - Home remedies and first aid
  - Red-flag symptoms requiring immediate medical help

- **Deployment:**

Deploy the agent on IBM Cloud using the watsonx platform for scalable and secure access.

# SYSTEM APPROACH

The section outlines the overall strategy and methodology for developing and implementing the Health symptom checker Agentic AI.

- **System requirements**
  - IBM Cloud
  - IBM watsonx.ai studio
  - IBM watsonx.ai runtime
- **Library required to build the model**
  - **IBM watsonx Agent Lab:** Platform to build and deploy agentic AI assistants
  - **LangGraph:** Framework to define and manage agent workflows
  - **Llama-3 model:** Large language model to understand and reason over user symptoms

# ALGORITHM & DEPLOYMENT

## Algorithm

- **Model:** Llama-3-70B-Instruct
- **Framework:** LangGraph with ReAct architecture
- **Function:** Understands user symptoms in natural language and provides:
  - Possible conditions
  - Urgency level
  - Home remedies
  - When to consult a doctor

## Deployment

- **Platform:** IBM Cloud – watsonx Agent Lab
- **Interface:** Web-based chat using Agent Preview
- **Scalability:** Cloud-deployed with real-time, low-latency responses
- **Custom Tools:** Can be added for advanced features

# RESULT — ADDING INSTRUCTIONS

IBM watsonx

Upgrade ⓘ ⚙️

Harini Vijayakumar's Accou... ▾

Dallas ▾

HV ⋮

Projects / Healthcare / watsonx Agent

Share feedback ⓘ

Autosaved 11:22 PM

New agent +

Deploy ⚙️

🔒 ⓘ

Build

AI Model: granite-3-3-8b-instruct ⌵ ⚙️

Setup ▾

Configuration ▴

Framework Architecture

LangGraph ▾ ReAct ▾

Instructions [Advanced configuration](#)

you are a Health symptom checker Agent. take the symptoms from the user like age, food preferences, medical history, how long they are having the symptoms for and Give the specific answer to the users query like possible conditions, urgency level, home remedies, and when to consult a doctor.

Knowledge ▾

Tools ▴

Add a tool Create custom tool

Agent preview

watsonx Agent 11:22 PM

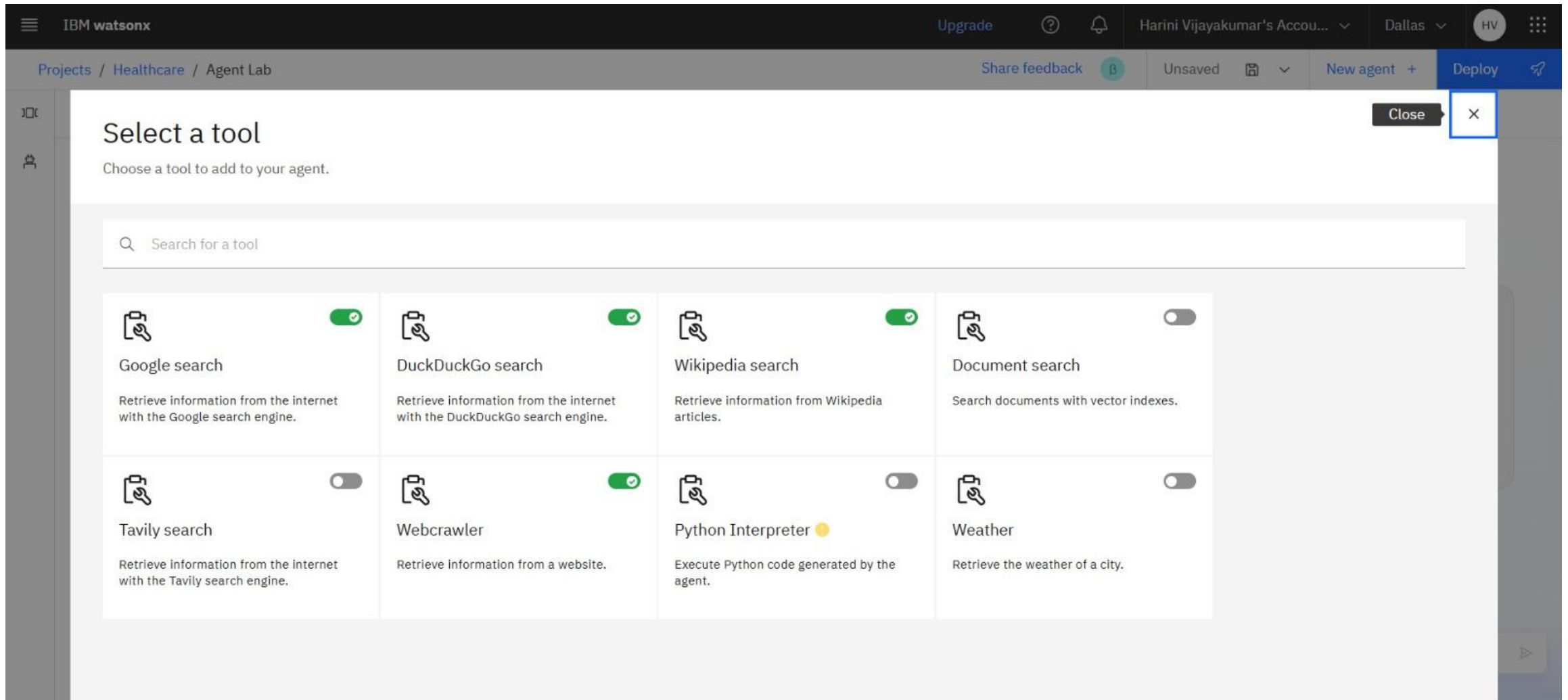
Welcome to watsonx Agent

Change this description to reflect your particular agent



Type something... ⚙️ ➤

# RESULT — CHOOSING TOOLS












IBM watsonx Upgrade ? Harini Vijayakumar's Accou... Dallas HV

Projects / Healthcare / Agent Lab Share feedback Unsaved New agent + Deploy

## Select a tool


Choose a tool to add to your agent.



Search for a tool






 <b>Google search</b> Retrieve information from the internet with the Google search engine. <input checked="" type="checkbox"/>	 <b>DuckDuckGo search</b> Retrieve information from the internet with the DuckDuckGo search engine. <input checked="" type="checkbox"/>	 <b>Wikipedia search</b> Retrieve information from Wikipedia articles. <input checked="" type="checkbox"/>	 <b>Document search</b> Search documents with vector indexes. <input type="checkbox"/>
 <b>Tavily search</b> Retrieve information from the internet with the Tavily search engine. <input type="checkbox"/>	 <b>Webcrawler</b> Retrieve information from a website. <input checked="" type="checkbox"/>	 <b>Python Interpreter</b>  Execute Python code generated by the agent. <input type="checkbox"/>	 <b>Weather</b> Retrieve the weather of a city. <input type="checkbox"/>





# RESULT — TRYING THE AGENT

 IBM watsonx

Upgrade ?  Harini Vijayakumar's Accou... Dallas HV 

Projects / Healthcare / watsonx Agent Share feedback β  Autosaved 11:20 PM  ▼ New agent + Deploy   

 Model: granite-3-3-8b-instruct ▼  <

Build

Setup

Configuration

Framework

LangGraph ▼

Architecture

ReAct ▼

Instructions

you are a healthcare Agent. take the symptoms from the user like age, food preferences, medical history, how long they are having the symptoms for and Give the specific answer to the users query like possible conditions, urgency level, home remedies, and when to consult a doctor.

[Advanced configuration](#)

Knowledge

Tools


Add a tool

Create custom tool

Agent preview

HV You: 11:19 PM

hi


 watsonx Agent 11:19 PM

Hello! How can I assist you with health-related information today?

► How did I get this answer?

HV You: 11:19 PM

i have fever and stomach ache



 watsonx Agent 11:19 PM

I'm sorry to hear that you're not feeling well. Here's some general advice:

1. **Fever:** This could be due to a variety of reasons, including infections (bacterial or viral), inflammatory conditions, or even certain medications. If it's high (above 101°F or 38.3°C) and persistent, it could be more serious.

2. **Stomach Ache:** This could be due to gastroenteritis, food poisoning, ulcers, or other conditions. It could also be due to stress or irregular eating habits.


Type something...

edunet  
foundation

# RESULT - FINAL

## Agent preview

 You: 11:19 PM

i have fever and stomach ache

 watsonx Agent 11:19 PM

I'm sorry to hear that you're not feeling well. Here's some general advice:

1. **Fever:** This could be due to a variety of reasons, including infections (bacterial or viral), inflammatory conditions, or even certain medications. If it's high (above 101°F or 38.3°C) and persistent, it could be more serious.
2. **Stomach Ache:** This could be due to gastroenteritis, food poisoning, ulcers, or other conditions. It could also be due to stress or irregular eating habits.

### Home Remedies:

- Stay hydrated. Drink plenty of fluids like water, clear broths, or electrolyte drinks to prevent dehydration.
- Get rest. Your body needs energy to fight off any infection.
- Over-the-counter pain relievers like ibuprofen or acetaminophen can help with fever and pain, but follow the dosage instructions carefully.

Type something...



## Agent preview

### When to Consult a Doctor:

- If your fever persists for more than a few days.
- If you have severe, persistent stomach pain.
- If you notice blood in your stool.
- If you're a child, senior citizen, or someone with a weakened immune system.

Please note that this advice is general in nature. For a specific diagnosis and treatment, please consult a healthcare professional.

I can also gather more specific information if you can provide details such as:

- How long have you had these symptoms?
- Any recent travel or exposure to sick people?
- Any pre-existing medical conditions?
- Any recent changes in diet or medication?

Would you like me to search for more detailed information on this using online resources?

► How did I get this answer?



Type something...



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# CONCLUSION

The Agentic AI Health Symptom Checker helps users understand their symptoms by providing possible conditions, urgency levels, and care advice using natural language input. Built on IBM watsonx, it offers accurate and accessible health support.

Challenges included handling vague inputs and ensuring reliable suggestions. Future improvements may include voice input and multilingual support.

The system shows how AI can assist in early health assessment and improve user awareness.

# FUTURE SCOPE

- **Personal Health Record Integration:** Allow users to optionally connect medical history for more personalized advice.
- **Voice Input Integration:** Allow voice-based symptom entry for ease of use, especially for elderly or less tech-savvy users.
- **Expanded Medical Coverage:** Include mental health checks, pediatric symptoms, and chronic condition guidance.
- **Edge Computing:** Enable offline or low-latency operation on mobile or embedded devices in rural areas.
- **Global Deployment:** Adapt system for different countries using localized health data and guidelines.

# REFERENCES

- IBM watsonx Agent Lab Documentation. *Building AI Assistants with Agentic Reasoning*.  
<https://www.ibm.com/cloud/watsonx/agent-lab>
- World Health Organization (WHO). *Symptoms and self-care guidelines*.  
<https://www.who.int>
- LangChain Documentation. *LangGraph for Agentic AI Workflows*.  
<https://docs.langchain.com>
- Centers for Disease Control and Prevention (CDC). *Symptom checker tools and guidance*.  
<https://www.cdc.gov>

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IBM **SkillsBuild**

Completion Certificate



This certificate is presented to

Harini Vijayakumar

for the completion of

**Lab: Retrieval Augmented Generation with  
LangChain**

(ALM-COURSE\_3824998)

According to the Adobe Learning Manager system of record

**Completion date:** 24 Jul 2025 (GMT)

**Learning hours:** 20 mins





**THANK YOU**