
AGENTIC AI PROJECT

Agentic AI Health Symptom Checker

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Problem Statement

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. Users can input symptoms in natural language such as “I have a sore throat and fever,” and the agent provides possible conditions, urgency level, home remedies, and when to consult a doctor. It supports multi-language interaction and avoids self-diagnosis risks by offering educational and referral-based suggestions. This AI-driven assistant promotes early detection, reduces misinformation, and empowers users to take informed health actions.

Proposed Solution

The proposed solution aims to empower individuals to make informed health decisions by using an Agentic AI assistant that interacts in natural language, understands symptoms, and responds with verified, educational, and non-diagnostic guidance.

It utilizes IBM Watsonx.ai, Granite language models, and IBM Cloud Lite services to:

- Analyse user-described symptoms in any language
- Extract relevant symptoms using granite-3-3b-instruct model
- Retrieve accurate information from trusted sources (WHO, CDC, government portals)
- Provide structured responses including:
 - Possible health conditions
 - Urgency level
 - Preventive tips and home remedies
 - Recommendations on when to consult a doctor
- Ensure safe interaction by including a disclaimer against self-diagnosis

System Approach

Interaction Flow:

1. User inputs symptoms to the agent
2. Extract key symptoms (Granite LLM)
3. Query verified health data from IBM services
4. Generate output:
 - Possible causes
 - Urgency
 - Home care guidance
 - Doctor referral advice
5. Proceed further to the response

Algorithm & Deployment

Algorithm Overview

- User inputs symptoms in plain text
- Granite model (granite-3-3b-instruct) extracts symptom entities
- Fetch verified guidance from IBM Cloud Object Storage
- Response generated with:
 - Possible conditions
 - Urgency level
 - Preventive tips
- Disclaimer: “This is not a medical diagnosis. Please consult a certified doctor.”

Deployment

- Hosted entirely on IBM Cloud Lite
- AI Agent configured in watsonx.ai
- Modular, scalable microservices architecture

Result

The screenshot displays the IBM watsonx web interface for configuring and previewing an AI agent. The browser address bar shows the URL: `https://dataplatform.cloud.ibm.com/wx/agents/41b3d28d-9d84-451c-9c1b-ab689a03d2ff?project_id=f7aa2d54-282b-4c78-9398-7eda6239eb2b&context=wx`. The interface includes a top navigation bar with the IBM watsonx logo, an 'Upgrade' button, a help icon, a notification bell, and user account information for 'Nikhil Singh's Account' in the 'Dallas' region. Below the navigation bar, the breadcrumb path is 'Projects / health_symptom_checker_agent / health_symptom_checker_agent'. The main interface is divided into two panels: 'Build' on the left and 'Agent preview' on the right.

Build Panel:

- Model:** Set to 'granite-3-3-8b-instruct'.
- Framework:** Set to 'LangGraph'.
- Architecture:** Set to 'ReAct'.
- Instructions:** A text area containing the following instructions:
"You are a helpful assistant that uses tools to answer questions in detail.
When greeted, say 'Hi, I am watsonx.ai agent. How can I help you?'"
"Your task is to assist users in understanding their health conditions by analyzing symptoms they enter in natural language. You should extract symptoms, retrieve verified medical..."
A link for 'Advanced configuration' is visible next to the instructions.
- Knowledge:** A section for adding knowledge, currently empty.
- Tools:** A section for adding tools, with buttons for 'Add a tool' and 'Create custom tool'.

Agent preview Panel:

- Agent Name:** health_symptom_checker_agent
- Timestamp:** 12:59 PM
- Welcome Message:** "Welcome to health_symptom_checker_agent
AI agent that analyzes symptoms, gives safe health advice, and suggests when to see a doctor."
- Diagram:** A visual representation of the agent's workflow, showing a sequence of steps connected by lines, with a magnifying glass icon highlighting a specific step.
- Input Field:** A text input field with the placeholder text 'Type something...' and a send button.

Result

The screenshot displays the IBM watsonx AI agent builder interface. The top navigation bar includes the IBM watsonx logo, an 'Upgrade' button, a help icon, a notification bell, and user account information for 'Nikhil Singh's Account' in 'Dallas'. The main header shows the project path: 'Projects / health_symptom_checker_agent / health_symptom_checker_agent', along with 'Share feedback', 'Autosave on', 'New agent +', and a 'Deploy' button.

The interface is divided into two main sections: 'Build' and 'Agent preview'.

Build Section:

- Setup:** Includes 'Configuration' and 'Instructions' tabs.
- Configuration:** Shows 'Framework' set to 'LangGraph' and 'Architecture' set to 'ReAct'.
- Instructions:** Contains the following text:
You are a helpful assistant that uses tools to answer questions in detail.
When greeted, say "Hi, I am watsonx.ai agent. How can I help you?"
Your task is to assist users in understanding their health conditions by analyzing symptoms they enter in natural language. You should extract symptoms, retrieve verified medical...
- Knowledge:** A section for adding knowledge.
- Tools:** Includes buttons for 'Add a tool' and 'Create custom tool'.

Agent preview Section:

- Shows a chat interface for the 'health_symptom_checker_agent'.
- The agent's welcome message is: 'Welcome to health_symptom_checker_agent. AI agent that analyzes symptoms, gives safe health advice, and suggests when to see a doctor.'
- A diagram illustrates the agent's workflow, showing a sequence of steps leading to a central 'AI' node, which then branches into 'Tools' and 'Knowledge'.
- The input field at the bottom contains the text: 'Hi, I have a headache and sore throat.'

Result

The screenshot shows the IBM Watsonx interface for building an agent. The browser address bar displays the URL: `https://dataplatform.cloud.ibm.com/wx/agents/41b3d28d-9d84-451c-9c1b-ab689a03d2ff?project_id=f7aa2d54-282b-4c78-9398-7eda6239eb2b&context=wx`. The page header includes the IBM Watsonx logo, an 'Upgrade' button, a help icon, a notification bell, the user's account 'Nikhil Singh's Account', the location 'Dallas', and a profile icon 'NS'.

The main content area is divided into two tabs: 'Build' and 'Agent preview'. The 'Build' tab is active, showing the configuration for the agent 'health_symptom_checker_agent'. The configuration includes:

- Framework:** LangGraph
- Architecture:** ReAct
- Instructions:** A text area containing the following instructions:
You are a helpful assistant that uses tools to answer questions in detail.
When greeted, say "Hi, I am watsonx.ai agent. How can I help you?"
Your task is to assist users in understanding their health conditions by analyzing symptoms they enter in natural language. You should extract symptoms, retrieve verified medical
- Knowledge:** A section for adding knowledge.
- Tools:** A section for adding tools, with buttons for 'Add a tool' and 'Create custom tool'.

The 'Agent preview' tab shows a chat history with the following messages:

- You:** 01:01 PM
Hi, I have a headache and sore throat.
- health_symptom_checker_agent:** 01:01 PM
Hi, I am watsonx.ai agent. How can I help you?
I understand you're experiencing a headache and a sore throat. Here's some general information based on these symptoms:
Possible Conditions:
 - Headaches and sore throats can be caused by a variety of factors, including common colds, flu, allergies, sinusitis, or even stress.**Urgency Level:**
 - Typically, these symptoms are not immediately life-threatening. However, if your headache is severe, persistent, or accompanied by high fever, stiff neck, or confusion, it could indicate a more serious condition like meningitis, and you should seek medical attention immediately.

The chat input field at the bottom contains the text 'Type something...' and a send button.

Conclusion

- The implementation of the Agentic AI Health Symptom Checker proved effective in providing users with accurate, safe, and informative health guidance based on natural language symptom input. The use of IBM Watsonx.ai and Granite models enabled precise symptom extraction and structured responses grounded in verified medical data.
- While the solution successfully avoided diagnostic risks and maintained educational value, challenges included integrating trusted data sources and maintaining real-time responsiveness within resource-constrained IBM Cloud Lite limits.
- Future improvements could focus on enhancing condition specificity and expanding the knowledge base with more localized health content.

Future scope

- **Expand Medical Data Sources:** Integrate more government health portals, clinical datasets, and real-time epidemic data for richer insights.
- **Algorithm Optimization:** Refine symptom-matching logic and urgency estimation for faster and more accurate responses.
- **Regional Expansion:** Adapt the system to support city/state-specific health trends, climate-related illnesses, and localized medical advice.
- **Edge Computing Integration:** Deploy edge-based symptom checkers in rural clinics or low-bandwidth areas for real-time offline support.
- **Advanced ML Techniques:** Incorporate user feedback loops, health trend predictions, and risk profiling using advanced AI/ML models.

References

1. World Health Organization (WHO) – Clinical guidelines and symptom databases
<https://www.who.int>
2. Centers for Disease Control and Prevention (CDC) – Public health information and symptom-based triage resources <https://www.cdc.gov>
3. Ministry of Health & Family Welfare, Government of India – National health protocols and disease symptomatology <https://www.mohfw.gov.in>
4. IBM Documentation – Watsonx.ai Agent Setup, Granite Model (`granite-3-3b-instruct`), Cloud Functions, Cloudant, DB2, and Object Storage <https://www.ibm.com/docs/>
5. Wikipedia, DuckDuckGo, and Google Search – For educational lookup through agent tool invocation
6. "Explainable AI for Healthcare: A Survey", ACM Computing Surveys, 2021

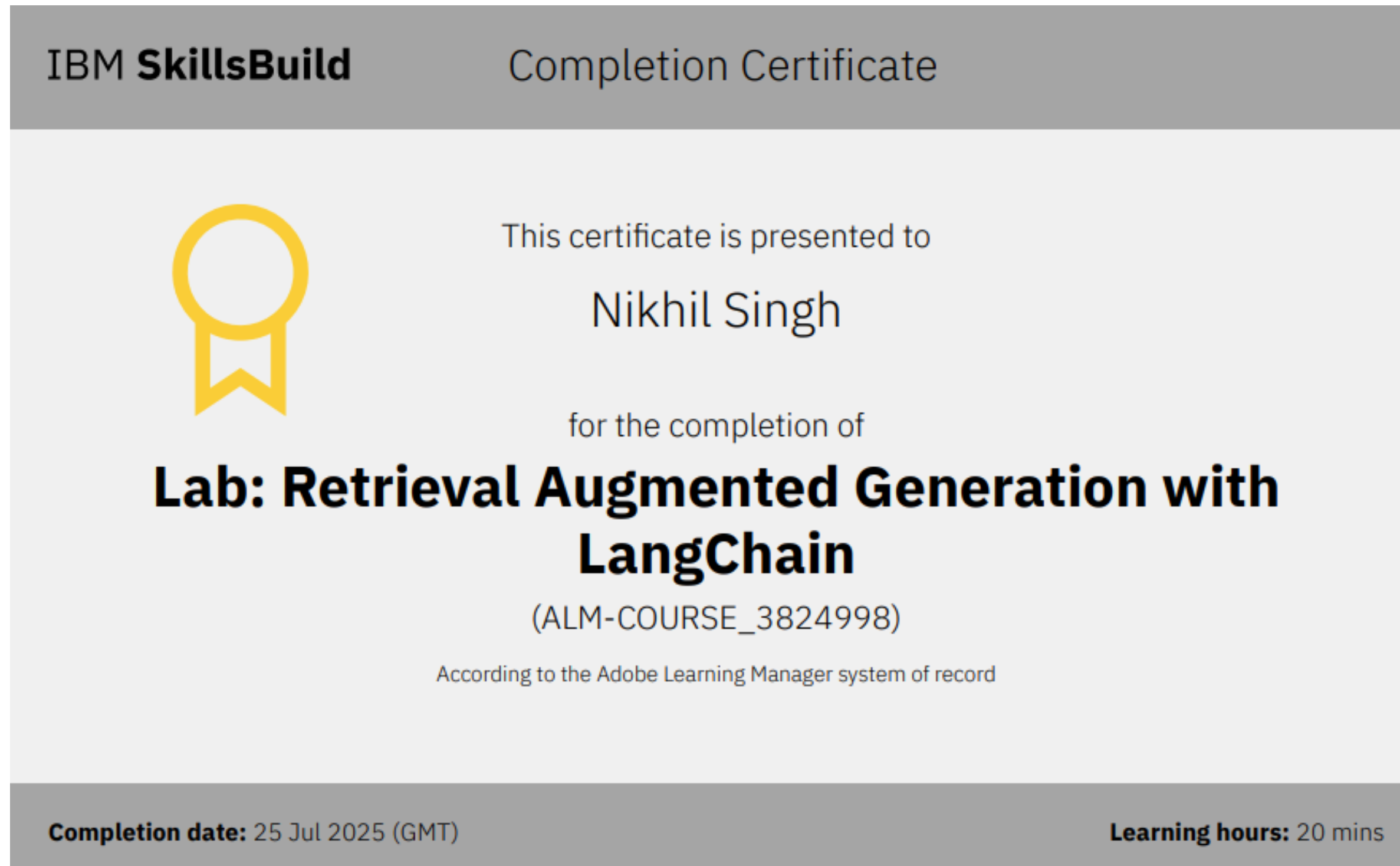
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