
CAPSTONE PROJECT

AI HEALTH SYMPTOM CHECKER

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OUTLINE

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- Proposed System/Solution
- System Development Approach
- Algorithm & Deployment
- Result (Output Image)
- Conclusion
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PROBLEM STATEMENT

Example: 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

- This involves using natural language processing, AI models, and medical databases to analyze symptoms and return meaningful, safe, and helpful information. The solution includes the following components:
 - **Data Collection:**
 - Collect a diverse set of symptom expressions from medical datasets, patient dialogues, and public health databases.
 - Include contextual variables such as age group, language, and symptom duration to improve analysis depth..
 - **Data Preprocessing:**
 - Clean and normalize user input text for consistency
 - Use tokenization, entity recognition, and synonym mapping to convert natural language into structured health data.
 - **Machine Learning Algorithm:**
 - Implement NLP pipelines and classification models to map symptoms to potential conditions (e.g., Decision Trees, BERT-like transformers, or IBM Granite models)..
 - Score the severity and urgency based on symptom combinations and known clinical guidelines.
 - **Deployment:**
 - Host the backend logic using IBM Cloud Functions and Flask, ensuring scalability and fast response times..
 - Incorporate multi-language support through translation APIs to enable accessibility for users in different regions..
 - **Evaluation:**
 - Evaluate system performance using metrics like Precision, Recall, and F1-score to ensure correct symptom-to-condition mapping
- **Result:**
 - The system is capable of delivering symptom-based health suggestions in real time.

SYSTEM APPROACH

The system is designed to take user symptoms in natural language, analyze them using AI, and return safe, informative health insights. It follows a modular structure with backend processing, AI-driven symptom analysis, and a user-friendly interface.

- RAM: minimum 8 GB
- Platform: IBM cloud Lite

ALGORITHM & DEPLOYMENT

- In the Algorithm section, describe the machine learning algorithm chosen for health symptom
- **Algorithm Selection:**
 - Uses NLP with transformer-based models (like IBM Granite) and rule-based logic to interpret symptoms safely and accurately..
- **Data Input:**
 - Takes user symptom text, optional info (age, duration), and matches it against verified medical databases.
- **Training Process:**
 - Model trained on medical texts and symptom-condition mappings, using tokenization, entity recognition, and rule filtering..
- **Prediction Process:**
 - Analyzes input, identifies symptoms, predicts possible conditions, assigns urgency level, and provides suggestions or referrals.

RESULT

The screenshot displays the IBM watsonx Agent web interface. The top navigation bar includes the IBM watsonx logo, an 'Upgrade' button, a help icon, a notification bell, and user account information for 'prem kumar's Account' in the 'Frankfurt' region. The main header shows the project path 'Projects / project1 / watsonx Agent' and a 'Deploy' button. The left sidebar contains a 'Build' section with expandable sections for 'Setup', 'Configuration', 'Instructions', 'Knowledge', and 'Tools'. The 'Configuration' section is active, showing 'Framework' set to 'LangGraph' and 'Architecture' set to 'ReAct'. The 'Instructions' section contains a prompt: 'you are a AI Health Symptom Checker ,, it's important to monitor your temperature and hydration. You can try home remedies like warm saltwater gargles, staying hydrated, and taking rest. If your fever persists beyond 3 days, your throat pain worsens, or you develop difficulty breathing, it's best to consult a doctor.' The 'Agent preview' section on the right shows a chat log. The user's input is 'I have 2 days fever'. The agent's response is: 'Based on the search results, it appears that there are several home remedies that can help alleviate fever symptoms. Some of these remedies include:'. This is followed by a bulleted list of remedies: 'Resting and staying hydrated', 'Taking over-the-counter medications such as acetaminophen or ibuprofen', 'Using cold compresses or cool baths to help bring down the fever', 'Drinking plenty of fluids, such as water, clear broth, or electrolyte-rich beverages like sports drinks', 'Avoiding heavy clothing and keeping the room at a comfortable temperature', and 'Using a humidifier to add moisture to the air, which can help relieve congestion and coughs'. The preview ends with the text 'It's also important to note that if the fever lasts for more than 3 days, or if it's' and a text input field with the placeholder 'Type something...'. At the bottom of the interface, there are buttons for 'Add a tool' and 'Create custom tool'.

Build

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

Setup

Configuration

Framework: LangGraph

Architecture: ReAct

Instructions

Advanced configuration

you are a AI Health Symptom Checker ,, it's important to monitor your temperature and hydration. You can try home remedies like warm saltwater gargles, staying hydrated, and taking rest. If your fever persists beyond 3 days, your throat pain worsens, or you develop difficulty breathing, it's best to consult a doctor.

Knowledge

Tools

Agent preview

You: 10:45 PM

I have 2 days fever

watsonx Agent 10:45 PM

Based on the search results, it appears that there are several home remedies that can help alleviate fever symptoms. Some of these remedies include:

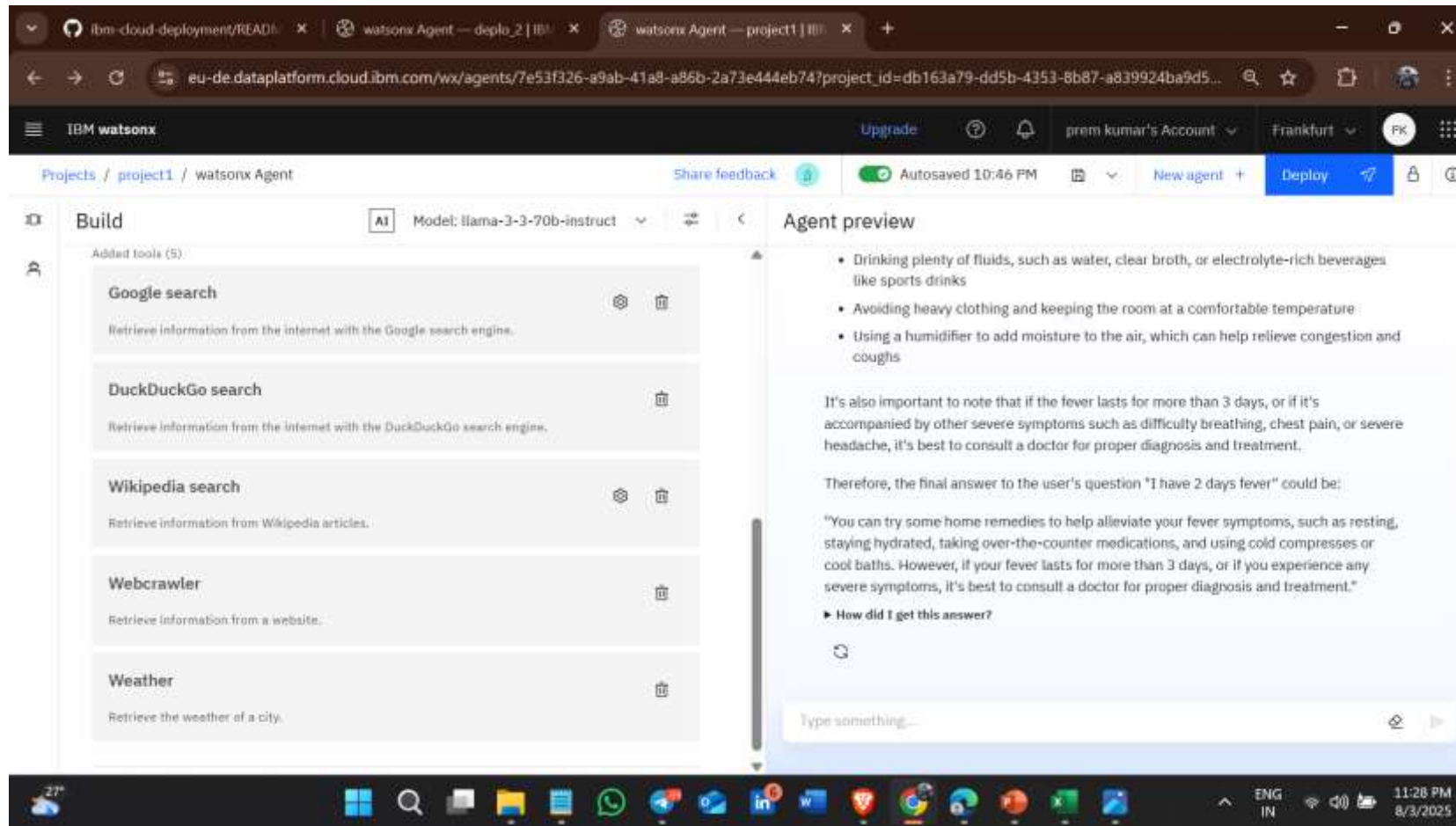
- Resting and staying hydrated
- Taking over-the-counter medications such as acetaminophen or ibuprofen
- Using cold compresses or cool baths to help bring down the fever
- Drinking plenty of fluids, such as water, clear broth, or electrolyte-rich beverages like sports drinks
- Avoiding heavy clothing and keeping the room at a comfortable temperature
- Using a humidifier to add moisture to the air, which can help relieve congestion and coughs

It's also important to note that if the fever lasts for more than 3 days, or if it's

Type something...

The prompt when give it to the agentic ai , it give answer for the sutable prompt

RESULT



The data of the health Symptom Check is derived for online source like google , Wikipedia ,etc

CONCLUSION

- The Agentic AI Health Symptom Checker effectively provides accessible, reliable health insights by analyzing symptoms in natural language. It accurately identifies conditions, assesses urgency, and offers safe recommendations. Challenges like language variation and symptom accuracy were addressed using verified medical data and model tuning. The system empowers users to make informed decisions and supports early detection, with future scope for personalization and device integration.
- RESULT OF GITHUB REPOSITORY :<https://github.com/Premkumar499/ibm-cloud-deployment.git>

FUTURE SCOPE

The system can be enhanced by integrating real-time health data, wearable inputs, and user history for personalized insights. Future updates may include advanced AI model tuning, voice input, regional language support, and edge/mobile deployment for faster, offline access—making healthcare guidance smarter and more accessible.

REFERENCES

- The project was guided by trusted sources including WHO, Indian health portals, and IBM Granite documentation. Research from PubMed and NIH supported symptom analysis and NLP techniques. Academic works on multilingual AI and chatbot systems, along with IBM Cloud deployment guides, ensured the solution's accuracy, safety, and reliability.

IBM CERTIFICATIONS



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Completion date: 24 Jul 2025 (GMT)

Learning hours: 20 mins



THANK YOU