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# 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)
- **Algorithm & Deployment**
- **Result (Output Image)**
- **Conclusion**
- **Future Scope**
- **References**

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# PROBLEM STATEMENT

**Example:** Millions of people experience health symptoms daily but often lack access to immediate, reliable, and understandable medical guidance. They may turn to unverified internet sources or social media for answers, leading to misinformation, self-diagnosis, anxiety, or delayed treatment. Furthermore, many users face language barriers, limited access to healthcare professionals, or uncertainty about when to seek medical attention. There is a critical need for an accessible, AI-powered health assistant that can interpret natural language symptom descriptions, provide evidence-based information, suggest preventive care or home remedies, and indicate when professional medical attention is necessary.

# PROPOSED SOLUTION

- To address the need for accessible and trustworthy health information, we propose the development of an Agentic AI Health Symptom Checker—a multilingual, intelligent assistant that allows users to input their symptoms in natural language (e.g., “I have a sore throat and a mild fever”) and receive reliable, non-diagnostic guidance. Data Collection:

## Natural Language Symptom Input:

- Users can describe symptoms in everyday language.
- AI processes and interprets input using NLP techniques.

## Medical Knowledge Integration:

- Retrieves symptom and condition data from verified sources like WHO, CDC, government health portals, and peer-reviewed journals.
- Continuously updated with current medical guidelines. and disease trends.

## Symptom Analysis and Output:

- Provides a list of possible conditions with a probability score or confidence level.
- Suggests urgency levels (e.g., self-care, see a doctor, emergency).
- Recommends preventive measures, home remedies, and follow-up actions.

## Multi-language Support:

- Enables interaction in multiple regional and international languages.
- Enhances accessibility for users across different demographics.

# SYSTEM APPROACH

Layer	Tool
Frontend	React.js
NLP	IBM Watson NLU
AI Core	Watsonx.ai with Agentic AI Agents
Knowledge Retrieval	APIs
Multilingual	IBM Watson Language Translator
Output Interface	custom agent
Security	IBM Cloud IAM, Key Protect, Data Shield

# ALGORITHM & DEPLOYMENT

- In the Algorithm section, describe the machine learning algorithm chosen for predicting Symptoms. Here's an example structure for this section:

## Algorithm Selection:

- We use an Agentic AI model integrated with Retrieval-Augmented Generation (RAG) and rule-based symptom triage, deployed via Watsonx.ai on IBM Cloud.  
Unlike traditional ML classifiers, this system relies on goal-driven AI agents that dynamically use knowledge retrieval tools and reasoning skills to analyze natural language symptom descriptions.

## Data Input:

- Uses symptoms description , Duration , vital sign

## Training Process:

- The core Agentic AI system uses a foundation model (LLM) such as those available in Watsonx.ai, fine-tuned with health-related prompts and symptom patterns.

## Prediction Process:


- NLU Layer (Watson NLU) processes user input and extracts symptom entities, duration, and emotion cues.


# RESULT

watsonx Agent 🟢 Deployed Online

[API reference](#) [Test](#) [Preview](#)

[New chat](#) +

 You 01:57 PM  
I have high fever

 watsonx Agent 01:57 PM  
Here are some results I found:

**1. Fever - Symptoms & causes - Mayo Clinic**

- Description: A temperature taken using a mouth thermometer (oral temperature) that's 100 F (37.8 C) or higher is generally considered to be a fever.
- URL: [Mayo Clinic](#)

**2. Fever Symptoms & Causes: What Is Considered a Fever?**

- Description: A fever is when your body temperature is higher than your normal average temp. Most providers say a fever is either 100.0 F (37.8 C) or 100.4 F (38 C).
- URL: [Cleveland Clinic](#)

**3. Fever: Causes, Symptoms, and Treatment**

- Description: A fever is when you have a brief rise in body temperature that's higher than your normal body temperature. It's also called a high temperature, hyperthermia, ...
- URL: [WebMD](#)

**4. Fever in adults: when to worry - Harvard Health**

Type something...



# CONCLUSION

- The Agentic AI Health Symptom Checker demonstrates strong potential as a reliable, user-friendly, and scalable solution for preliminary health guidance. By leveraging IBM Watsonx.ai's agentic AI capabilities, along with retrieval-augmented generation (RAG) and verified medical data sources, the system provides accurate, context-aware recommendations without engaging in risky self-diagnosis.
- In conclusion, this model offers a balanced, ethical, and intelligent approach to symptom checking—empowering users to make informed decisions, promoting early detection, and bridging gaps in health literacy and access. With further fine-tuning and localization, it can serve as a valuable digital front line for preventive healthcare globally.



# FUTURE SCOPE

- The current Agentic AI Health Symptom Checker lays a strong foundation for accessible and intelligent health guidance. However, its capabilities can be significantly expanded in the future to improve accuracy, inclusivity, and integration with real-world healthcare ecosystems.
- Examples:-
  - Integration with Wearable and IoT Devices
  - Personalized Health Profiling
  - Mental Health and Lifestyle Support

# REFERENCES

## Academic & Research References

- **Park, S., et al. (2023).**  
Generative Agents: Interactive Simulacra of Human Behavior  
Proceedings of CHI 2023.  
<https://arxiv.org/abs/2304.03442>  
➤ Introduces foundational architecture for agentic AI with autonomous reasoning and memory.
- **Yao, S., et al. (2023).**  
ReAct: Synergizing Reasoning and Acting in Language Models  
<https://arxiv.org/abs/2210.03629>  
➤ Basis for agentic task-solving where the AI reasons, retrieves data, and acts in steps.

## AI in Healthcare and Symptom Checkers

- **Esteva, A., et al. (2019).**  
*A guide to deep learning in healthcare*  
Nature Medicine, 25(1), 24–29.  
<https://doi.org/10.1038/s41591-018-0316-z>  
➤ Surveys medical applications of AI, including clinical triage and diagnostics.
- **Semigran, H. L., et al. (2016).**  
*Evaluation of symptom checkers for self diagnosis and triage*  
BMJ, 353, i2359.  
<https://doi.org/10.1136/bmj.i2359>  
➤ Comparative analysis of symptom checkers, useful for benchmarking.

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This certificate is presented to

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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**