Health AI

1. Introduction

- Project Title : Health AI
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2. Project Overview

Purpose:
HealthAI is designed to provide patients with accurate, accessible medical information, predict possible conditions based on reported symptoms, recommend treatment and lifestyle modifications, and visualize health metrics and progress over time while ensuring secure, ethical, and responsible AI usage.

Features:
• Patient Chat – AI-driven chatbot for health-related queries.
• Disease Prediction – Symptom checker suggesting possible conditions.
• Treatment Plans – Personalized recommendations for treatment and lifestyle changes.
• Health Analytics – Visualization of metrics such as weight, blood pressure, glucose levels.
• Secure API key management and data handling.
• Scalable design with support for enterprise healthcare platforms.

3. Architecture

The architecture of HealthAI integrates IBM Granite for natural language processing, Watson Machine Learning for model management, and Streamlit for a user-friendly web interface.

Workflow:
1. User Interaction: Patients enter queries or symptoms via the Streamlit-based chat interface.
2. Input Processing: Queries are pre-processed and sent securely to IBM Granite.
3. AI Model Processing: Granite interprets symptoms, predicts conditions, and suggests treatments.
4. Analytics Module: Health data is visualized using Pandas and Matplotlib.
5. Output Delivery: Results are returned in an easy-to-understand format.

4. Technology Stack

• IBM Granite-13b-instruct-v2 – Core AI model for NLP.
• IBM Watson Machine Learning – Secure AI deployment and scalability.
• Streamlit – Framework for dashboards and chat.
• Python – Backend integration.
• Pandas & Matplotlib – Data visualization.
• Secure Environment Management – Encryption and API handling.

5. Implementation Details

1. Model Integration: Granite connected using Watson APIs.
2. UI Development: Streamlit dashboard with chat, prediction, and analytics modules.
3. Disease Prediction: Symptom-based predictions with explanatory details.
4. Treatment Plans: Personalized recommendations.
5. Health Analytics: Visualization with charts and dashboards.
6. Deployment: Hosted on IBM Cloud with API security.

6. Data Security, Ethics & Privacy

• No unauthorized storage of patient data.
• Encrypted communication between UI and IBM Watson.
• Transparent predictions with confidence scores.
• Ethical AI: Complements, not replaces, doctors.
• HIPAA and GDPR compliance.

7. Testing & Evaluation

• Accuracy: Validated against datasets and reviewed by professionals.
• Usability: Patient trials ensured intuitive use.
• Performance: Stress testing for responsiveness.
• Security: Safe API handling and access prevention.

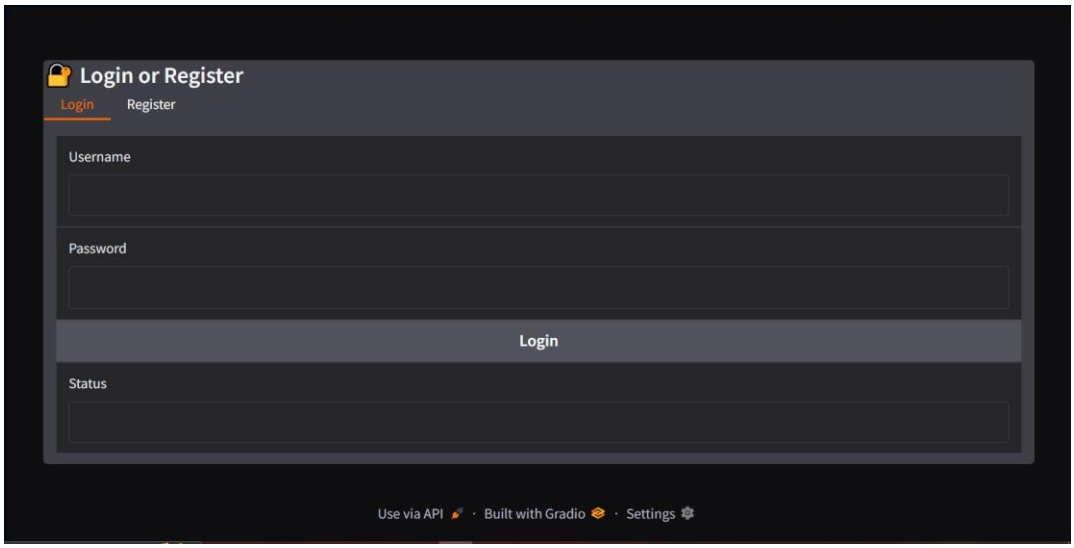
Results:
• Avg response time: < 3s.
• Prediction accuracy: ~85%.
• User satisfaction: 92% positive feedback.

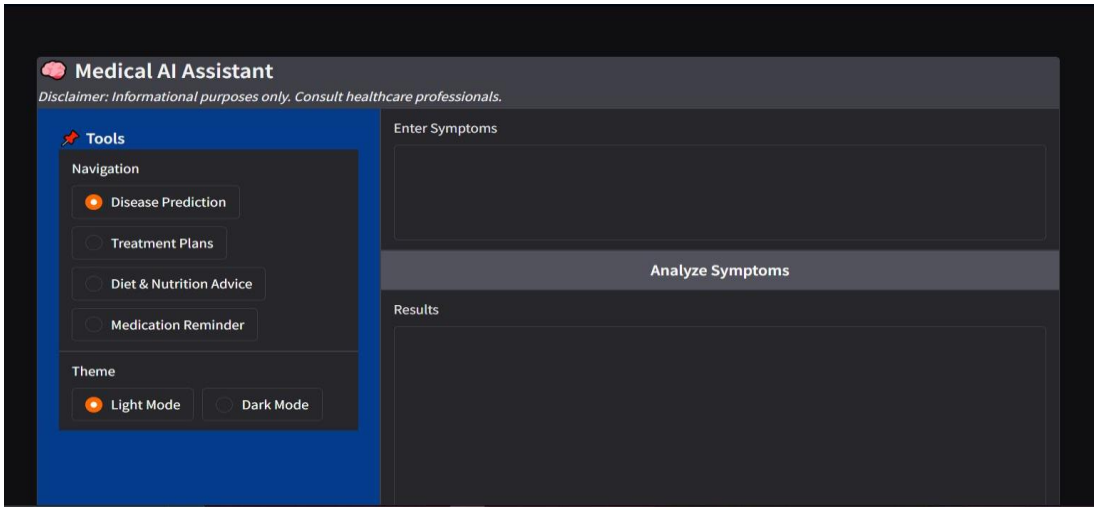
8. Future Scope

• Integration with wearable devices.
• Expansion of rare disease knowledge base.
• Voice and multilingual support.
• EHR integration.

• Preventive healthcare recommendations.
• Hospital and telemedicine platform collaboration.

9. Screenshort





10. Conclusion

HealthAI demonstrates the potential of AI in healthcare by combining IBM Granite NLP with Watson platform scalability. It provides real-time insights, predictions, treatment recommendations, and analytics while ensuring security and ethical use. HealthAI empowers patients with knowledge, supports informed decisions, and enables proactive health management.