Applied AI Internship **AICTE IBM SkillsBuild**

Presented By: Prince Rajendraprasad Yadav

College: HVPS Ramniranjan Jhunjhunwala College, Mumbai

REPORT

Healthcare AI Agent

Project Title: Development of an AI-Powered Healthcare Agent for Preventive Health Monitoring and Intelligent Assistance

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Introduction

Healthcare management has become increasingly complex due to rising chronic diseases, mental health challenges, and the need for continuous monitoring of personal health data. Traditional healthcare systems are often reactive rather than preventive. This project presents the development of an **AI-powered Healthcare Agent** that assists users through symptom analysis, medication reminders, health tracking, and mental health support, leveraging modern AI and cloud-based tools.

Problem Statement

The primary challenge is the lack of an integrated, intelligent system for daily healthcare management. Existing solutions are fragmented (e.g., just a pedometer or just a calendar), leading to:

- Missed medications and appointments.
- Misjudged symptom severity.
- A lack of personalized, data-driven health insights.

Objective

The goal is to design a proactive health management system that:

- Provides **AI-driven symptom analysis**.
- Improves **adherence** to medications/appointments.
- Centralizes **health data tracking** (Vitals, BMI, Sleep).
- Offers **emotional support** via conversational AI.

Why This Problem?

Global healthcare complications often arise from late detection and poor treatment adherence. By focusing on **preventive healthcare**, this project empowers users with timely insights, reducing long-term health risks and the overall healthcare burden.

Solution

Overview:

The proposed solution is an AI-powered healthcare agent built with Streamlit, Python, Supabase, and AI models for secure, intelligent analysis. It combines multiple healthcare features into one platform to help users manage their health proactively and efficiently.

Key Features:

- **AI Symptom Checker:** Categorizes symptoms into emergency or non-emergency using LLMs.
- **Smart Reminders:** Automated in-app and email alerts for medication.
- **Health Tracker:** Logs vitals like heart rate and glucose levels with AI-generated suggestions.
- **Mental Health Support:** A conversational AI companion for emotional wellness.
- **Unified Profile:** A secure, single source of truth for all medical history.

Technical Implementation

To achieve a production-ready agent, the following stack was utilized:

Component	Technology	Role
Frontend	**Streamlit**	User interface for symptom input and health dashboards.
Database	**Supabase (PostgreSQL)**	Secure storage for user profiles, logs, and encrypted medical data.
AI Orchestration	**LangGraph & LLMs**	Manages complex conversational flows and logic for symptom analysis.
Backend	**Python**	Logic for authentication, BMI calculations, and API integration.
Deployment	**Render / Streamlit Cloud**	Cloud hosting for global accessibility.

Implementation Workflow:

1. **Data Management:** Relational database design in Supabase to ensure data integrity.
2. **AI Logic:** Using LangGraph to create stateful AI agents that remember previous health inputs.
3. **Notification System:** Integrating SMTP services for real-time email reminders.

Why IBM Resources and Tools?

- **IBM SkillsBuild Foundation:** The project architecture was guided by SkillsBuild modules on AI Ethics, Cloud Computing, and Machine Learning.
- **Alignment with IBM Principles:** The agent follows IBM's core tenets of **Scalability** and **Security**, ensuring that personal health data is handled with the highest privacy standards.
- **Responsible AI:** The system is designed for **assistance, not diagnosis**, adhering to responsible AI guidelines by prompting users to seek professional medical help for emergency symptoms.

Conclusion

This project successfully demonstrates how AI and cloud infrastructure can transition healthcare from reactive to proactive. By combining automated tracking with intelligent conversational analysis, the Healthcare Agent contributes to **United Nations Sustainable Development Goal 3: Good Health and Well-Being**.
