

LifePulse: AI-Powered Health Monitoring Dashboard

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Abstract

The LifePulse Health Monitor Dashboard is an intelligent, IoT- and AI-driven system (web or mobile-based) designed to collect, analyze, and visualize real-time health data from users through connected devices (sensors) or manual inputs. The system aims to assist individuals and healthcare providers in monitoring vital signs such as heart rate, blood pressure, oxygen level, body temperature, and sleep patterns/activity, transmitting this information to a centralized dashboard for analysis. By integrating Internet of Things (IoT) technology, the system ensures accurate, continuous data collection, while Artificial Intelligence (AI) algorithms interpret these readings to detect anomalies and predict potential health risks. The dashboard provides intuitive visualizations and instant alerts to notify users and healthcare providers of irregularities, enabling early intervention and preventive care. Through its combination of real-time monitoring, intelligent data analysis, this system promotes proactive healthcare management and contributes to more efficient, data-informed medical decision-making.

Goal

The software system allows users to monitor their health and gain insights from it; since the AI integrated into the software processes the data inputted by the user to provide recommendations, the software also alerts the user's doctor when there is an abnormality.

Current Practice

Most health monitors are manual or they are basic wearables, lack continuous tracking, or do not have an integrated alert system.

Novelty

This platform uniquely integrates wearable sensor data, AI-generated health insights, and role-based access for users and doctors within a single interactive dashboard. Its real-time alerts, personalized recommendations, and historical data logging set it apart from standard health tracking apps.

Effects

The system provides continuous, real-time health monitoring, allowing for early detection of abnormalities and timely alerts. It empowers users and doctors with accurate data for better health decisions, reduces unnecessary hospital visits, which lowers costs, and supports preventive care.

Technical Approach

The system uses IoT sensors to collect real-time health data. The data is securely sent to a central server where AI models analyze trends, detect anomalies, and provide alerts. Users will view their health metrics and insights through a web/mobile-based dashboard. The system is designed to be modular, scalable, and user-friendly.

Risks

Developing LifePulse comes with a few risks. Since it stores sensitive health data online, there are privacy and security concerns that must be handled carefully. Inaccurate sensor readings or AI recommendations could lead to false alerts, and system failures might interrupt real-time monitoring. There is also a chance that users could misunderstand the data or rely too much on the system instead of consulting a doctor.