**Problem Definition**

In today's fast-paced world, chronic illnesses, sedentary lifestyles, and poor health habits contribute significantly to rising healthcare challenges. While wearable devices like smartwatches and fitness trackers have enabled individuals to collect health data such as heart rate, blood oxygen levels, and activity patterns, there remains a gap in transforming this data into meaningful, real-time health insights and actionable recommendations.

Manual monitoring and interpretation of this data can be difficult for ordinary users, delaying timely detection of health anomalies such as irregular heartbeats, low oxygen saturation, or inactivity-related risks. Furthermore, most users lack personalized feedback tailored to their unique health patterns, limiting the impact of wearables in improving personal well-being.

This project seeks to bridge this gap by developing an AI-powered health monitoring system that automatically analyzes real-time data from wearable devices to detect abnormalities and generate personalized health recommendations. The system will empower users to make informed decisions about their health, detect potential health risks early, and adopt healthier lifestyles through intelligent insights.

**Objectives**

1. To develop a system that collects real-time health data such as heart rate, blood oxygen levels, and activity levels from wearable devices or simulated sources.
2. To implement AI-based anomaly detection models that identify abnormal health patterns such as low blood oxygen levels or irregular heart rate using machine learning algorithms.
3. To provide personalized health recommendations based on the user's historical and real-time data, aiding in early intervention and preventive care.
4. To design a user-friendly web or mobile application that allows users to view their live health metrics, receive alerts, and access historical trends and suggestions.
5. To deploy the system to the cloud using platforms like Azure or AWS, ensuring scalability, availability, and secure data exchange.
6. To evaluate the system's performance through metrics such as precision, recall, and F1-score, and validate the effectiveness of anomaly detection and recommendation generation.
7. To ensure data privacy and security, complying with best practices and standards when handling sensitive health information.