Wearable Health and Activity Tracker

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Project Summary

The Wearable Health and Activity Tracker (WHAT) is a project focused on monitoring biometric data such as heart rate, body temperature, and physical activity. The device is built using an ESP32 microcontroller and integrates multiple sensors to collect real-time health data.

Key components of the system include:

- **MAX30105 Photoplethysmogram Heart Rate Sensor** – Measures heart rate using Infrared light.
- **MCP9808 Temperature Sensor** – Monitors body temperature.
- **MTK3339 Ultimate GPS Breakout** - Connects to satellites and gets users location.

The collected data is processed and displayed on a web application, allowing users to track their health metrics over time. This system provides a compact and efficient solution for continuous health monitoring.

How it works

The wearable device continuously gathers biometric data from the connected sensors and processes it on the ESP32, applying basic filtering and formatting. Once processed, the data is transmitted via Wi-Fi to the connected web application. The web interface displays real-time measurements and historical trends, providing users with an easy-to-understand view of their health status. Users can access their data remotely and monitor key metrics over time for better health awareness.

Technologies & languages

- React
- Node.js
- C/C++
- JavaScript
- WebSockets
- Bcrypt
- JWT
- MongoDB
- Express
- CORS
- Google Map API
- Open-Meteo Weather API

Hardware

- ESP32
- MTK3339 GPS
- MAX30105 PPG
- MCP9808 Temperature Sensor

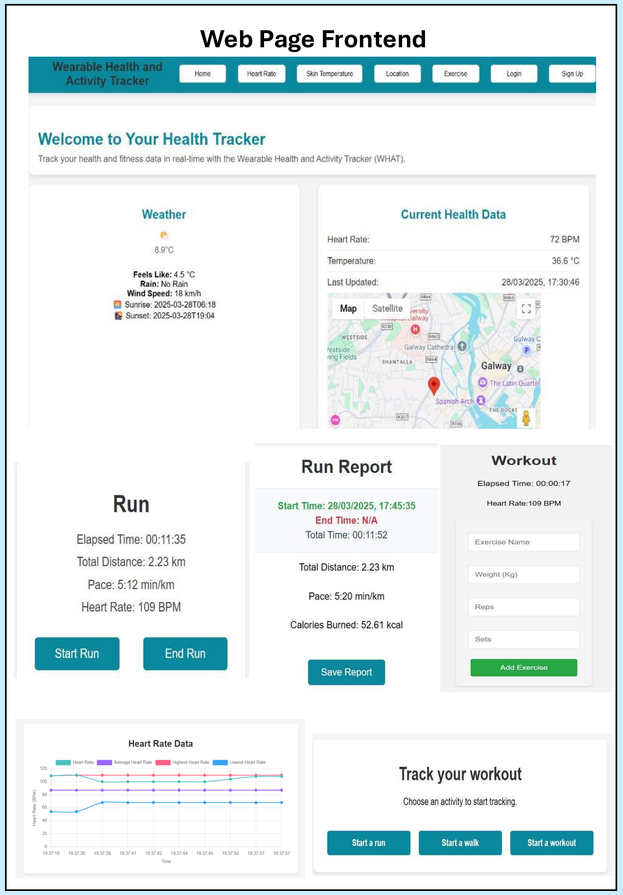
Front End GitHub

Back End GitHub

ESP32 GitHub

Scan Us!!

Web Page Frontend



Architecture Diagram