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Atlantic Technological University

Health-Tracking Smartwatch

Internet of Things 2nd Year Project

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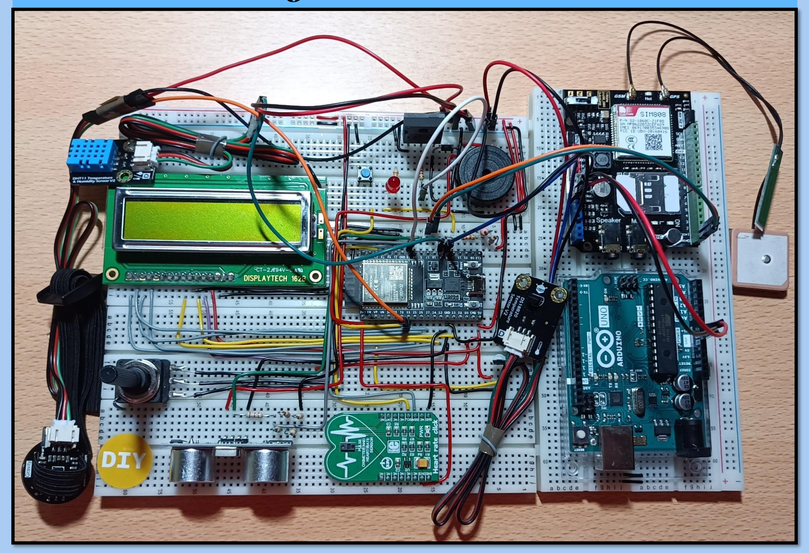
Project Summary

Health is an important aspect of daily life. We can often overlook our health state or be too busy to go to the doctor. With an interest in the medical health sector, programming, and web design, I have developed a health-tracking smartwatch.

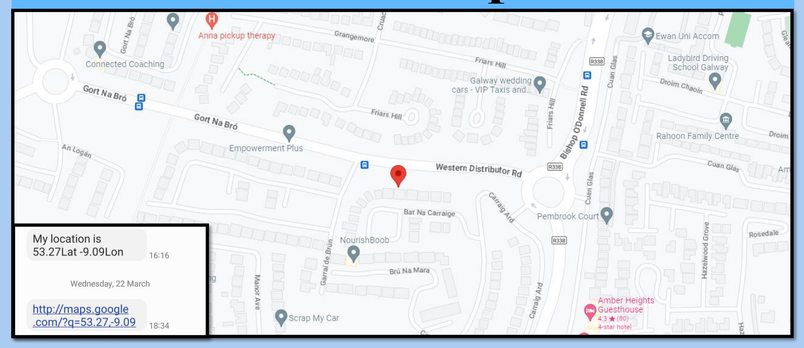
This smartwatch helps users track their health state by keeping a record of their heart rate and blood oxygen levels, body temperature, and their environment (humidity and temperature).

The user can view this information on an accessible website. The watch also has an emergency system in case the user is feeling unwell. They can press a button on the health-tracking website and send their location in an SMS text to their chosen recipient.

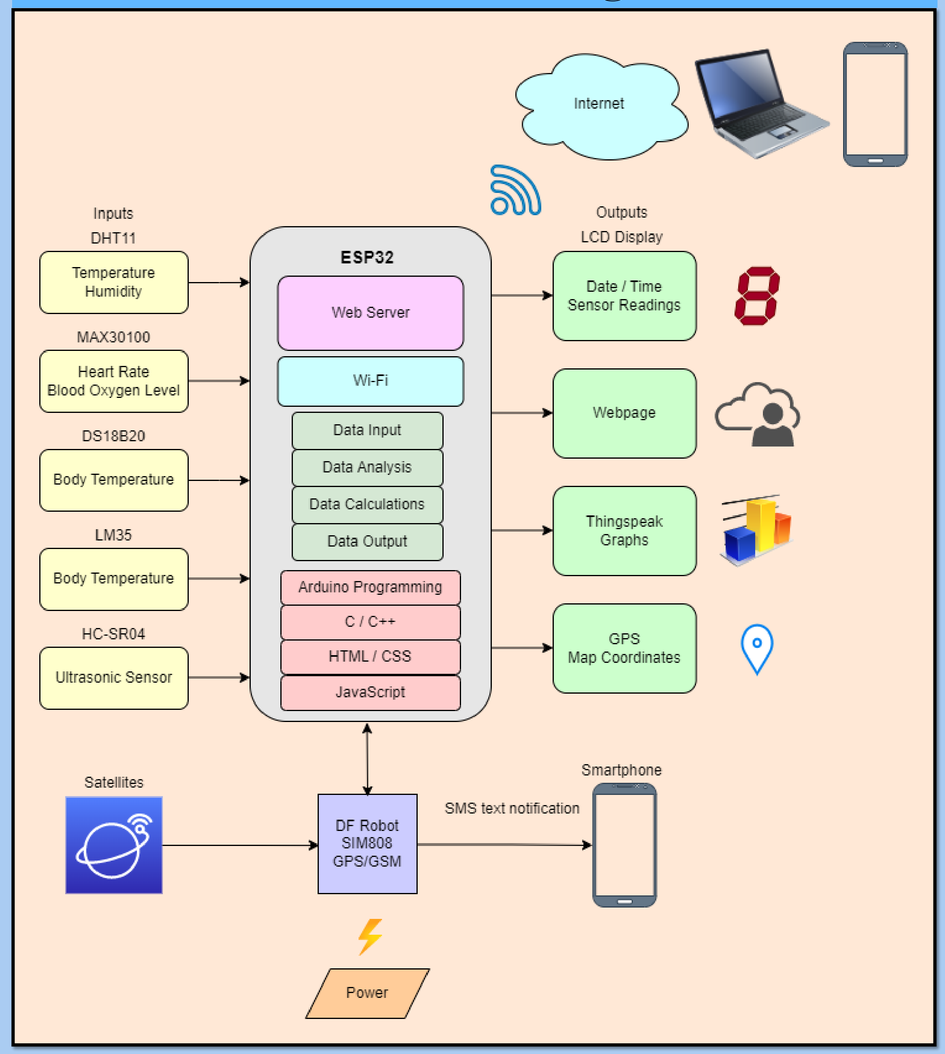
Project Hardware



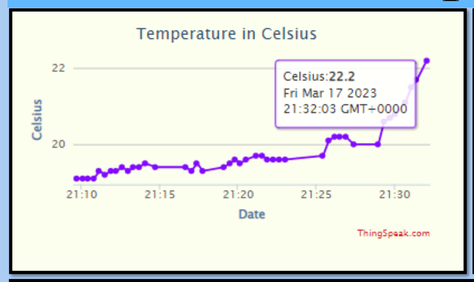
SMS Texts and Map Location

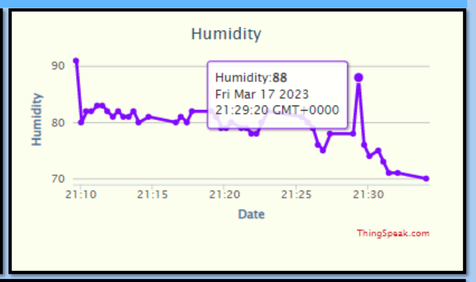


Architecture Diagram



Website Graphs and Tables





Humidity and Temperature sensor Table DHT11

Humidity	Degrees Celsius	Degrees Fahrenheit
82 %	21.64	70.95

Accessible Website Design

Health-Tracking Webpage with ESP32 Server

Welcome to your Homepage

Here are some readings of your Health-Tracking Smartwatch.

Send Location Button

SMS

Skills and Technologies

- C / C++ Programming
- C Multi-File Programming
- Custom-Made Libraries
- HTML / CSS Website Design
- Website Layout / Responsive Design with Flexbox
- Website Accessibility Design
- Visual Studio Code
- Notepad++
- JavaScript Fetch API
- Wi-Fi Networking
- IoT Analytics using ThingSpeak
- Analog Circuit Design
- Sensor Data Analysis, i.e. Ultrasonic Sensor
- Hardware Prototyping
- Interfacing to Peripherals I2C (with LCD, MAX30100)
- GPS Location Tracking
- GSM Communications (Modem)
- Problem-Solving Skills

Sustainable Development Goals

Goal 3: Good health and wellbeing.
The health-tracking smartwatch would help users and patients keep a better record of their health condition.

Goal 11: Sustainable cities and communities.
Healthy people create more sustainable cities and communities. The smartwatch would help achieve these goals.

Goal 10: Reduced inequalities.
A health-tracking smartwatch would make health more easily available, also among disadvantaged people.