RESEARCH READY SMART WATCH PROJECT

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INTRODUCTION

As a team, we created a full-fledged application that allows users to conduct their research, giving them the ability to exploit all sensor types and extract their respective raw sensor data.

Sample Cases:

- Bilalteral recurring authentication
- Temperature reader
- Smart office analytics (ie. productivity)
- Basic watch sensors (ie. gyroscope, accelerometer)

PURPOSE

The purpose of this project is to build a custom Android Wear Application which allows the use of watch sensors available in the Google Pixel Watch 1 and Google Pixel Watch 2.

The user can record the data by logging into a web server and choosing their desired sensors, sample size and bulk size.

The data recorded through the watch is then sent to the data lake (Elasticsearch), which can then be viewed by the user

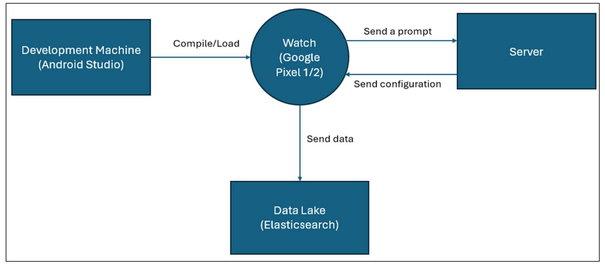


Figure 1.0 Flow of the application.

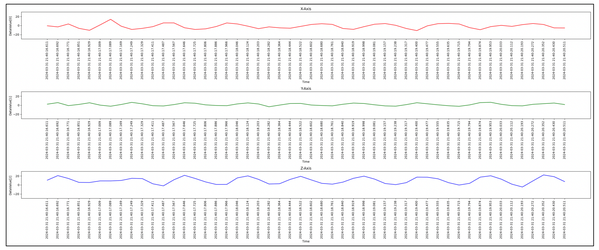


Figure 2.0 Matplotlib Data.

METHODS

SOFTWARE/SYSTEMS USED

- Android Studio
  - Allowed the usage of Android API
  - Emulator/Watch
    - Kotlin
    - Java
    - XML
  - Flask Server
    - Python
    - HTML
    - CSS
    - JavaScript
- Elasticsearch
  - Data lake – recorded data is saved here
- **GitHub**
  - Documentation
  - Project Board

ALGORITHMS USED

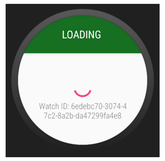
- Generate authentication token
- Verifying token
- Unique string identifier
- Extracting sensors from the watch
- Data payloads

RESULTS

WATCH/EMULATOR

Select the Peppermint app on the watch

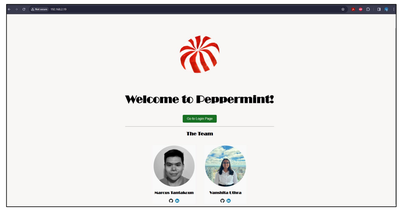
Enter the 4-digit pin



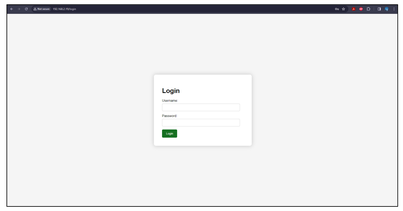
Wait to get a prompt from the server

Begin recording

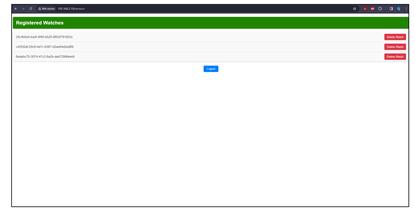
SERVER



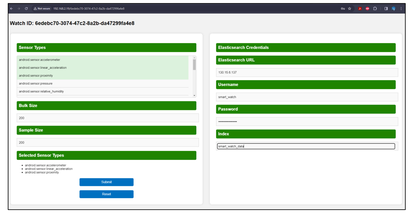
Homepage *- Click the "Go to Login Page"*



Login Page *- User enters their login information*

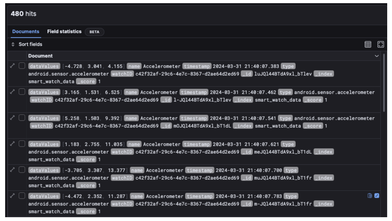


Registered Watches Page *- Select the watch to configure – Note: Watches will only be displayed once the user enters the token on the watch*



Configuration Page *- The user can now configure the watch and connect to Elastic Search (using their login information) where the data will be displayed*

ELASTICSEARCH



Data Display – *The data is recorded by the watch is sent to Elasticsearch to be displayed to user. This data can be used to create a graph as shown in Figure 2.0.*