



# Development of a Mobile App for Biosignal Visualization App with Flutter

Project Management and Software Development  
for Medical Applications

## General Info

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## Project Abstract

In this project we aim to implement a mobile application that interfaces with the Mentalab Explore (MLX) device, a lightweight multi-channel ExG amplifier that streams data in real-time via Bluetooth. The ExG data received from the device should be visualised on the phone as it comes in. The application will be developed with both Android and iOS in mind, using Flutter to develop for both operating systems at the same time.

## Background and Motivation

Mentalab Explore (MLX)<sup>2</sup> is a versatile, high-end solution for biomedical recordings that provides research-grade precision in a mobile format. It offers different options to automate data pipelines: Data can be streamed to a Bluetooth device for real-time applications, or recorded for later offline processing. MLX contains various sensors for the acquisition of ExG, movement and orientation data.

To really make use of the mobile format of the device, we want to offer a mobile application solution to researchers to take their experiments with them, wherever they are. An Android specific app has been developed previously, but with growing demand, we want to expand to iOS as

well. To reduce the complexity of future development for both platforms, we propose to use Flutter<sup>[1]</sup> to combine the development for Android and iOS.

## Student's Tasks Description

The aim of this project is to connect to an MLX device with bluetooth low energy (BLE) into a flutter app. Currently a flutter application with a working user interface exists. However, the current application uses dummy data and does not feature online recording. A Java API<sup>3</sup> also exists that can be used as reference.

The project would have the following steps:

- Research on suitable BLE libraries for flutter.
- Define API endpoints for future API users.
- Implement the API functionalities in Flutter app with chosen BLE library for Android and iOS devices.
- Assessing performance of the Flutter app in Windows OS would be a bonus feature.

## Technical Prerequisites

These skills are recommended for this project.

- Good knowledge of object oriented programming and design patterns.
- Knowledge on concurrent programming.
- Knowledge of Kotlin and Flutter framework is a plus.

## References



[1] <https://flutter.dev/>

[2] <https://www.figma.com/>

[3] <https://github.com/Mentalab-hub/explore-android-app-release>