



EE-490 Project 7A



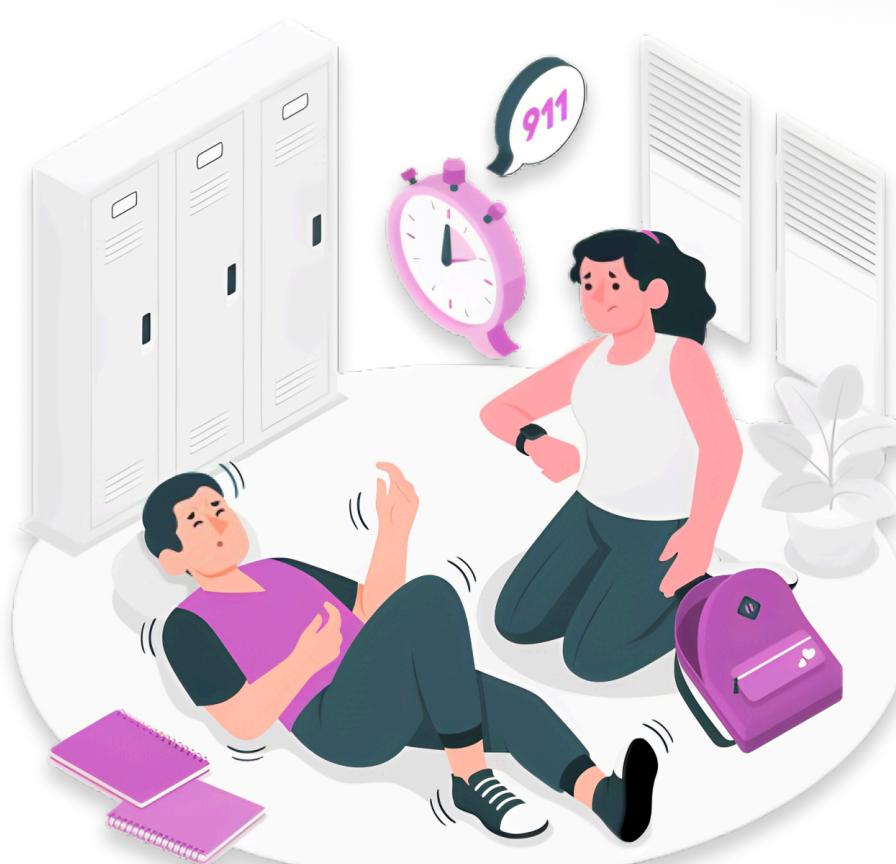
SeizureGuard

Francesco Poluzzi
EL-MA3

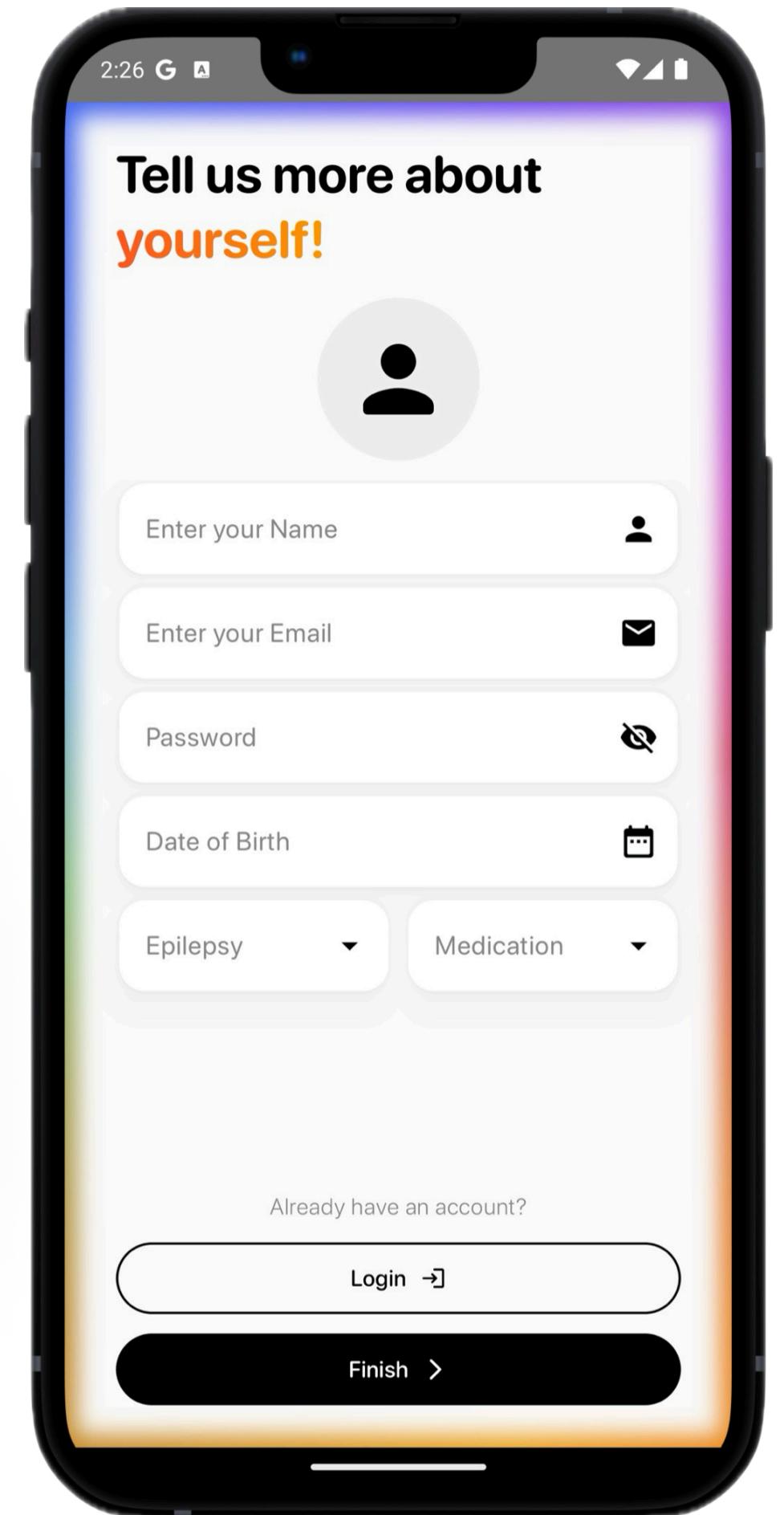
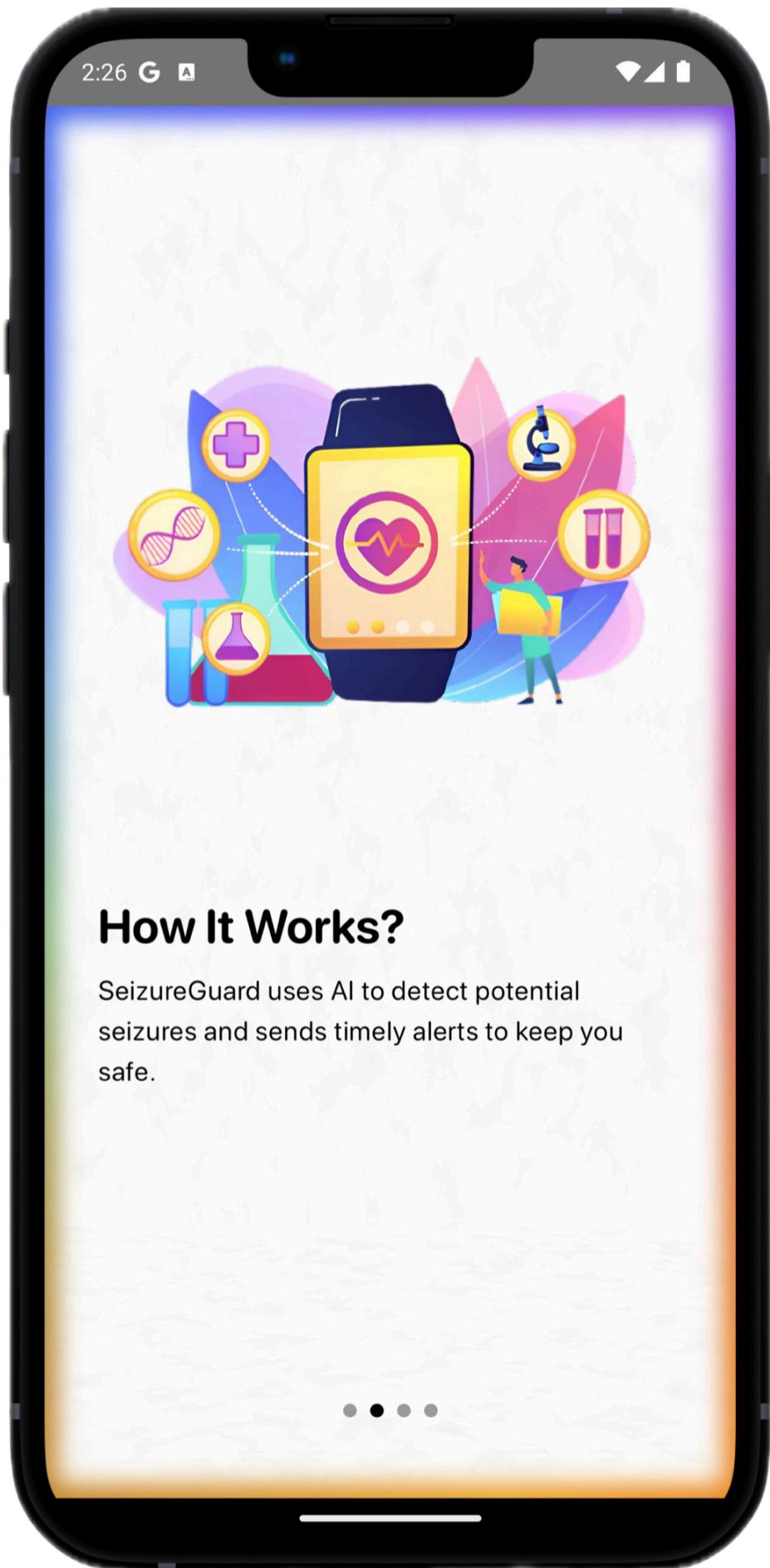
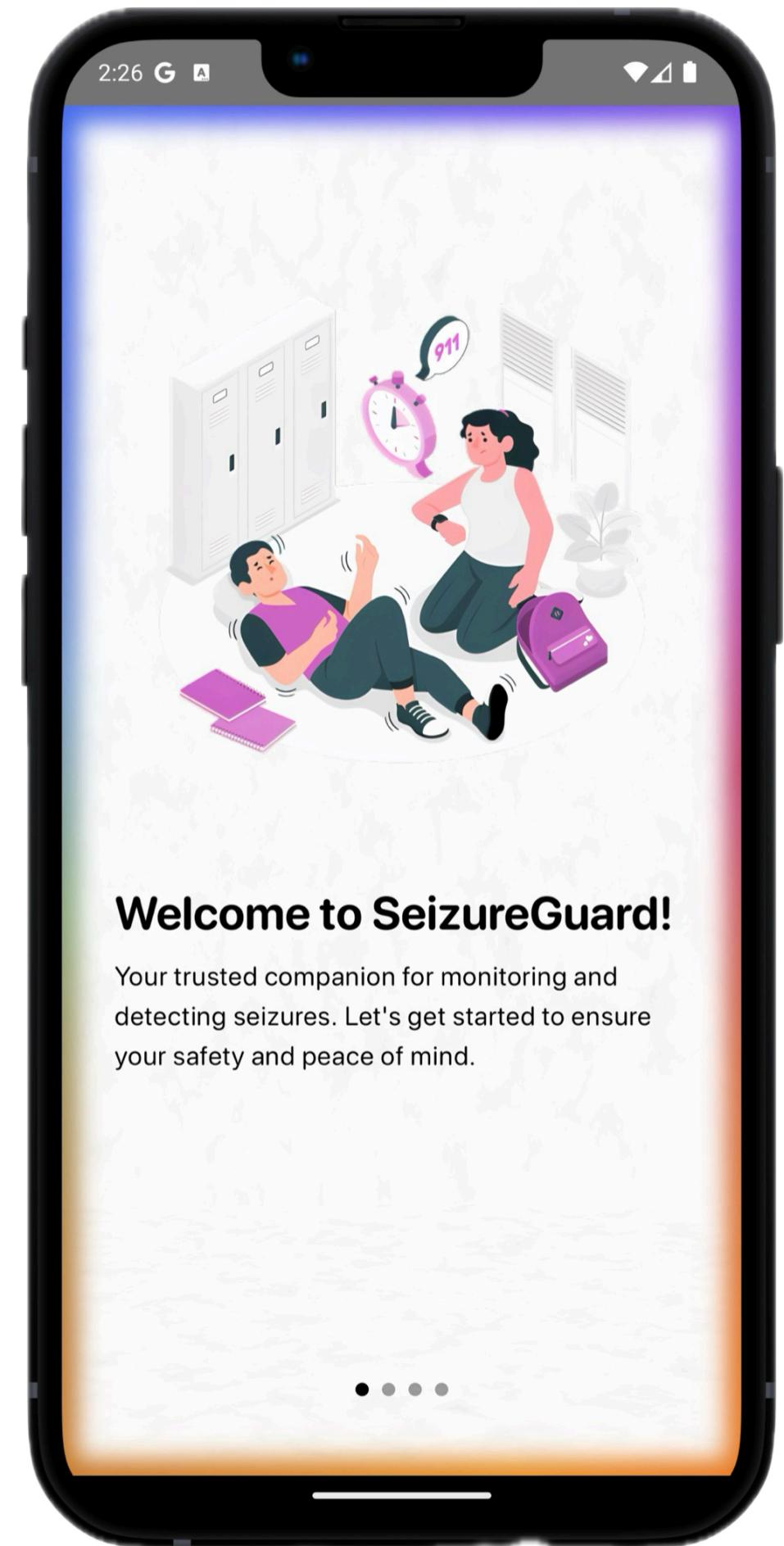
François Dumoncel
SC-MA3



- Approximately **50 million** people worldwide have epilepsy, making it one of the most common neurological diseases globally.
- An estimated 70% of people with epilepsy could live seizure-free if properly diagnosed and treated (source: WHO).
- **SeizureGuard** offers AI-based seizure detection on epilepsy patients wearing a EEG sensor.
- The AI model is safely fine-tuned to be **optimized** for each different patient.
- **High-importance notifications** to device and caregivers with shortcuts for calling emergency triggered in the case of seizure detected.



Onboarding

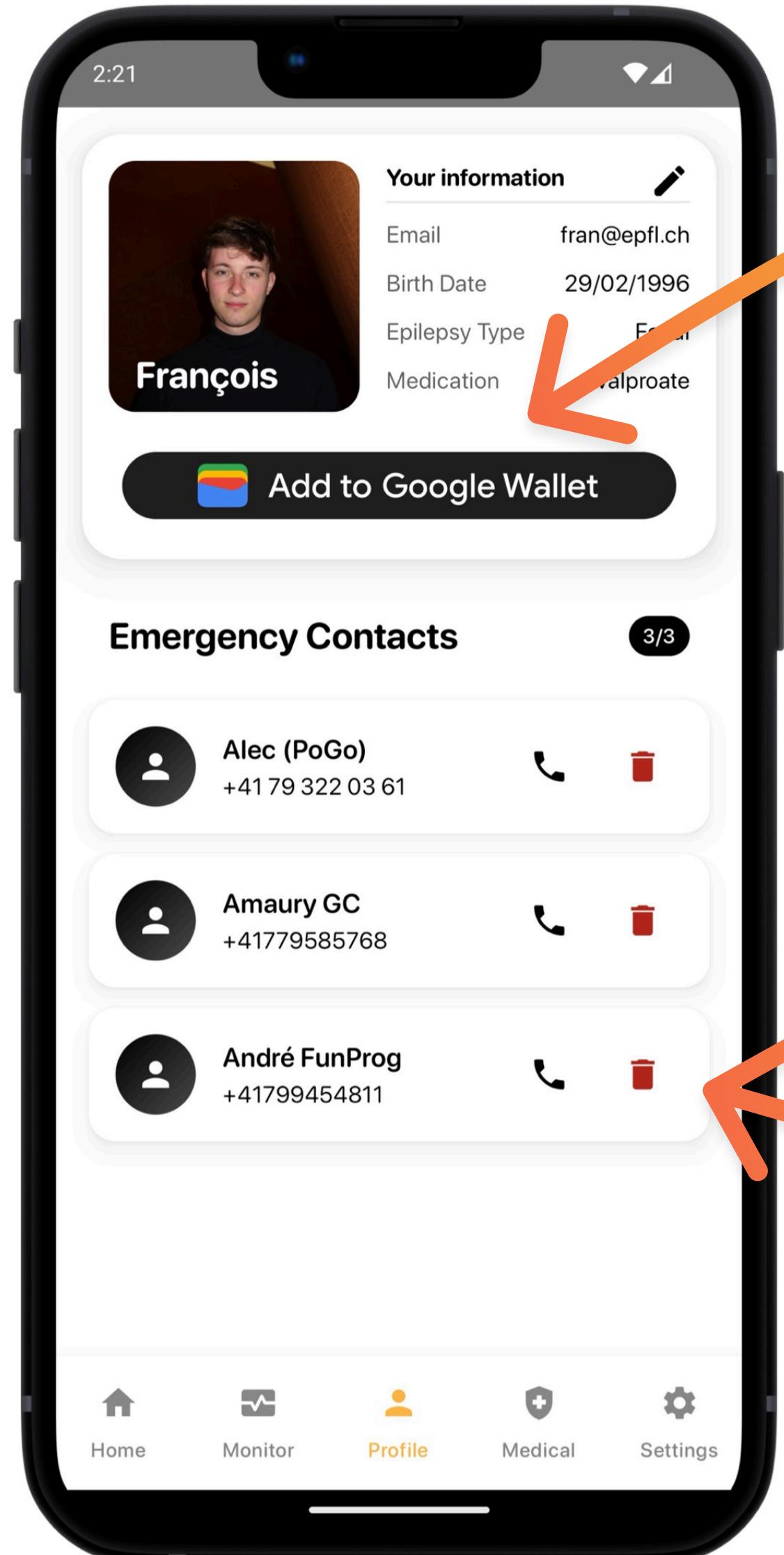


Simple and **engaging** onboarding



Collects **minimal** data

EPFL Profile



Android Wallet Integration

Goal: During a seizure, important information are accessible directly from the patient's phone.



Simple edition of the profile



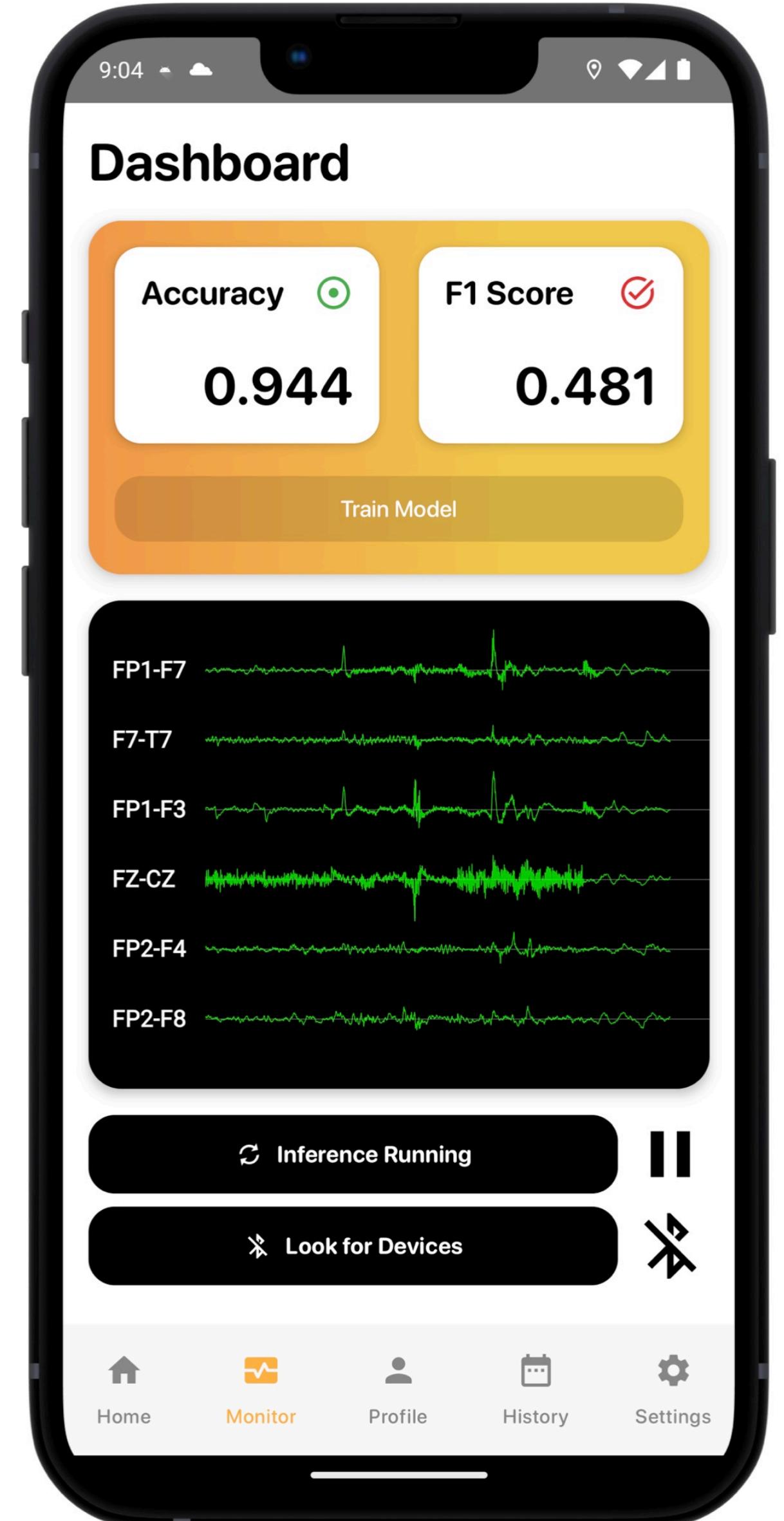
Emergency contact section: User can select up to **3 users** to be called in case of emergency.



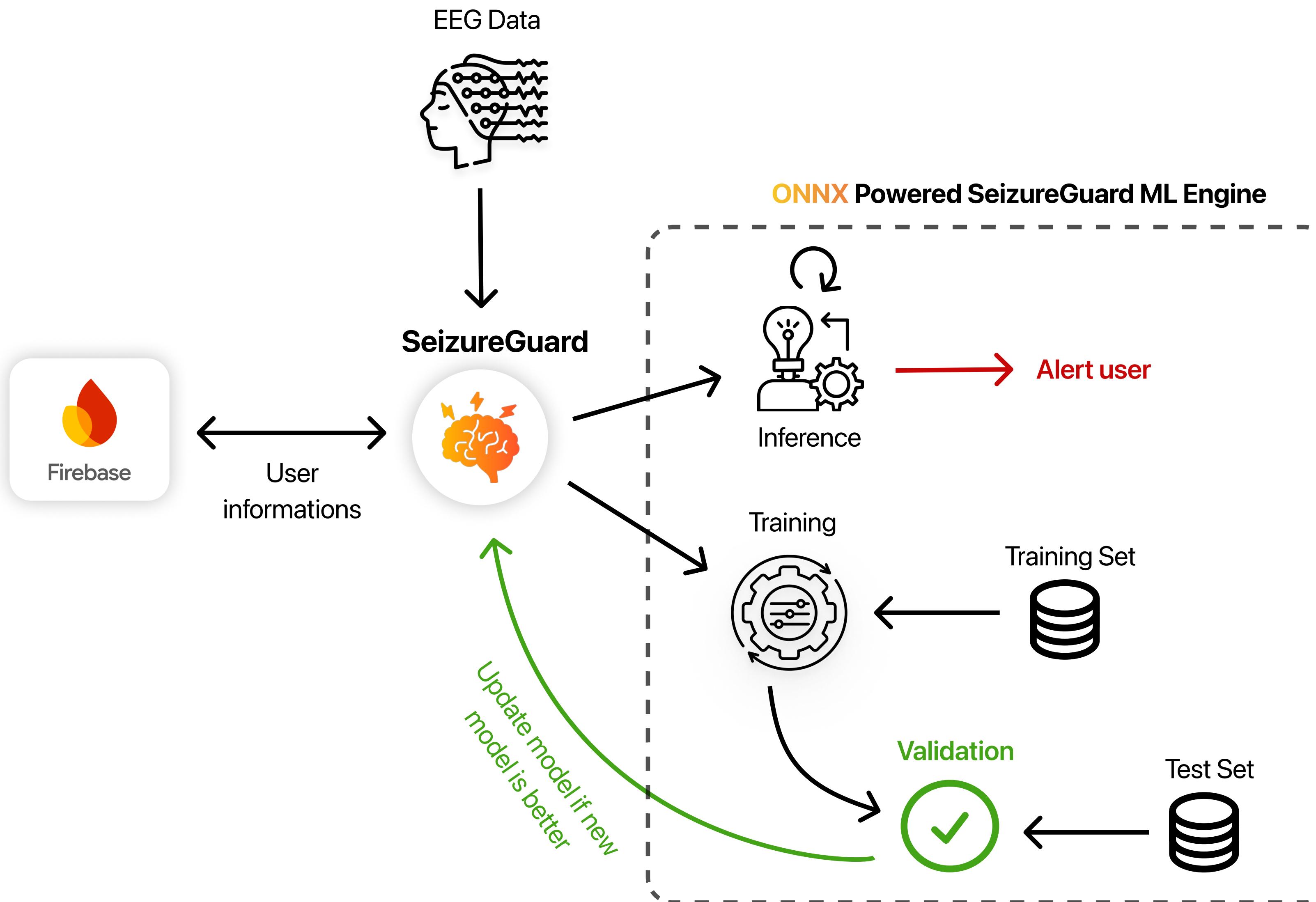
EPFL Inference & Training

Predicting seizures based of EEG data is the **core** of the SeizureGuard!

- ⟳ Seizure monitoring keeps running even with the app closed.
- 📶 Power-efficient wireless communication with Bluetooth Low Energy (BLE).
- ⚙️ When enough data is gathered, user can trigger training to personalize the model and improve its precision.
- ⌚ Possibility of setting the sensor's sample rate to switch among different power modes.
- 🔢 Real time validation metrics to inform the user about how the current model performs.
- 📈 Real time monitoring with interactive EEG Graph for visualization.



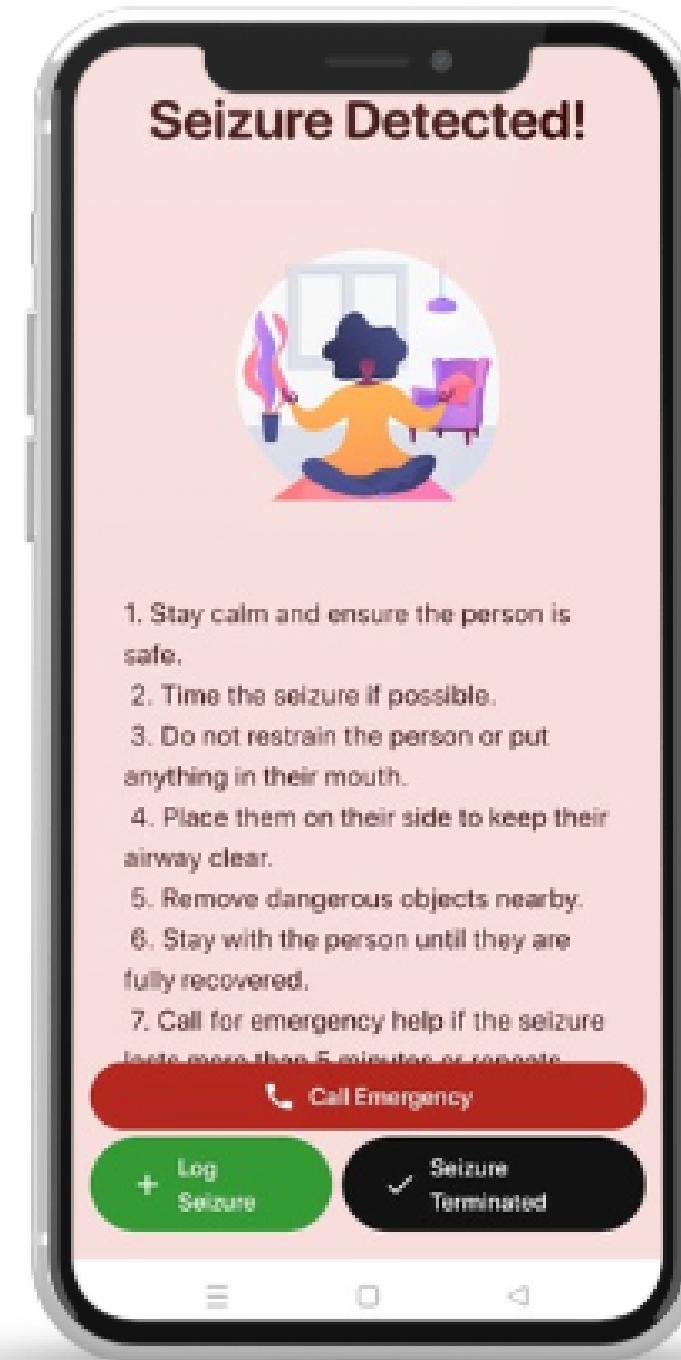
SeizureGuard - App Structure



EPFL Seizure alerts



An high-importance notification is triggered in case of seizure with shortcuts for calling emergency and saving the event into history.



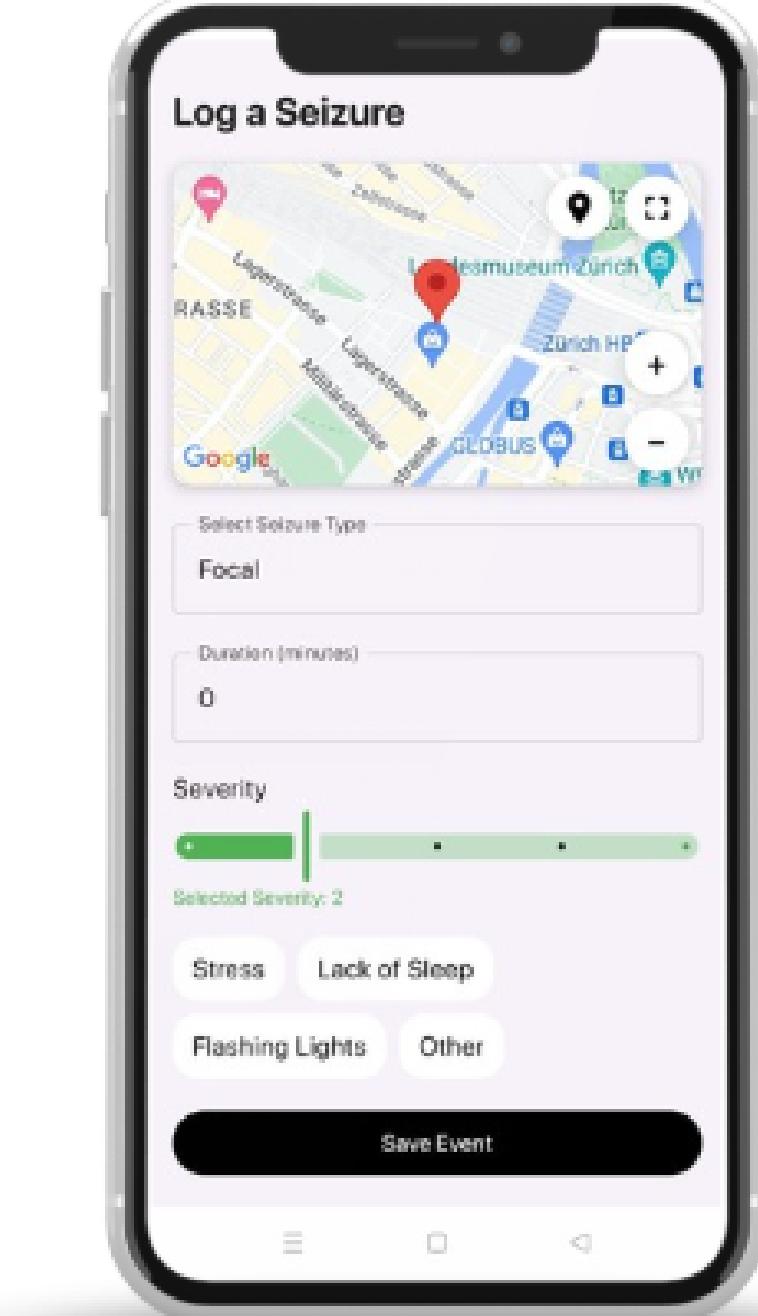
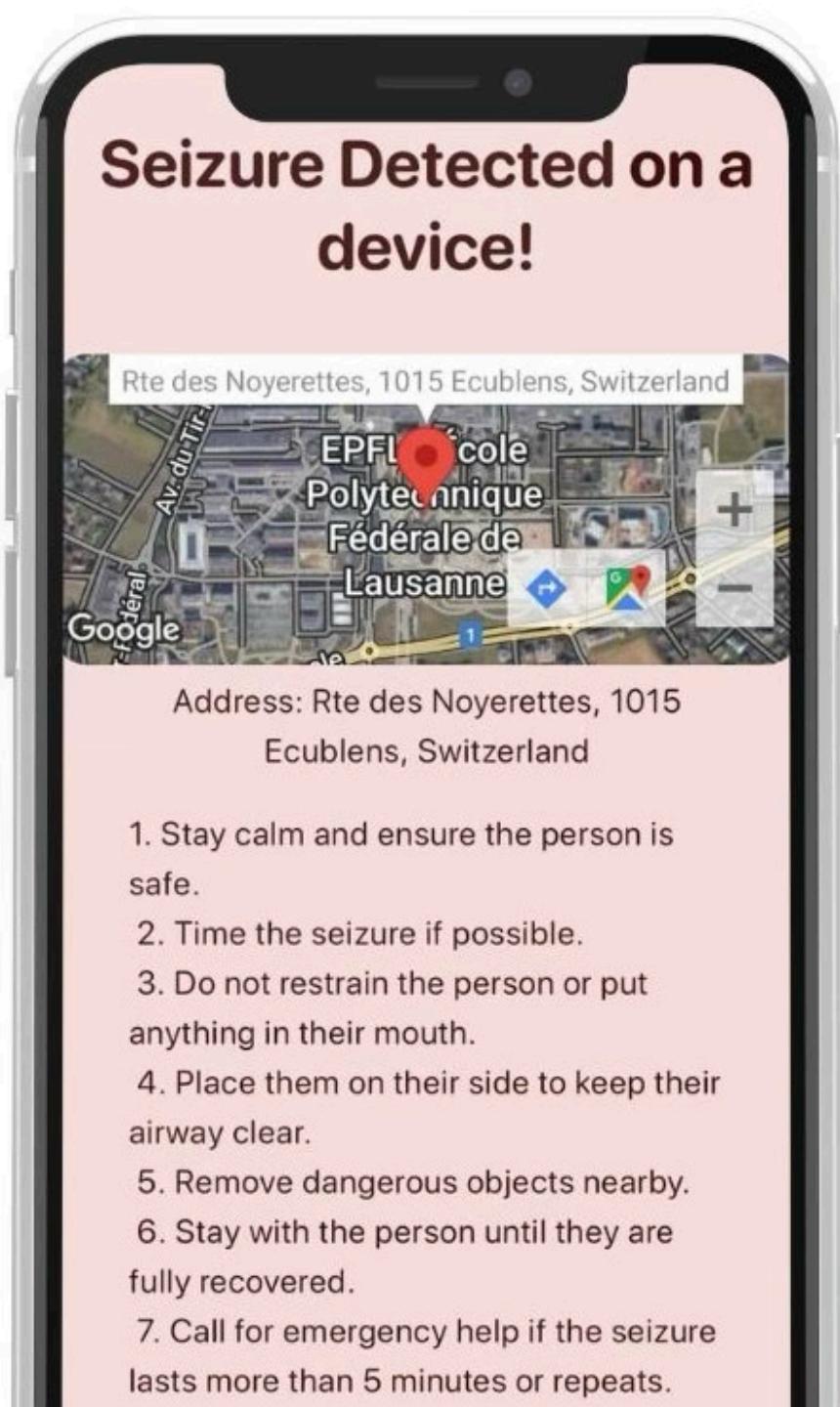
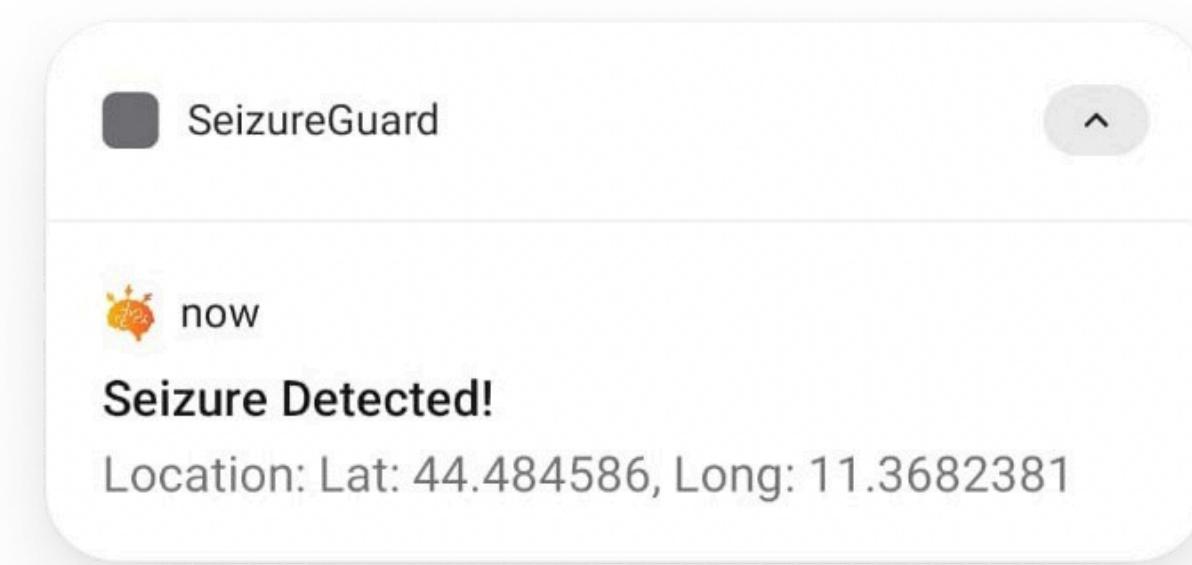
A device in the profile can switch to parent mode to get notifications when seizures are detected in other devices



Allows a caregiver to follow a patient.



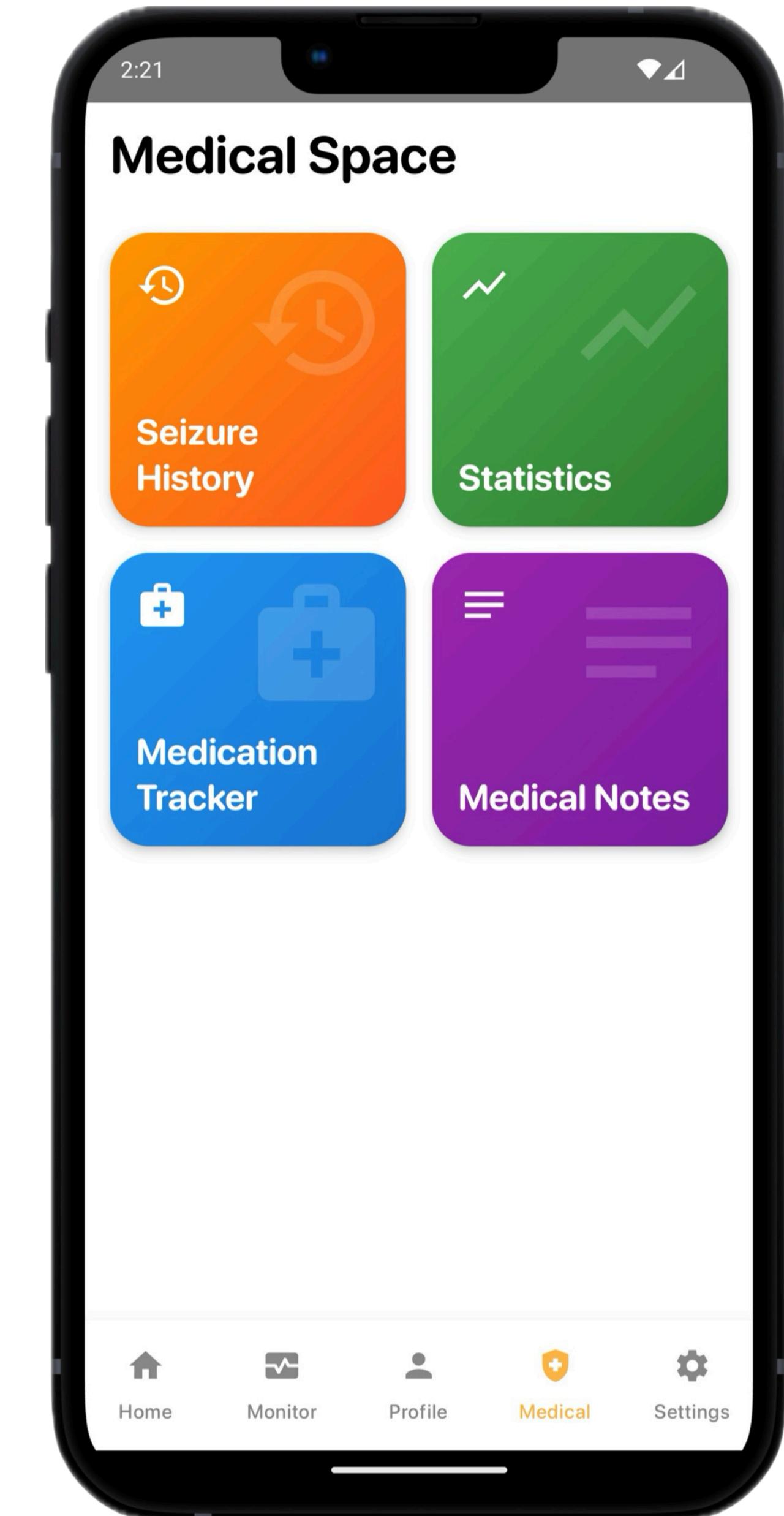
Parent notification also shows location of the seizure just happened.



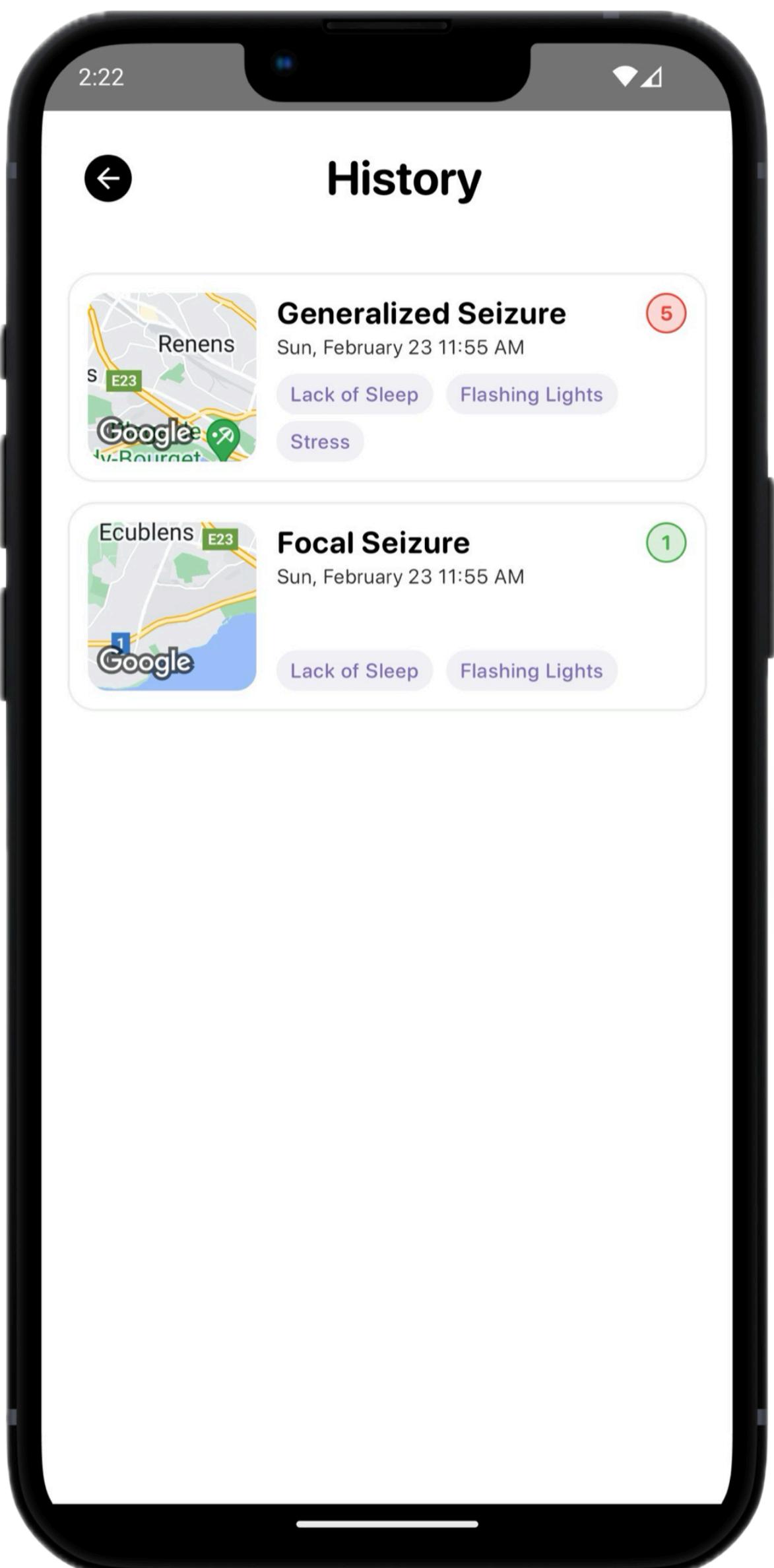
Goal: Make life of patient easier when dealing with epilepsy.

→ Store all personal health information in one place:

- Past seizure history
- Statistics from past seizures
- Medication tracker
- Medical notes

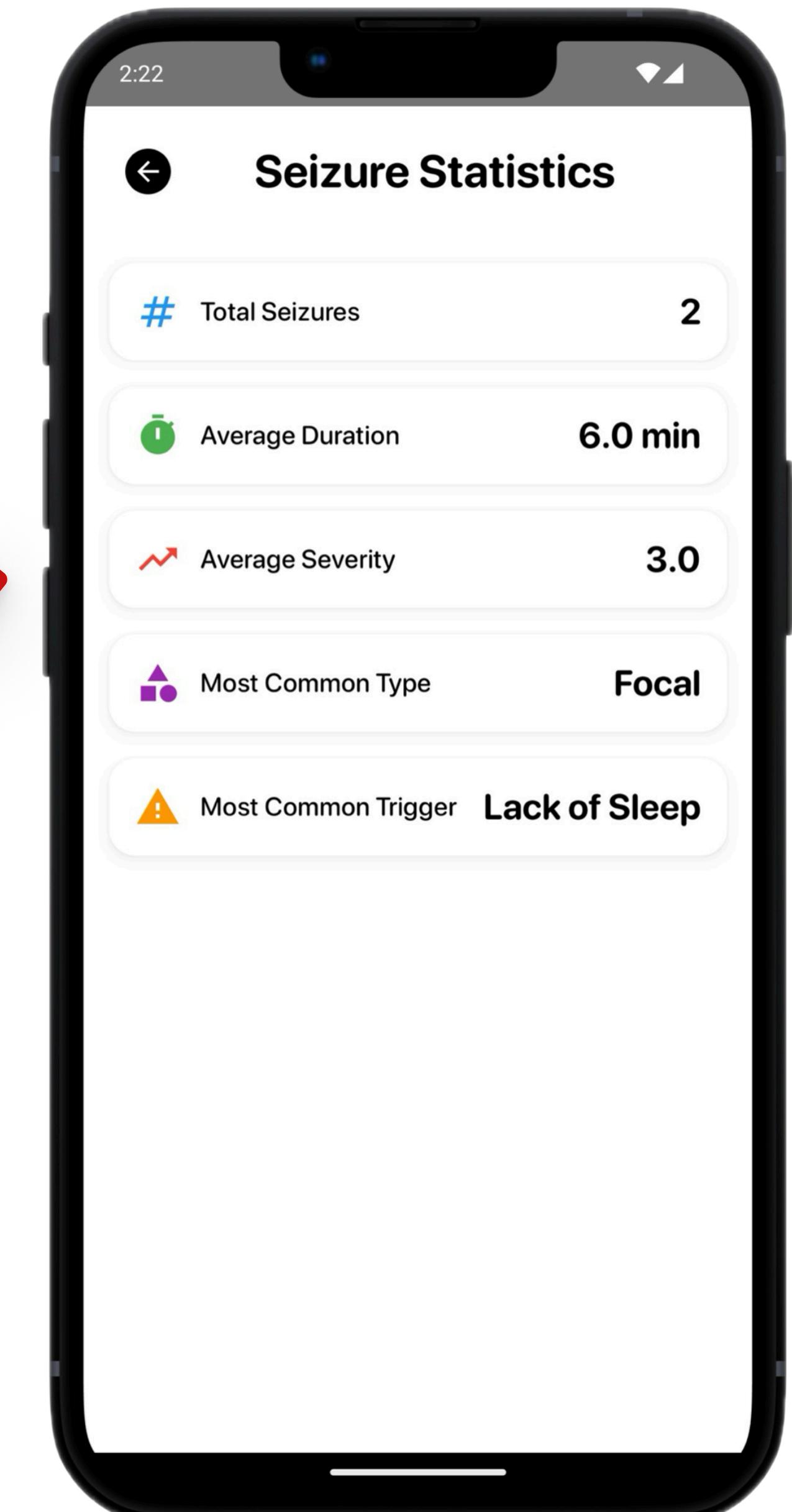


EPFL History & Statistics



History

Records all past seizures with essential details—including location, date, type, and severity—to provide a comprehensive overview of each episode.

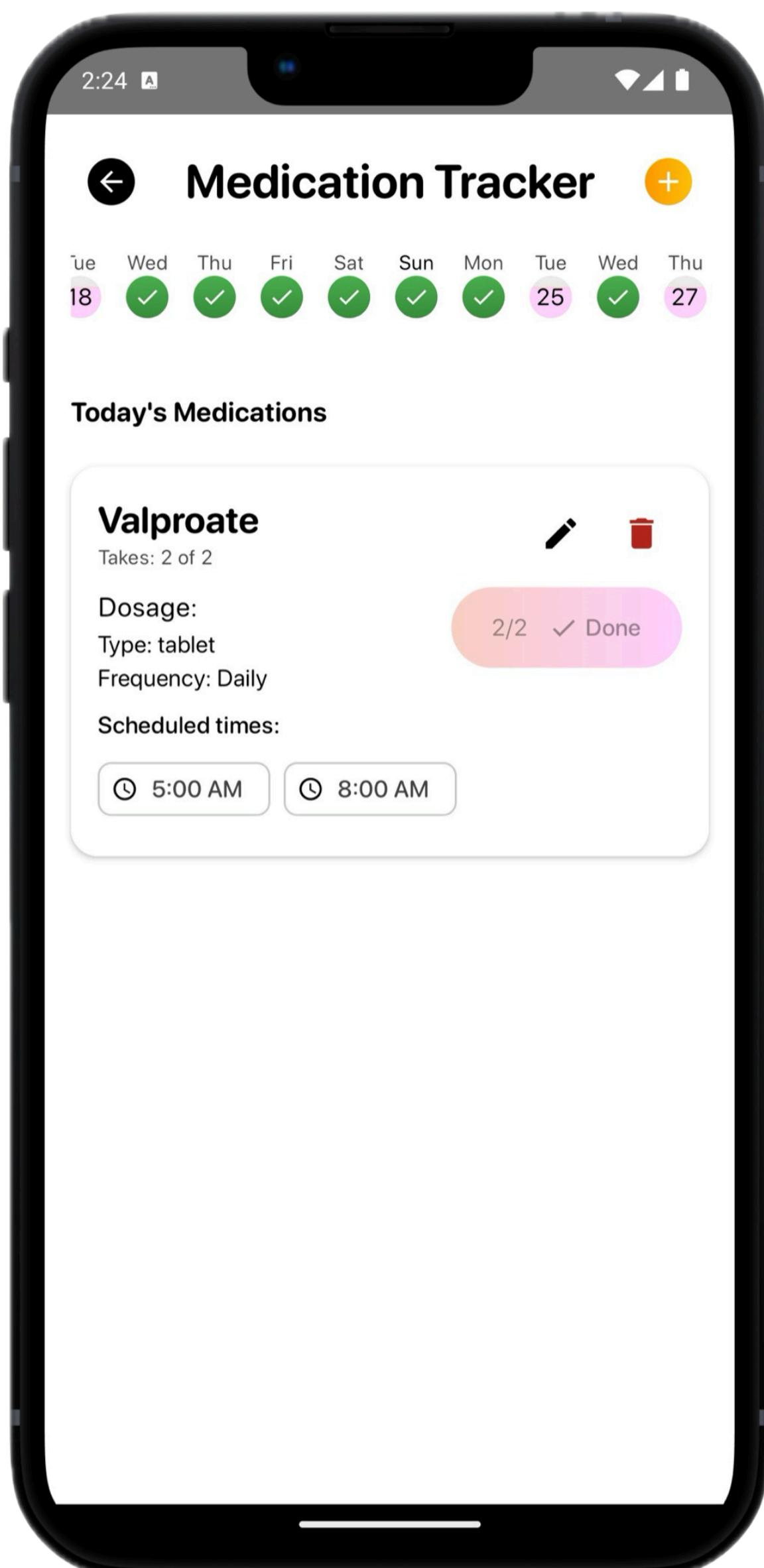


Statistics

Utilizes the recorded seizure history to highlight key factors and identify recurring patterns, enabling the user to better understand and manage seizure episodes

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EPFL Medication Tracker & Medical Notes



Medication Tracker

Designed to help users stay on top of their medication schedule. Through customizable reminders, dosage logs, and refill alerts, this feature ensures adherence to prescribed treatments and helps prevent missed doses.



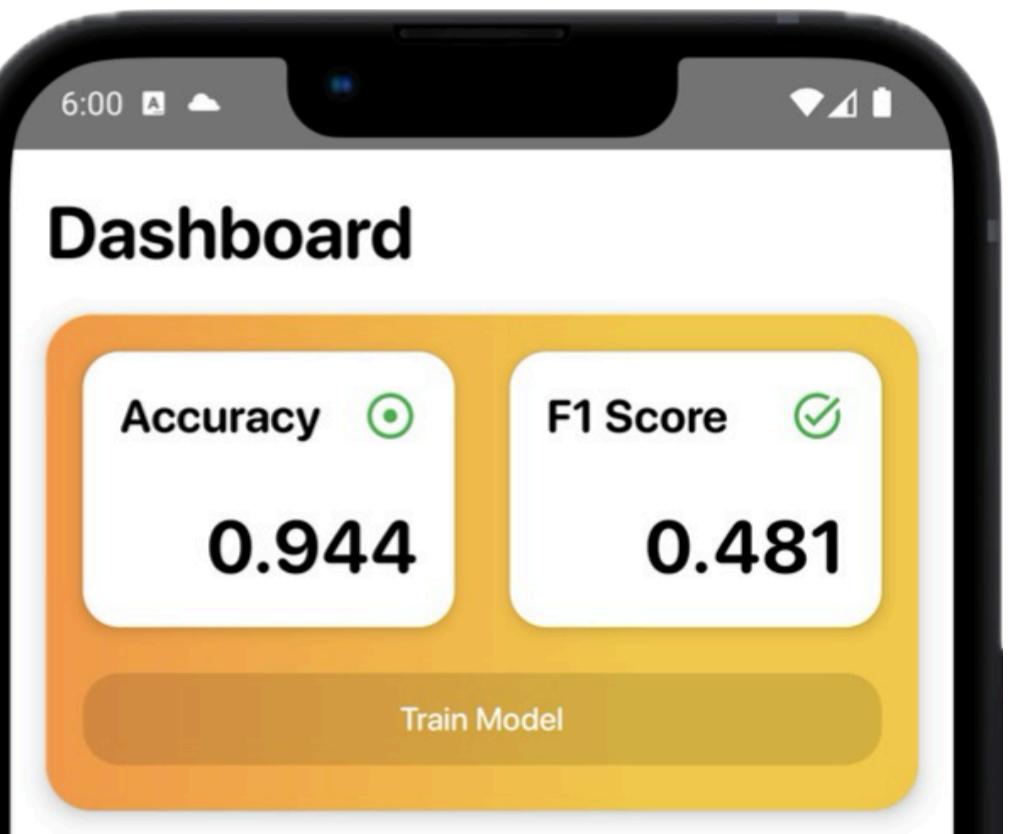
Medical Notes

A dedicated space for users to document daily observations, doctor's recommendations, and any relevant health updates. Easy to keep track of symptoms, treatment progress, and follow-up steps in a single location.

In App Statistics



AI-Powered Seizure Detection



Seizures 8

Home Screen Widget

Roger Federer
078 892 18 94



Francesco Poluzzi
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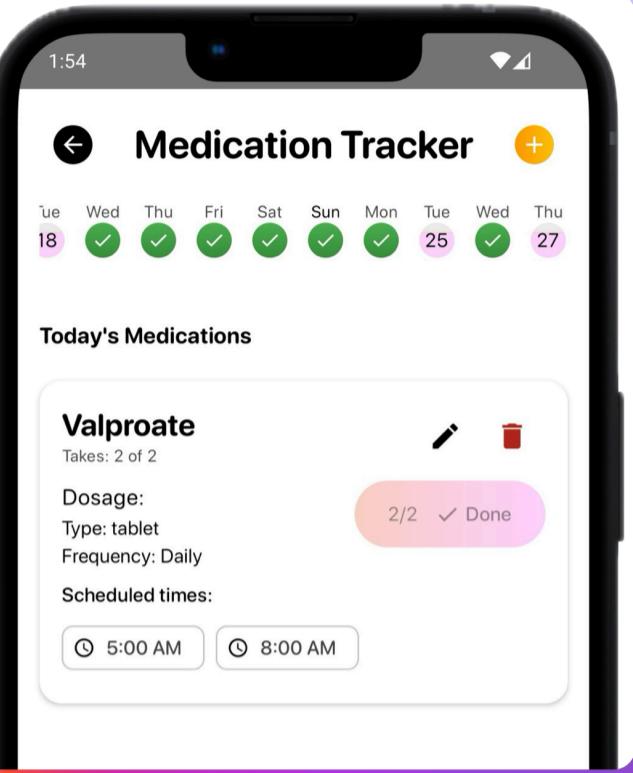


Giovanni Ansaloni
078 892 25 74

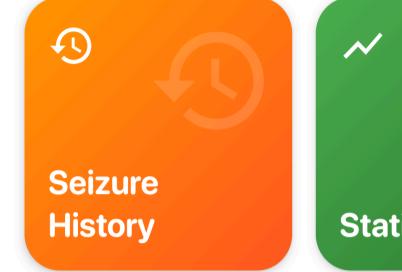


Emergency contact

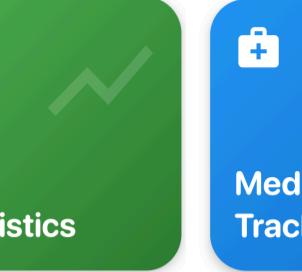
Tracking medication?
We got you!



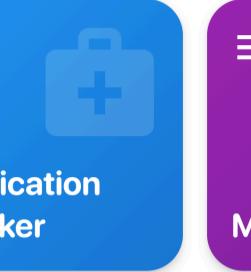
Your safe place. Always.



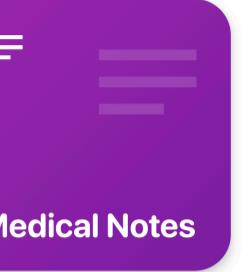
Seizure History



Statistics

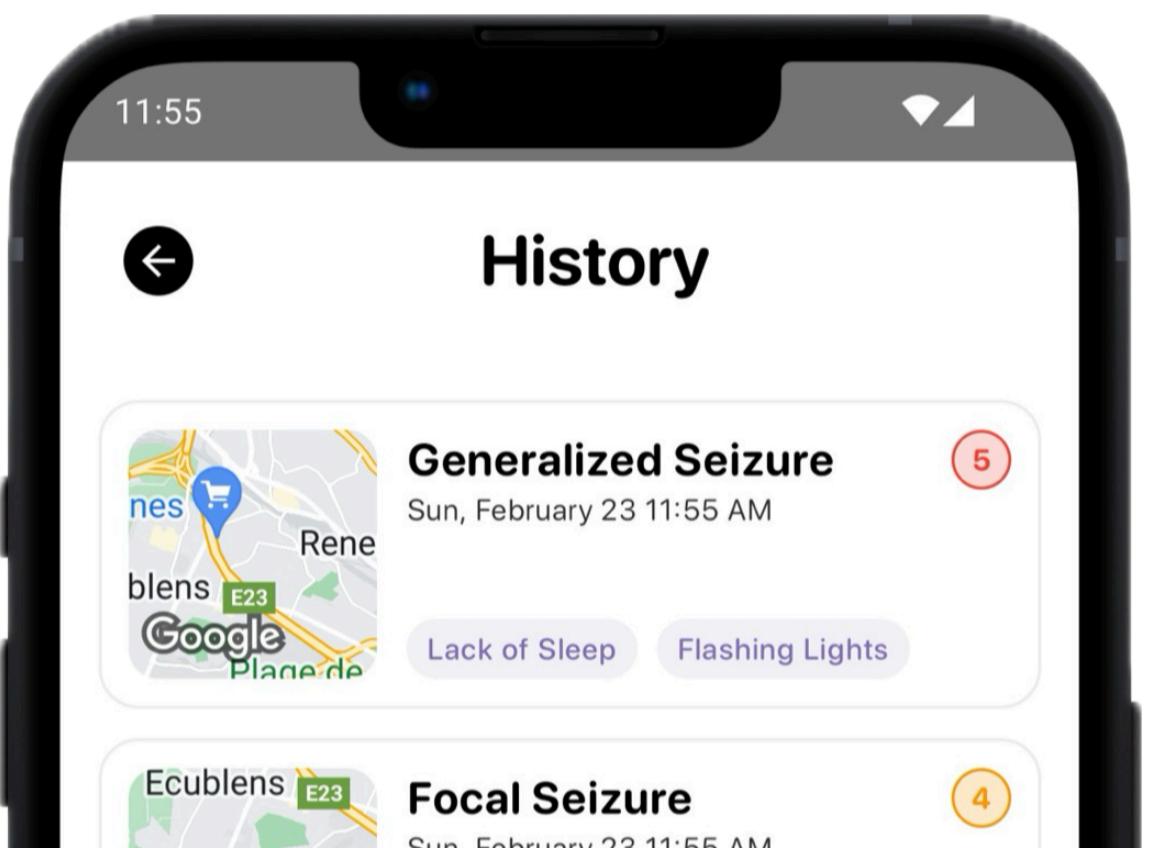


Medication Tracker



Medical Notes

Logging and Tracking of Seizures



Biometric protected



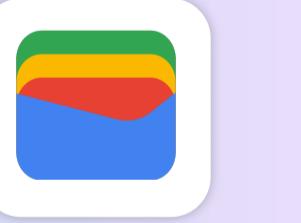
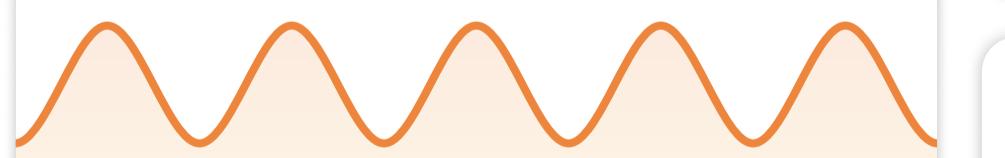
SeizureGuard



Seizures 8

Home Screen Widget

Real Time EEG Monitoring

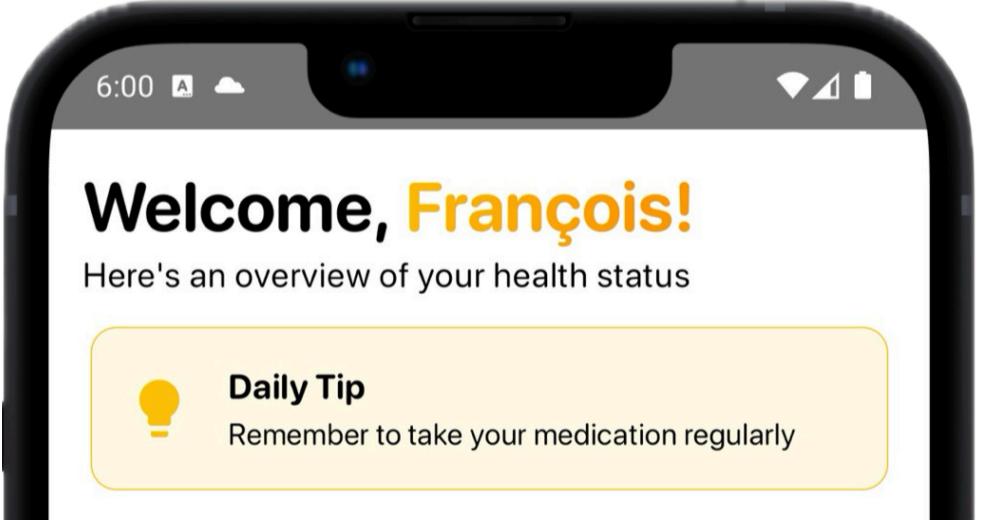


Wallet Integration



Parent Mode

Daily Advice



On-Device Training



Firebase Integration