Detecting Driving Manners Using Accelerometer Data
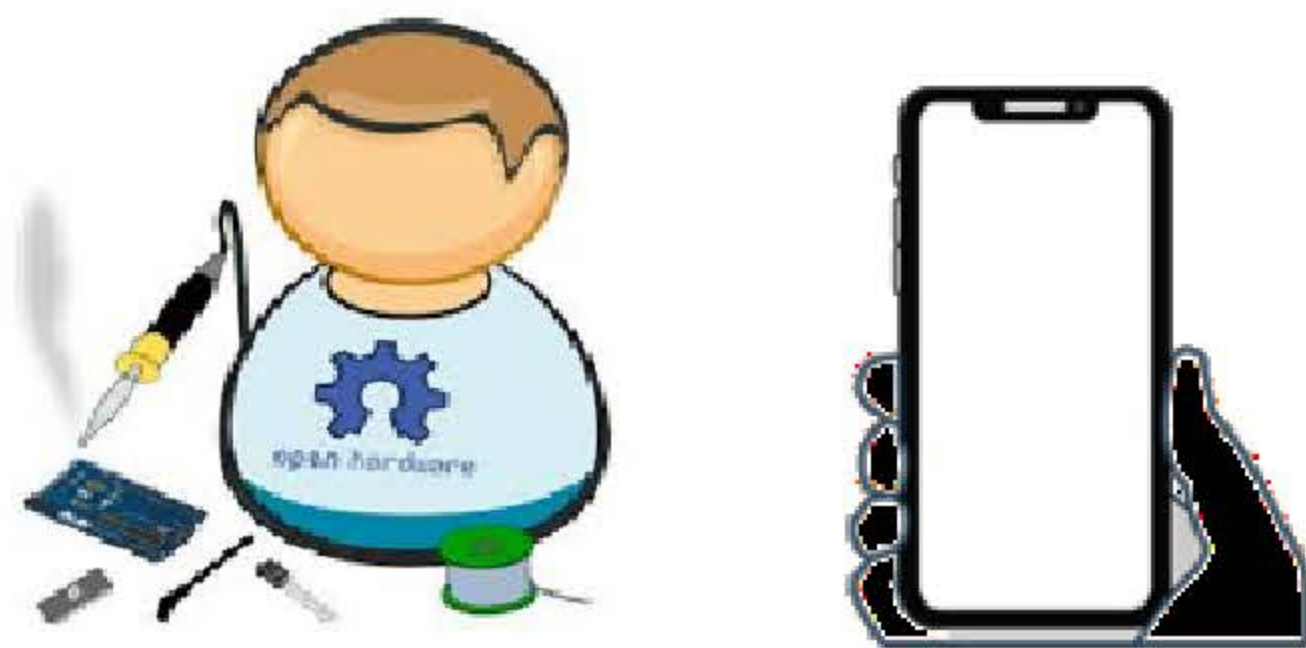
LAU School of Engineering

Motivation

Careless vehicle driving causing frequent car damage and pricy and unnecessary repairs.

Children using their parent's car for drifting and performing stunts without their approval, so they end up with harming the car and causing life threats.

Proposed Solution

Inexpensive and easy to use device that sticks on the car and analyses the driving behavior to finally provide the driving manners to a mobile phone application.

Features

- Attach Anywhere in the Car
- Calibrate Only Once
- Accurate and Reliable Outcomes
- Covers Most Faults
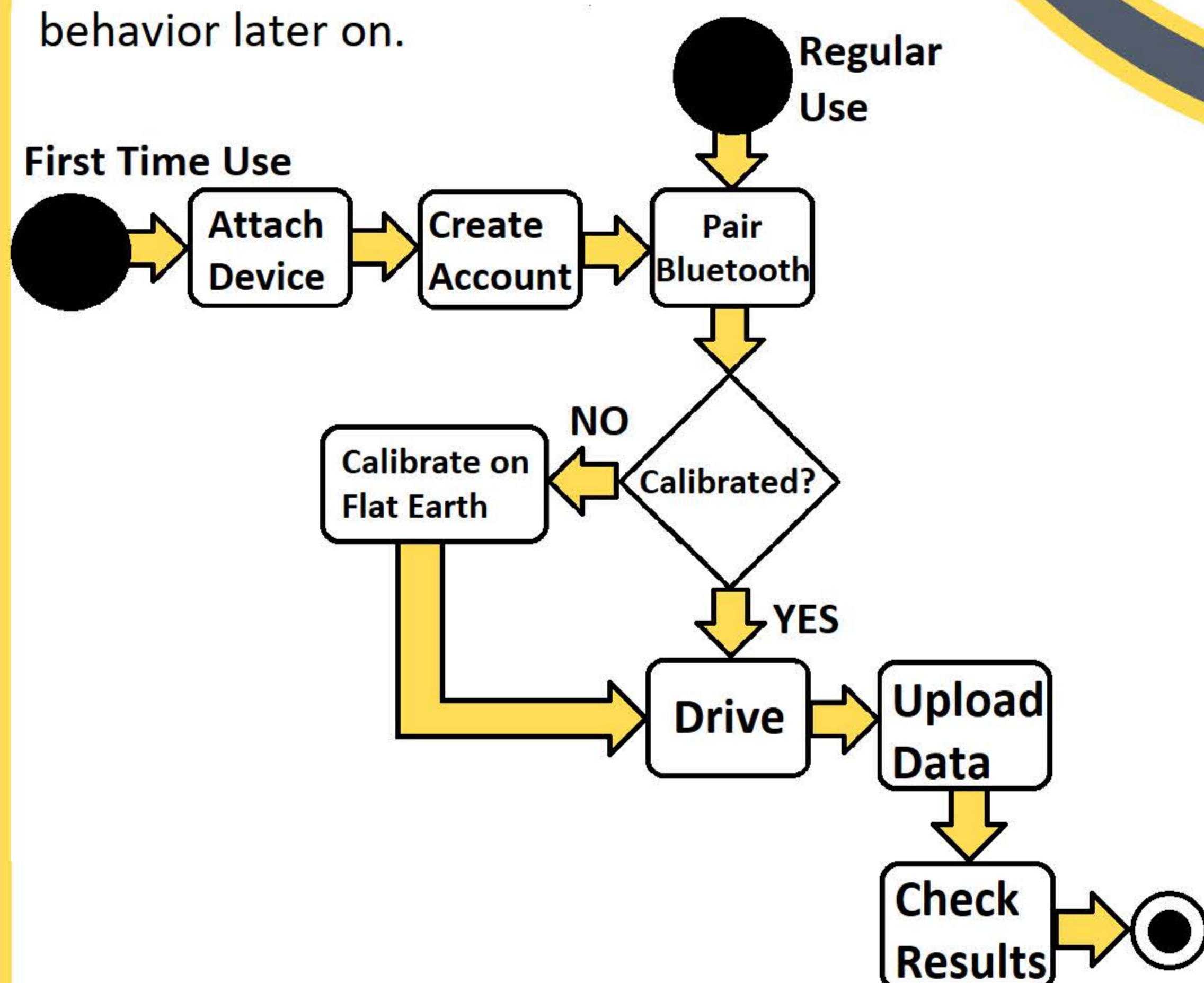- Ergonomic Mobile Application
- Easy to Use
- Only at **$25**

Mobile Application

The mobile application will analyze the measurements and reports the results to the car owner. It has two modes: one for the driver to upload data, and the other for the boss to track the driving behavior. It is user friendly, uniquely designed and informative.
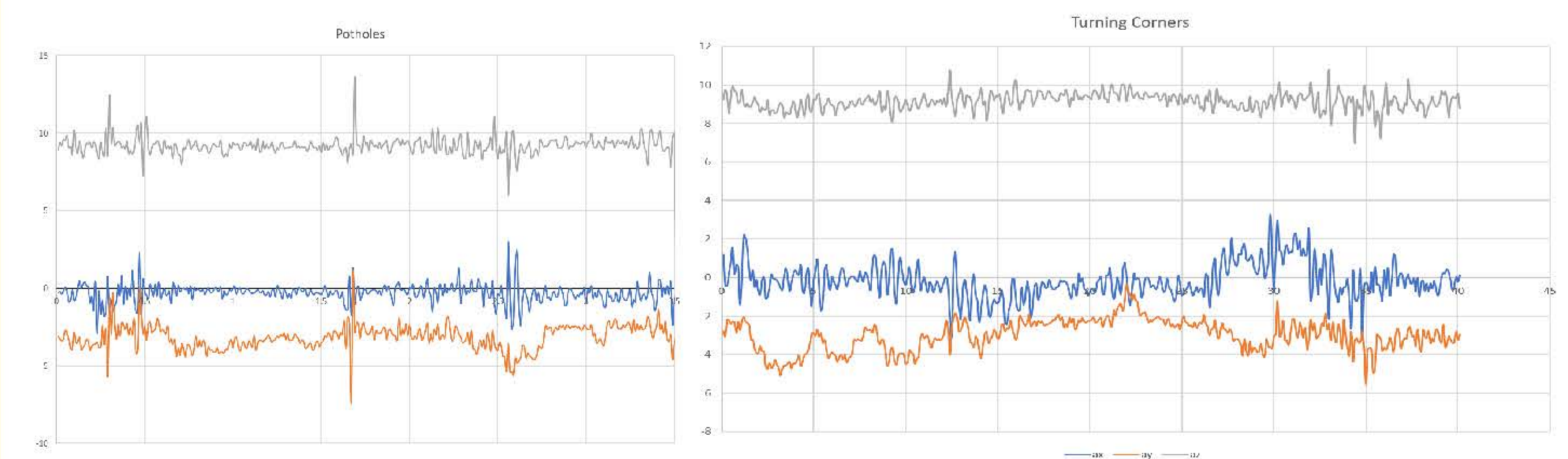
How to Use

Once the user creates an account, attaches and calibrates the device, the product will collect data while driving for the car owner to track the driving behavior later on.

First Time Use → Attach Device → Create Account → Pair Bluetooth

Regular Use → Pair Bluetooth

Calibrated? → NO → Calibrate on Flat Earth → Drive
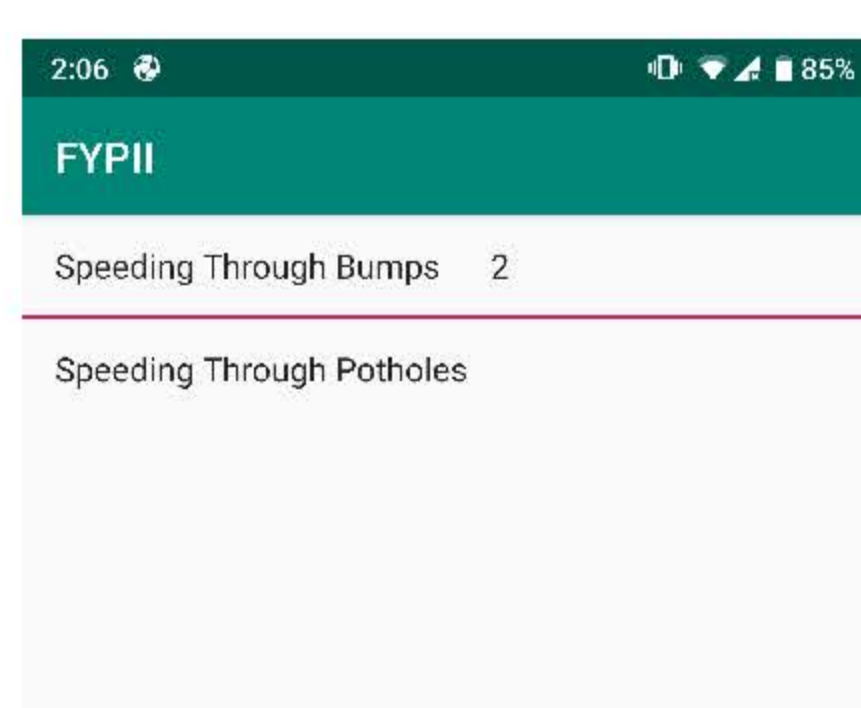Calibrated? → YES → Drive → Upload Data → Check Results

Statistical Learning

The device has unique and incredibly accurate techniques to classify faults. Faults like: speeding over bumps and potholes, fast change of lanes, unsafe acceleration or deceleration and even drifting can be detected using algorithms that were learned from data collected to each and every case. The methods rely on observing the acceleration on the 3 axes of the car and noticing bizarre and spiky behavior of the measurements.

The device is a solution for frequent vehicle damage in companies and homes. Its small size, low power consumption, and cheap cost make it very handy and efficient in detecting driving manners in addition to a mobile phone application that facilitates the user experience. The ergonomic design of both the hardware and the software gives the device an enormous advantage in terms of practicality. Also, the accuracy of measurements and analysis makes it a reliable tool to be utilized by companies.

FYPII

Speeding Through Bumps   2

Speeding Through Potholes

Advisor: Dr. Chadi Abou Rjeily

Group Members:
Milad Bassil
Nabil ElMasri
Youssef Shakrina

LAU
الجامعة اللبنانية الأميركية
Lebanese American University