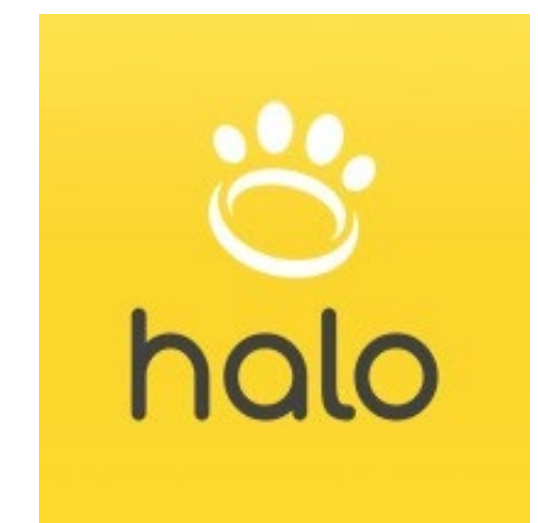# Halo Collar
Wireless Leash

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Abstract

The Halo Collar – Wireless Leash project is aimed at creating a wireless leash that allows users to keep their dogs within a certain distance during a walk. The project focused on research and data collection for different hardware found within the collar, the hardware included: Bluetooth, GPS, and accelerometer.

For all the listed hardware, the team was responsible for finding the most accurate one and alternatives if the most accurate one became unreliable or unavailable. Using a combination of these three would allow the application to ascertain the distance with reasonable accuracy between the user and the dog. We would develop an algorithm that is able to satisfy this goal.

Keywords: Geopositioning, Wireless Collar, Data Analysis, RSSI

Architecture

Android and iOS Applications
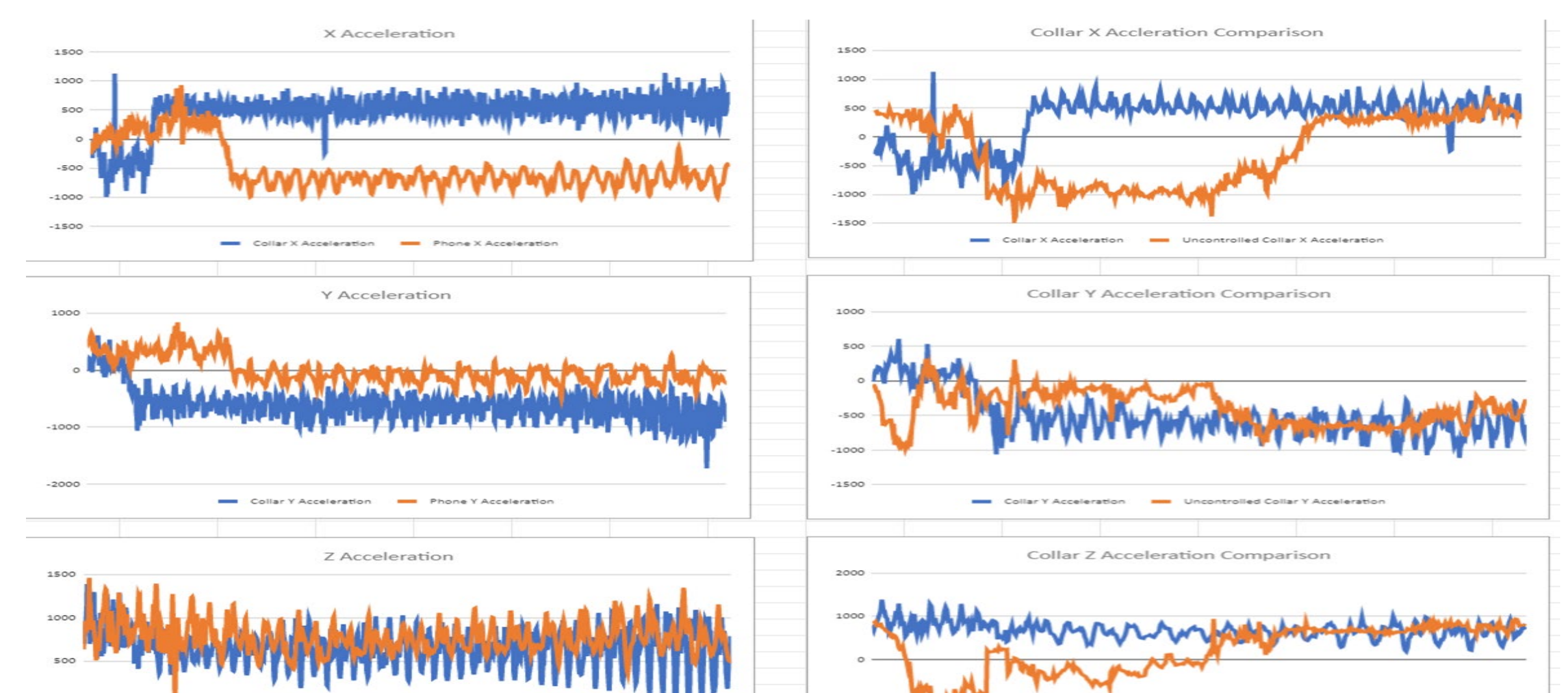- SensorLog
- Accelerometer Analyzer
- Halo Collar
- NRF Connect
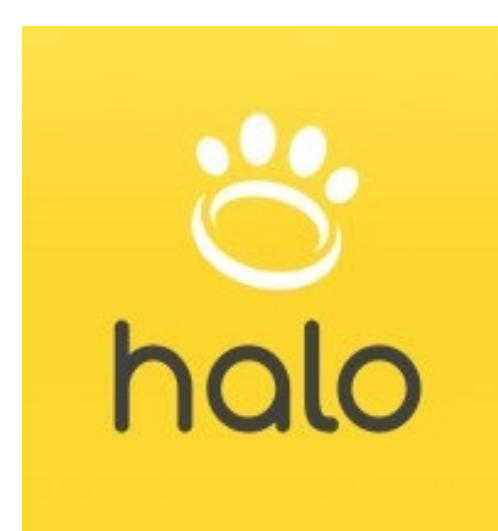
Backend and Database
- RealTerm - Microsoft
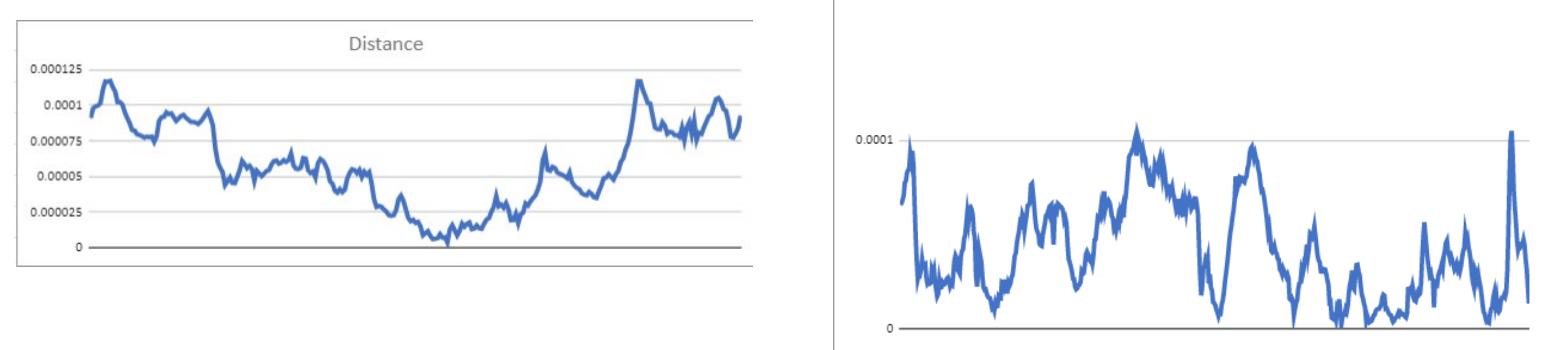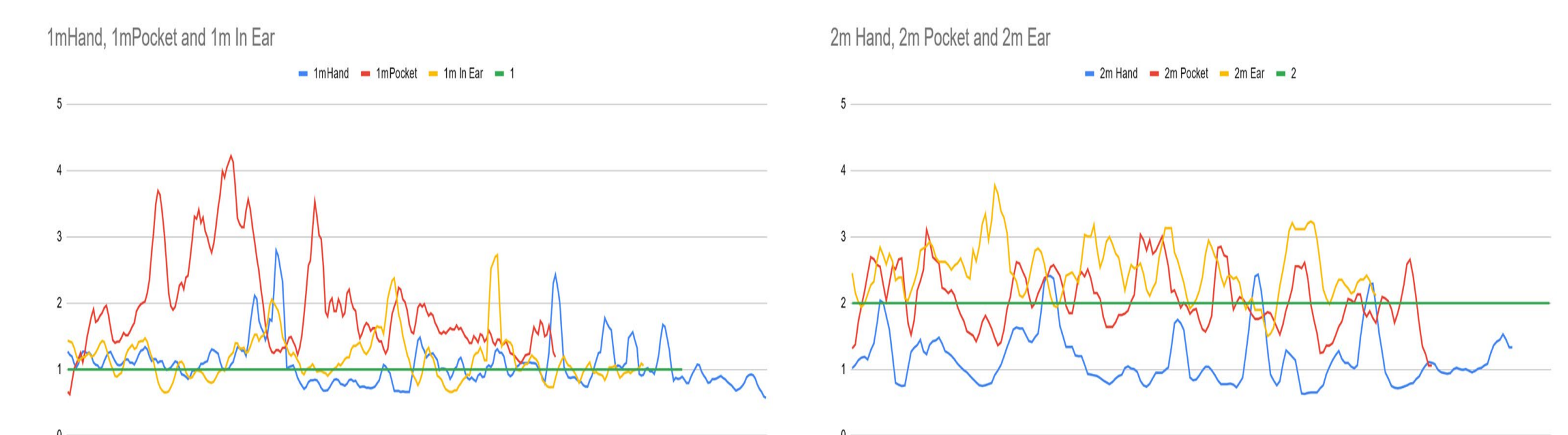- CoolTerm - MacOS
- Microsoft Excel

Results

Accelerometer

GPS

Bluetooth

Impact

The purpose of this project was to find the most accurate method in finding distance between the company's product (Halo Collar) and the user's phone (Android or iOS). From data collection and analysis, we have concluded that the best method for distance measurement that is less than 3 feet is by using Bluetooth and the best method for distance measurement that is further than 3 feet is via GPS. With this information, we hope to save the company time and resources in data collection and analysis.

Performance

- Weekly task completion rate: 90%

- Data analysis is complete but algorithmic analysis is left uncompleted

Summary

- The percent error for GPS increases as distance decreases, therefore GPs is the best method for long distance measurement.

- The best method for short distance measurement is using Bluetooth, although its signals do through many bridges.

- Accelerator can be used to a certain measure when the dog is moving or just sitting.