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Poor to Proper Posture

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Abstract

The Poor to Proper Posture goal is aimed to help people fix poor back posture such as hunching and build healthy posture habits. Our product uses curvature sensors which separates from the back posture market that uses either posture braces or gyroscopes with accelemoter technology. The system can communicate with your phone to calibrate hunching and correct posture while give you data based on user's performance. It is battery powered to last the typical work day and uses inductive charging for the user's convenience.

## Problem

Block Diagram
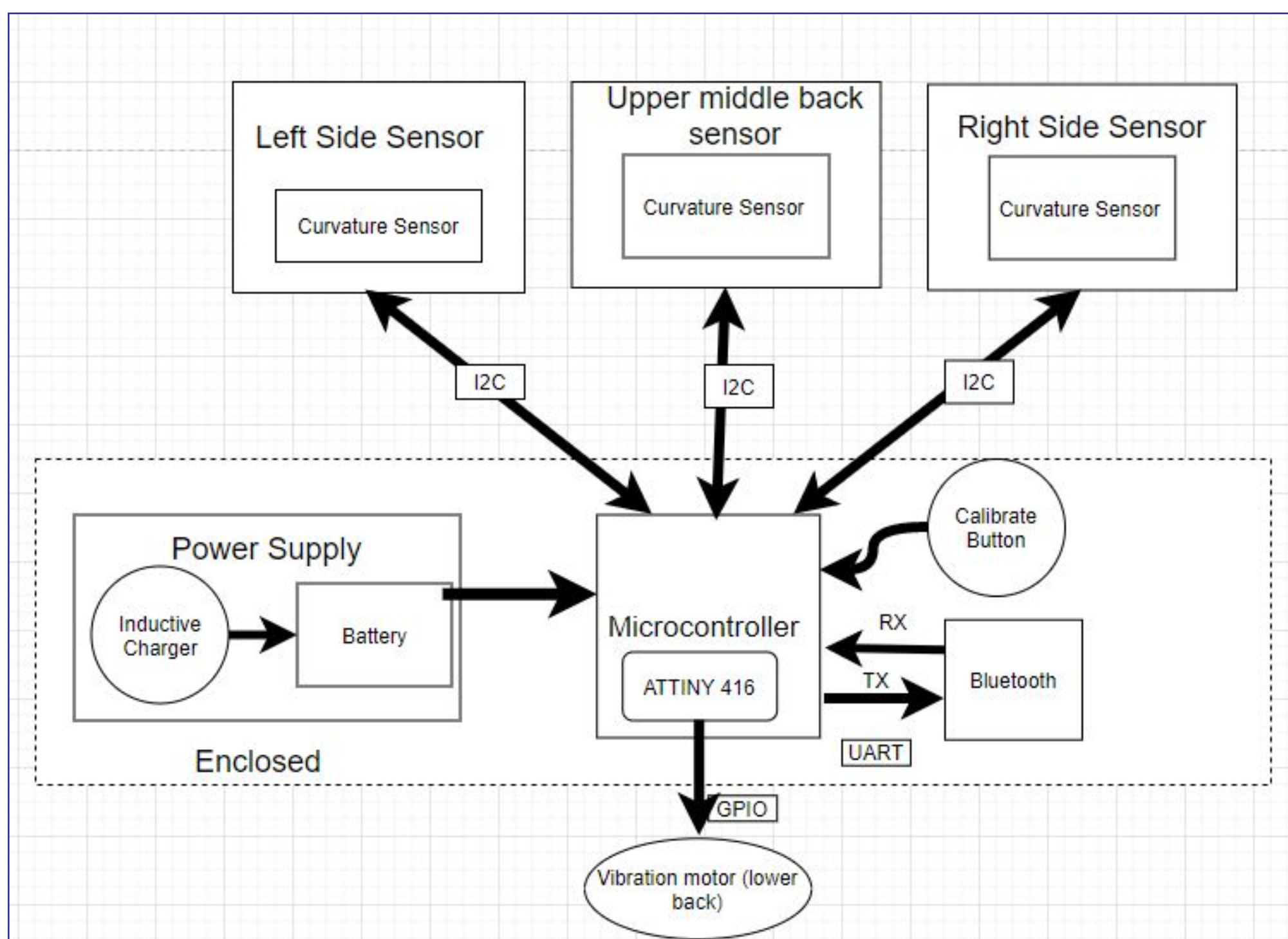
Specifications

Requirement	Specification	Value
portable	weight	<.5lbs
	size	<10cm2
	battery powered	<lasts 20 hours
	inductive Charging	<charges in 5 hours
responsive	latency	<every .5 sec sample
safety	sweatproof	IPX 4

System Overview

The Poor to Proper Posture system communicates with the curvature sensors to determine the angle of the user's posture. Then the microprocessor will calculate the percentage of the users posture compared to hunching level based on the initial calibration of the proper and hunching posture that was set by the user. Once the hunching threshold is met, the vibration sensor will start buzzing within 5 seconds, if the user hunches for at least 4 seconds consecutively in that period(to account for miscellaneous daily actions such as picking up objects off the ground). All the while sending constant data back to the app to give a graph of the user's progress, to help them know how often they are hunching and what their posture is like. As a result helps build healthy posture habits through vibrations on the back compared the the back brace which is a more forceful method.
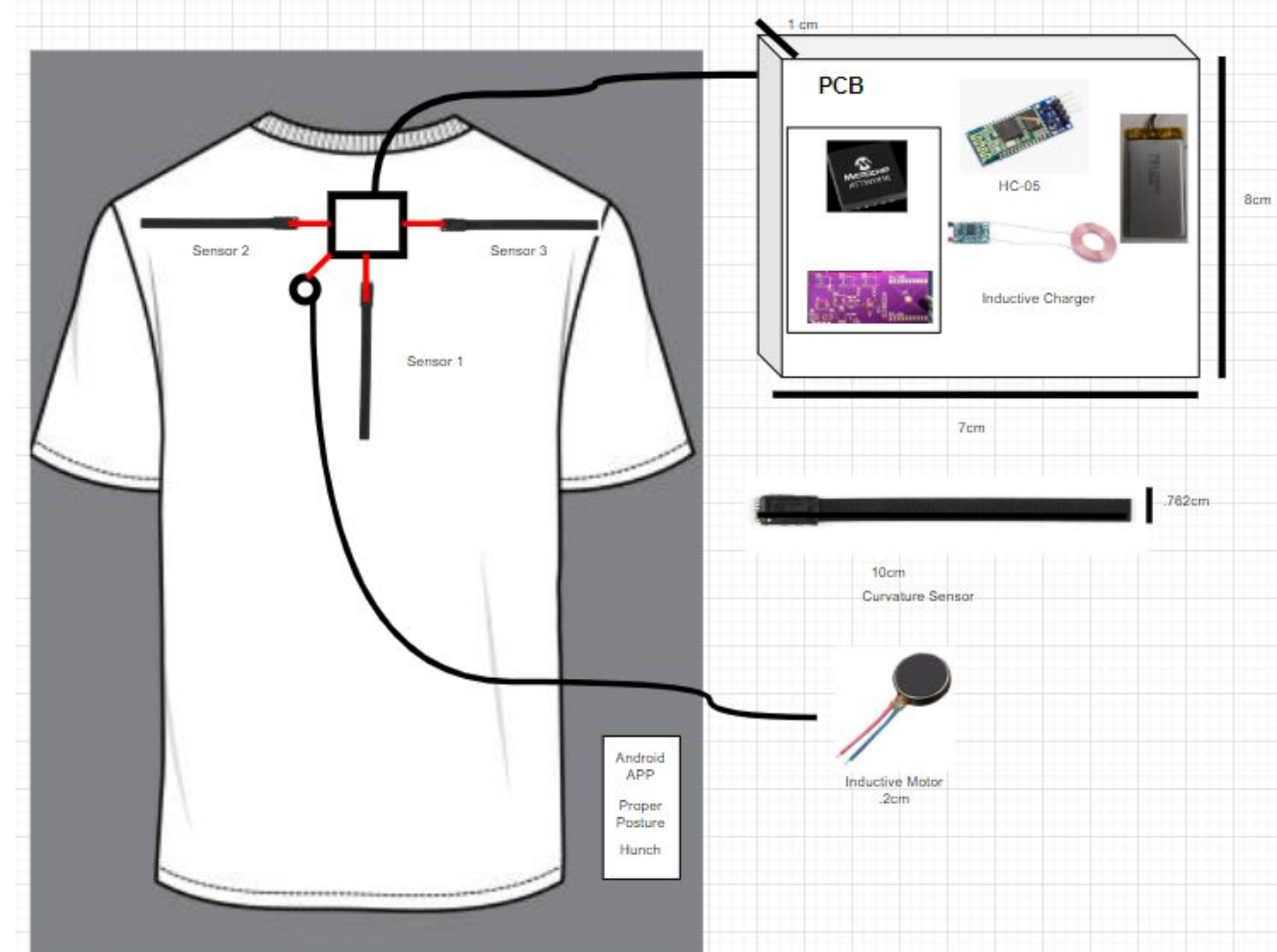
Results
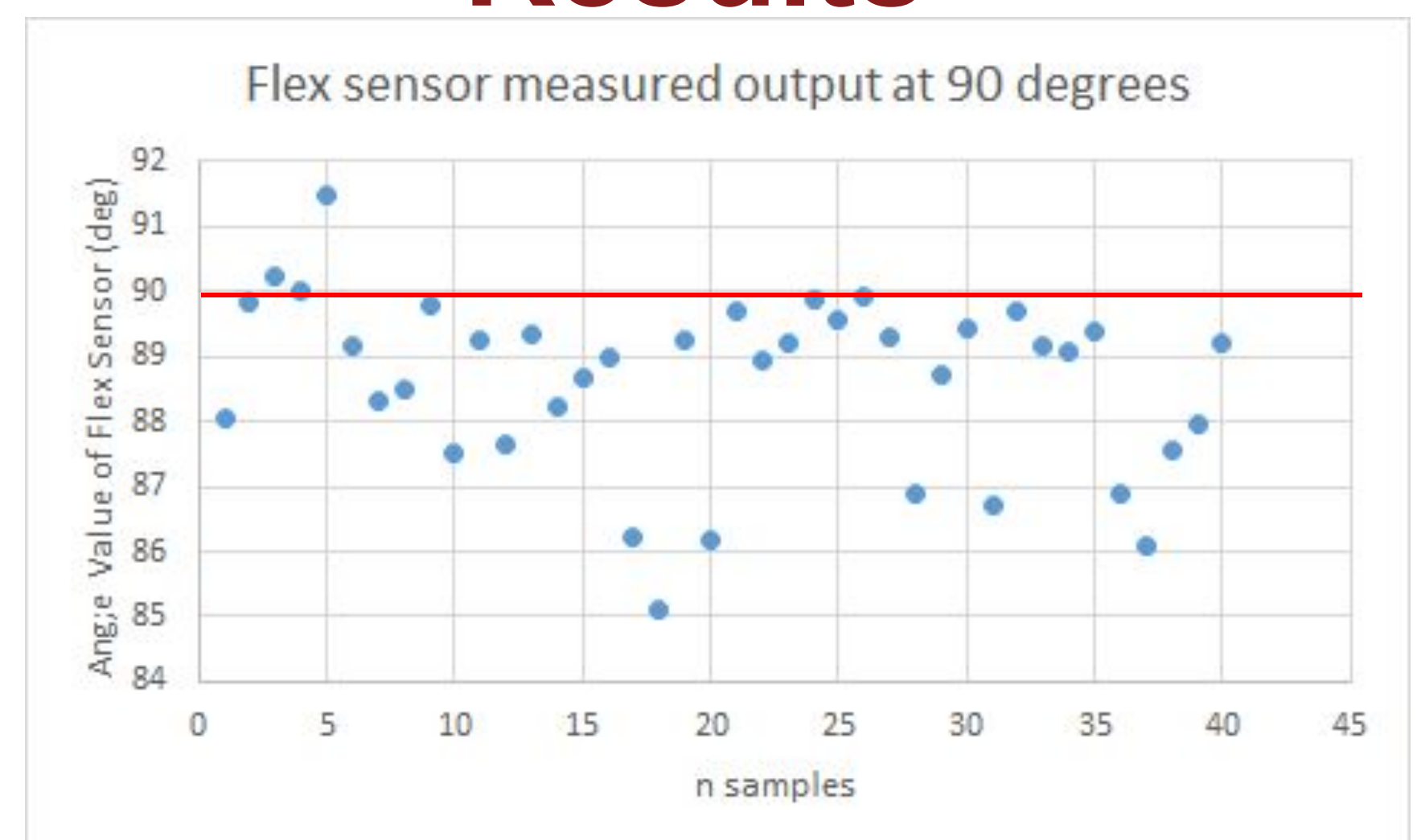
This is the chart reflects the accuracy of our system when calibrating against a 90 degree angle, which has a mean of 88.6 degrees and a standard deviation of 1.335. This shows that the accuracy of our sensor is only a few degrees off from the true angle value giving us evidence that our product would be reliable and accurate overall.

Acknowledgement

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