Project Charter for *iPhone Breathalyzer* for EE149 David Stanislowski
March 8, 2012 (rev 1) Nathan Collingridge

iPhone Breathalyzer Overview

A compact breathalyzer that communicates with your iPhone through the 3.5mm Audio Jack. Self contained as a dongle for your keychain you will never leave home without it. Combined with iOS and many features provided by your mobile device, you will have a novel approach to determining whether getting behind the wheel is a good idea given your current conditions.

Project Objective

This project addresses a major problem. According to the CDC, rates of self reported alcohol-impaired driving is down (compared to prior years) but are disproportionally high among young men (ages 18-24) (Source: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6039a4.htm). The objective of this project is to target this segment through a fun, tech savvy mobile hardware component/application that will shed a new light on intoxication awareness, and provide opportunities for making better decisions that will prevent DUIs and keep roads safe.

Approach

We are applying an agile like method with emphasis on rapid prototyping - both hardware and software. The first phase will be a very low-fidelity sensor connected to the microprocessor running a basic state machine to communicate with the mobile and read the data from the sensor. The first phase of the iOS application is to implement the app's state machine and simple UI to perform the test. Once complete, we will iterate over this to improve the sensor's accuracy, speed up communications and add features to the app, such as game like sobriety testing.

Major Deliverables

A working hardware software prototype that measures a users relative BAC (blood alcohol content) through their mobile device. A bill of materials for the hardware component and an application that can be released to the app store.

Constraints

We have two group members that should each be able to commit 3 hours/week during the regularly schedule lab sessions as well as 1-2 hours extra. Time will be our major constraint. We have access to ample computing power and enough programmable controllers that we will not have to share. We can purchase custom PCBs online for 2-day delivery. Any electronics components we need will be cheap and readily available. We only have one mac to develop the app on between the two of us.

Risk and Feasibility

There are numerous examples readily available online of a breathalyzer constructed using Arduino and the same 5V sensors we purchased. The risk here is working with HiJack, a device construed for harvesting power and communicating with a mobile device all through the audio jack. The concepts have been proven, but this project will aim at driving a marketable application.

Success Measurements

Success will be measured by the cost of the hardware's BoM (bill of materials). It will be necessary to keep this as low as possible, <$20. An additional metric is the level of engagement it provides. This is measured by face value of the application - do people enjoy taking this with them to the bar and "play" with it among their friends? This is a fairly subjective metric and will require analysis among a large set of target users (n > 20).

Signatures

Name _____ Date _____
Name _____ Date _____