**ALS app**

Description: This app uses a small camera, raspberry pi and LED light to communicate between a patient with ALS and their caregiver. Using computer vision language (in C), the camera on the raspberry pi detects how many blinks the patient does and relays that message to an app that the patient’s caregiver has. The LED on the raspberry pi lets the ALS patient know that the caregiver (or someone) received her/his message.

Inspiration + Goal(s): First, I’m an ICTD student so designing an application for a normally marginalized user population is right up my alley (and my goal is not to become an app developer, but rather a designer and entrepreneur working in many different fields). Second, I’m taking Abhishek’s free BTU lab and I would really like to integrate electronics and software in a real way. I’m fascinated with IoT and network connections and would really like to learn how to code apps and connect them with sensors—ultimately to build smart-home apps and apps that help people, like this ALS app.

The ALS app was an idea given to me by Mustafa who has done a version of this app with students in Pakistan. So if I have Professor Pierce to advise me with post requests on the app side, Mustafa to advise me on the computer vision side, and Abhishek to advice me on the electronics side, I know I can do this and it’ll give me a great chance to build on this in different applications, such as connecting my phone to the TV or lights in my house or creating my “backup app” below just in case this doesn’t fit the project description.

Caveat: If the UI and user flow isn’t complex enough for this project, I can add an element to the app, like popover prompts to teach the caregiver how to use the app or commands that make the app change color depending on urgency or something like that…

How it works:

ALS patient (camera/raspberry pi side):

* 1 blink = “Yes” appears on iPhone app UI
* 2 blinks = “No” appears on iPhone app UI
* 3 blinks = “I need to go to the bathroom” appears on iPhone app UI
* 4 blinks = “I am hungry” appears on iPhone app UI
* 5 blinks = “I am thirsty” appears on iPhone app UI

Caregiver (app side):

* “OK, I’m coming” button = 1 LED flash on ALS patient side
* When a message is received on the iPhone, it gives you a notification displaying the text message

Components questions/needs:

* Hardware:
  + Broadcom processor
  + Camera (CSI)
    - 8 megapixel native resolution high quality Sony IMX219 image sensor
  + Micro SD card to connect Internet
  + Coding in C for computer vision program
  + LED + processing language for LED
  + Find out which one is best:
    - SparkFun Blynk Board - ESP8266 (<http://bit.ly/2d7j8fU>)
    - Particle Photon Kit (<http://bit.ly/2cj1pf4>)
    - Raspberry Pi
      * Pi 3 with built-in wifi dongle chip?
* iPone:
  + Launch screen + logo
  + Text display box that receives data from server. Text appears with a different color background and then only disappears when the caregiver presses the reply: “Ok, I’m coming” button.
  + Button sends post request to server and LED to let patient know he/she is coming.

First step: get proof of concept this week.

If I can’t get all the parts together in time for the project, I’ll do one of these two (or both) app ideas…

**Backup App 1: Keyboard app**

Description: This app has three or four different colored squares that when pressed light up a different LED (and maybe makes a different noise). The goal would be to connect this to a lamp with a bulb that turns different colors and makes a sound when pressing the buttons.

**Backup App 2: Meditation app**

Description: This is a meditation app where you have to match your breathing to the app that makes you take a deep breath for ten seconds and out for fifteen. Depending on what I learn with the prototyping and technical research, it could just count to 10 and 15, or it could be a pulsating/color-changing orb that expands for 10 seconds slowly, then shrinks for 15 seconds. What’s more is that when you tap and hold the orb/circle in the middle that helps you breathe, a popover menu will display all the people on the app at the same time so you know that you’re breathing with other people (in theory, all over the world or just on campus).

Goal: To get people to slow down and breathe—a meditation app that allows you to feel connected with others.

Inspiration: This is from a conversation I had with my roommate who was talking with this older hippie guy in Santa Monica about how it’d be cool to breathe together with people all around the world :). This app wouldn’t do that, but it would aim to help you breathe with other people logged onto the app at the same time.

Visual description and user flow:

1. When you tap on the app icon the load screen pops up (app icon is blue/purple circle in the icon box).
2. After the load screen, the first time you open the app you get a popover menu that points to a pulsating, color-changing orb in the middle of the app screen and tells you to match your breathing to the orb—10 seconds in, 15 seconds out.
3. After you hit “OK,” a second popover menu comes up telling you to press and hold the orb in the center to see how many people you are meditating with.