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Deconstruction Project 3: Heart rate detector

Introduction:

- For this project I would like to explore how to use Arduino and Processing to gather and display data derived from the human body. I intended to explore technology that can be relevant in the emergency first responder context, which is the field in design I would like to work for. Additionally, I intend to create an experience for a gallery and public setting. The experience I wanted to create was to replicate a heart-beat using a wearable device to soothe or massage the body to relieve tension.

How/ Process

- I used these tutorials:
- Infrared pulse sensor
  http://makezine.com/projects/ir-pulse-sensor/
- Heart beat sketch from arduino
  http://playground.arduino.cc/Main/HeartbeatSketch

- I began by purchasing all of the assigned parts and making sure that they were the correct ones.
- Because the original tutorial (the one using two infra-red light) required that I used 5 different types of resistors, I had to use a website which allowed me to choose the resistors stripe colors form a drop down menu in order to find the resistors rate.

- After that I closely read the instructions to make sure I didn't miss a step. Unfortunately, Radio Shak did not have the exact same bread board which led to me to cut it too small and not allowing the board to have enough space to layout and solder the resistors and lights. This mistake became evident after I had soldered the two infra-red lights to the board and ran out of space to accommodate the other components.

- What confused me was the mistaken assumption that the number of rows and columns of the board was arbitrary, and that I only had to allow for sufficient space for the components to be soldered.

- This failure became a significant setback for my project. I spent a lot of time observing and rereading the tutorial instructions so I wouldn't make the same mistake again. My biggest fear was to overheat my components and permanently damage them with the solder wand. (which happened to the servo motor in the first tutorial).

- Frustrated and afraid I had to make the decision of changing my project in order to prevent further damage to the hardware and running out of time before the deadline.

- I decided to continue with the bio data topic and chose a much more manageable tutorial

- The challenge with this tutorial was to update the code so it can activate a vibrator instead of a set of LED lights and also familiarize myself with the layout of the LilyPad Arduino.

What I learned:

I again made much of the same mistakes of previous projects not paying attention to all the details and not debugging correctly. My inexperience with electronics and code was very challenging. I do however find the projects relevant to my interest in developing technology for first responders. It was helpful to get an understanding of the different components needed to gather and display the data. I also learned to differentiate resistors types. Furthermore, as an industrial designer I was interested in the intricate physical qualities of each component, especially the Ceramic disk capacitor, tantalum capacitor and quad op amp. This is particularly relevant to ID because we often make the mistake of miscalculating the dimensions of our products. We often ask "why can't this product be smaller?" or larger? but the reality is that if the technology relies on these essential components in order to work, then as designers we are required to abide and work around these limitations successfully. Tis concept is relevant in any stage of the design process and will surely help my communication with engineers in any future design position.