

# **QI Interactive Dress**

## **Documentation**

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# Team Members

Introduction

Discovery

Ideation

Prototype

Final Artifact



# Project Description

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*"An interactive dress expressing the user's current state by examining the pulse rate and displaying it as intricate light pattern feedback."*



# Fashion Stream

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- It gives a **personalized** experience
- The "**language**" of **clothing** used in one's social system, situation and role
- Meaning explained in terms of **attributions made to a user.**

# Ideation

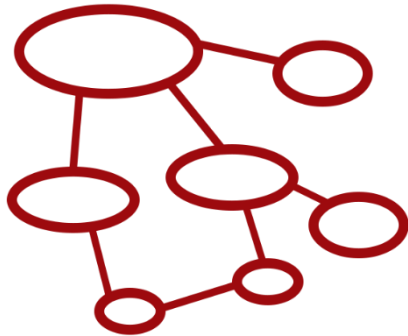
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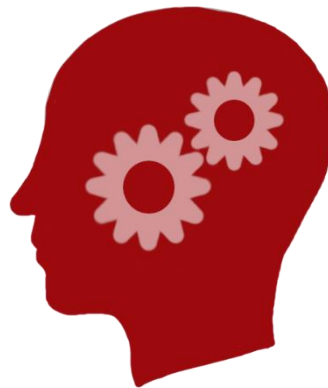
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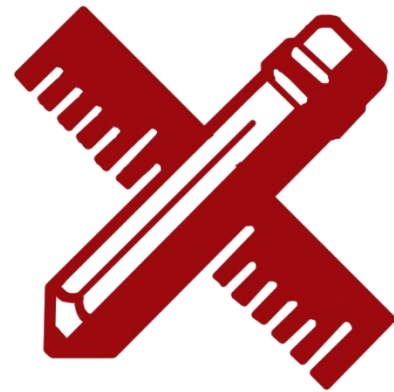
## Brainstorming

- Flow
- Breathing
- Nature
- Environment



## Interpretation

- Qi
- Body energy flow
- Life Force



## Design

- Pulsating
- Organic
- Rippling
- Flowing



# Concept

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Traditional Chinese culture ‘氣’ (Qi) is an active principle **forming part of any living thing.**

**Qi** is translated as natural energy, life force and energy flow.

“We believe ‘氣’ (Qi) **permeated** everything and linked their surroundings together.”

-Ancient Chinese

# Precedence

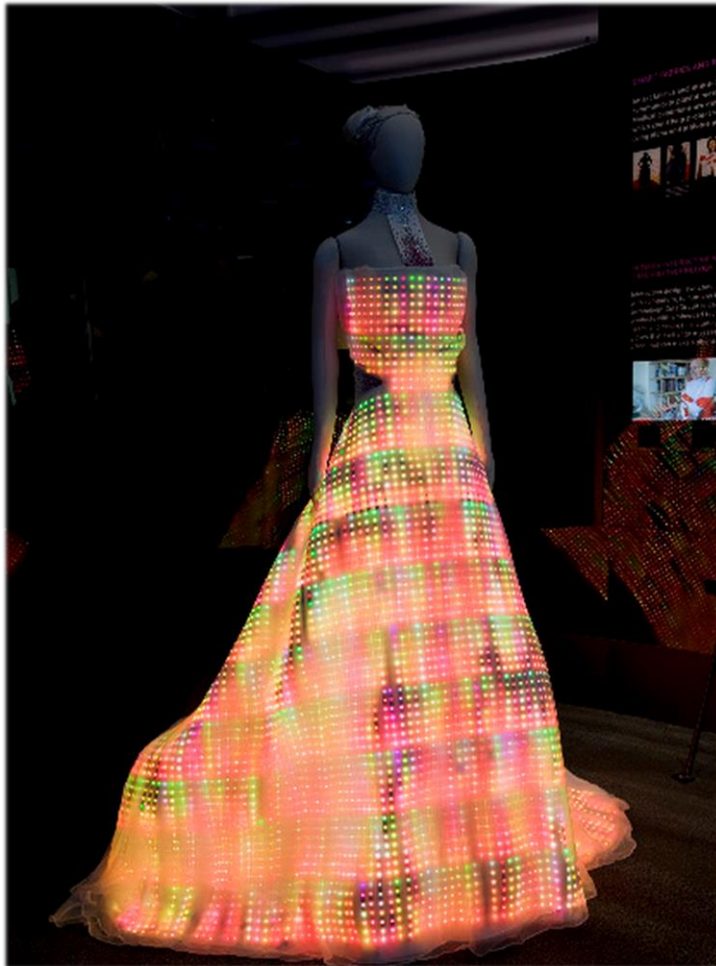
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## Galaxy Dress

Provides spectacular **mesmerizing** effect and looks good when switched off.



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## Swarm Light

Translates patterns of collective behaviour found in nature **into moving light**.

**Visitor presence** stimulates the installation's 'collective consciousness'.

Viewer have **responsive relationship** with the work itself.





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## GER Mood Sweater

Interprets emotions and displays mood instantly as an **interactive light display**.



# Initial Sketch

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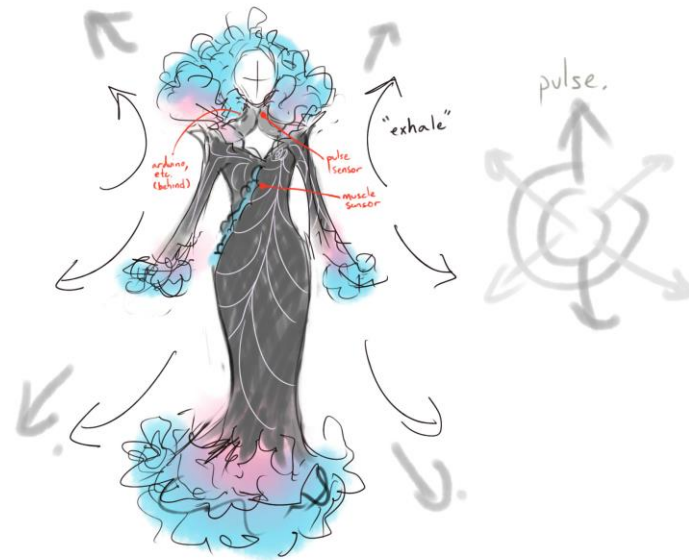
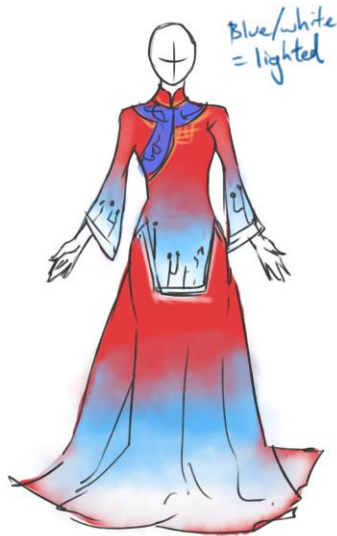
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- Arduino/Breadboard (under)
- LEDs
- Fabric



- Muscle Activity sensor
- HeartRate sensor



# Final Sketch

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The **top** contains 6 LEDs hidden in **fabric that can enhance the interactive light display**. The **bottom** portion of the dress contains 11 LEDs also **hidden in see-through fabric** and also contains the Arduino Uno since it is a good place for weight balance and user comfort.

# Technology and Structure

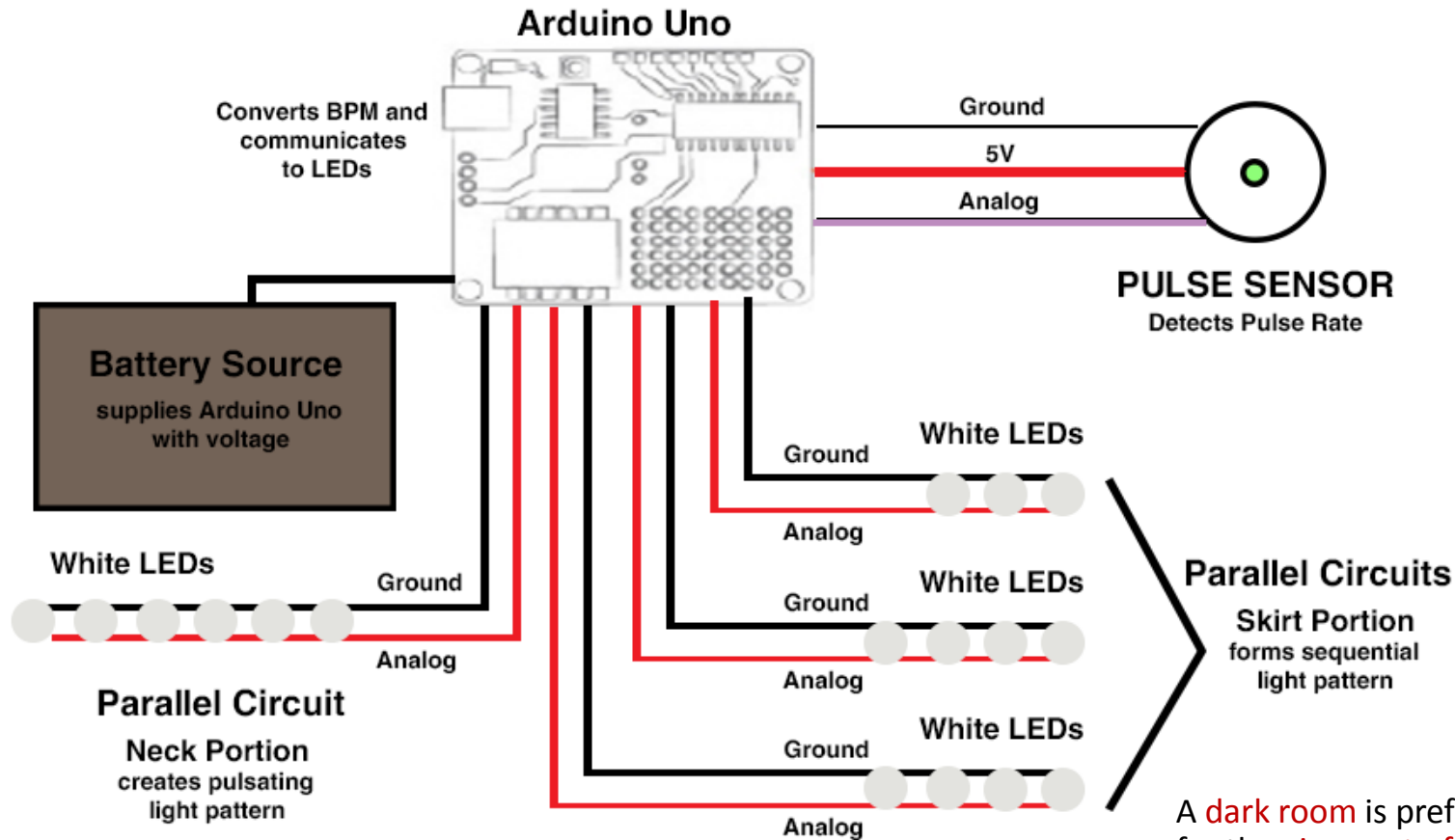
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A **dark room** is preferred in order for the **viewers to focus** more on the light patterns of the dress and enhance the dress' **illumination**.

# Prototype Progress

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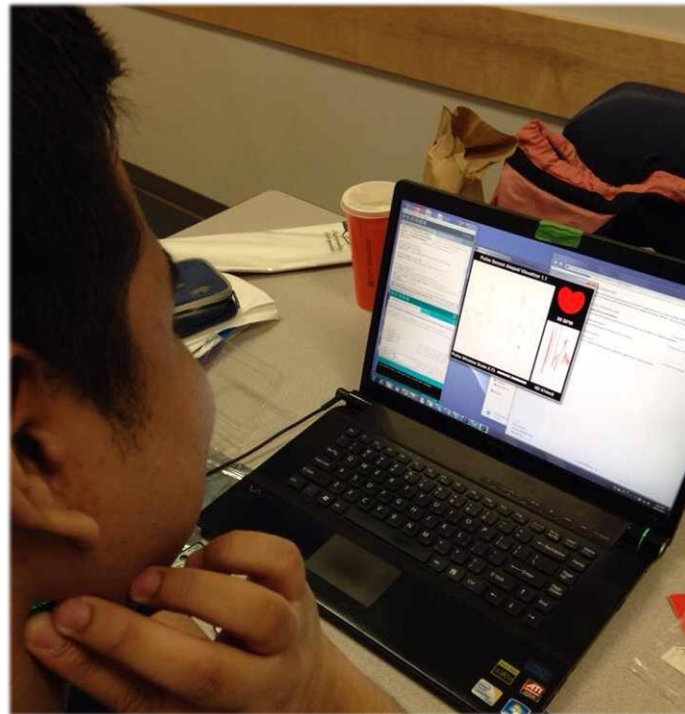
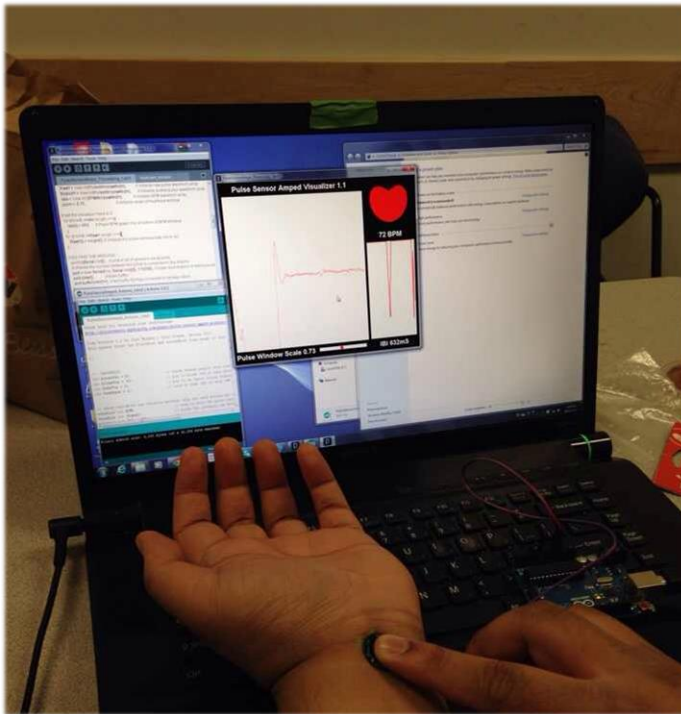
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Determining **how the pulse sensor works** with emotions and **what part of the body** gives the best pulse data measurement whether it's the wrist, elbow or neck.





# Prototype Progress

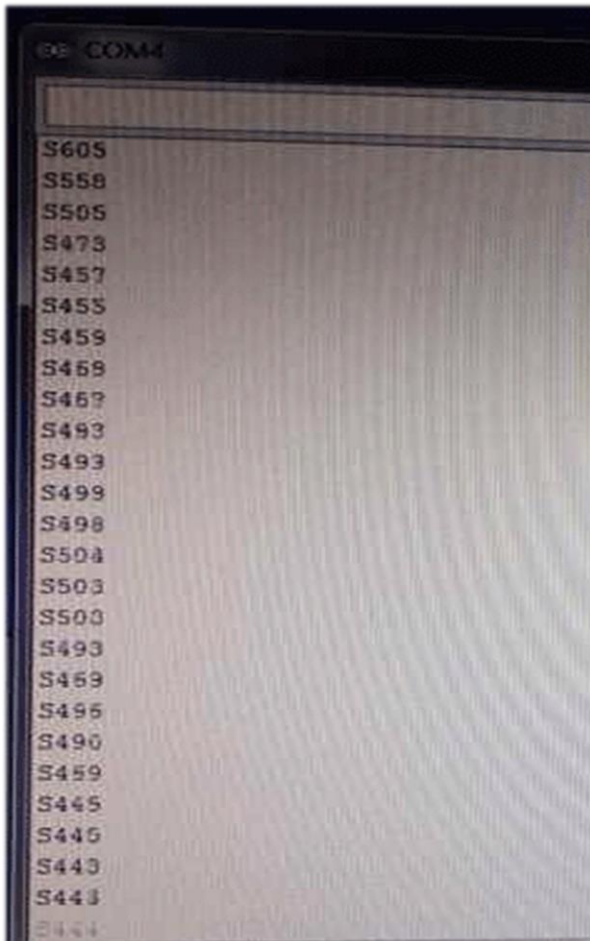
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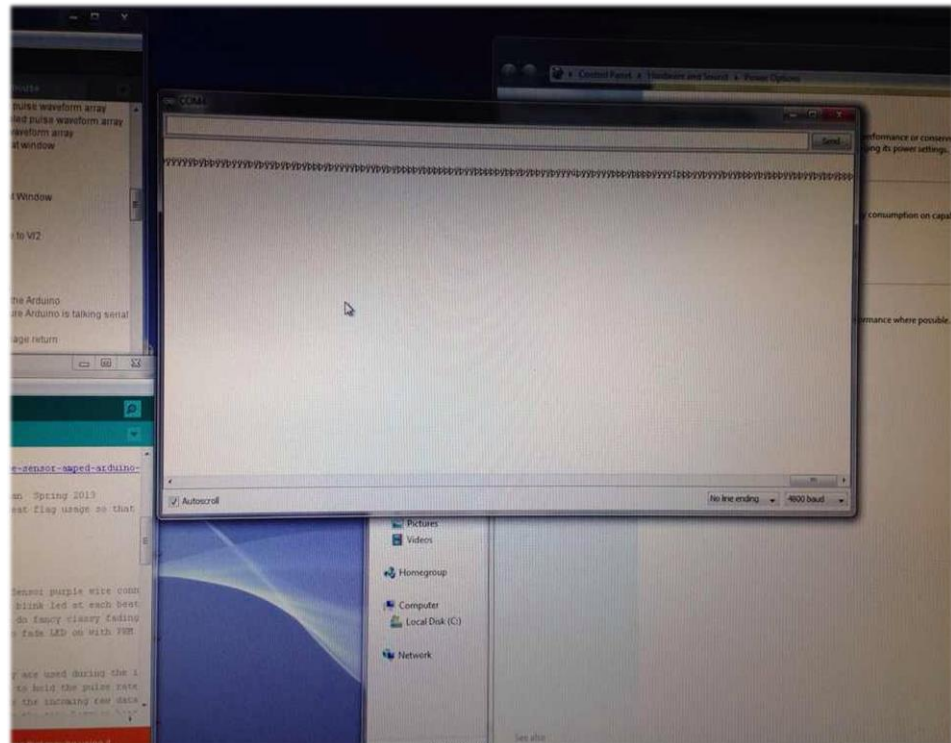
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Coding in **Arduino** to read the possible values and **Processing** to test the values and finding the more reliable form of data which we determined to be the **BPM** of the user.



# Prototype Progress

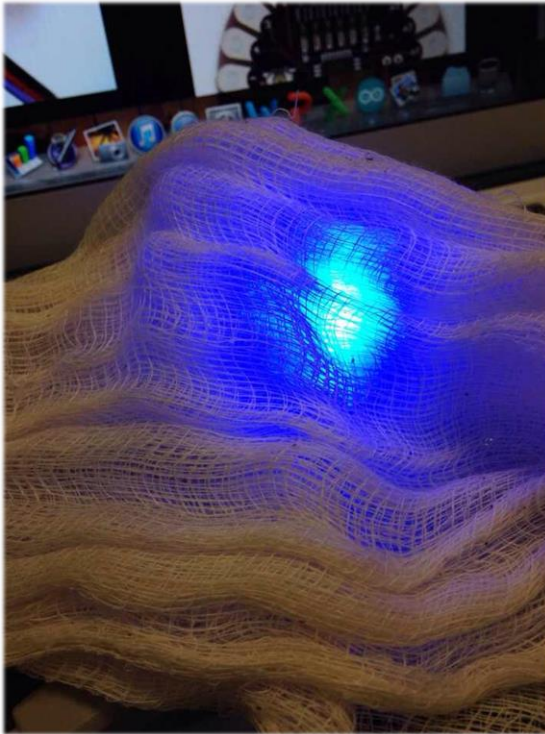
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Gathering and testing **materials** that can be used effectively in displaying the project's illumination while keeping aesthetics.

# Prototype Progress

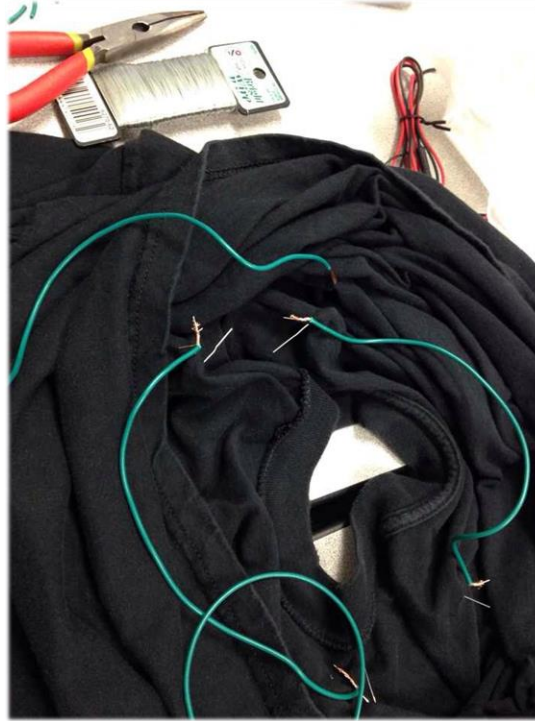
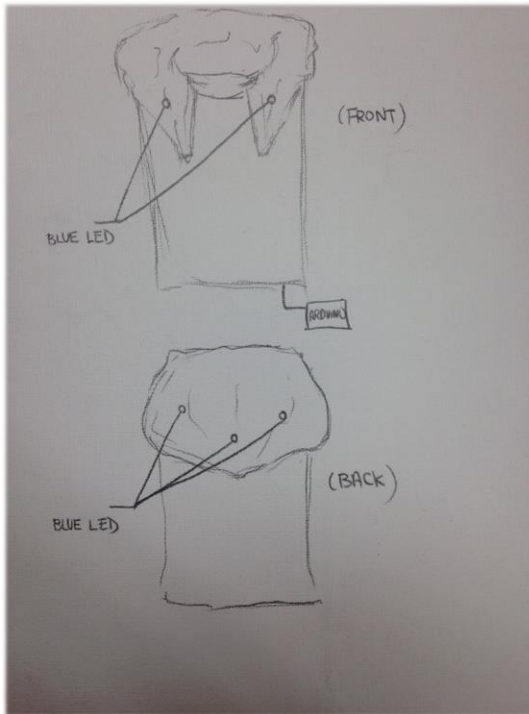
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Attempting to create the **upper neck portion** and determining the **location** of the LEDs beforehand.



# Prototype (top)

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## ACCOMPLISHED:

The **pulse sensor** reads the pulse rate of the user which is converted to the BPM value that adjusts the light pattern on the dress. The LEDs near the neck will pulsate slower when **below 70 BPM**, in a constant speed when **between 70 to 90 BPM** and faster when **above 90 BPM**.

<https://vimeo.com/79443691>

# Prototype (bottom)

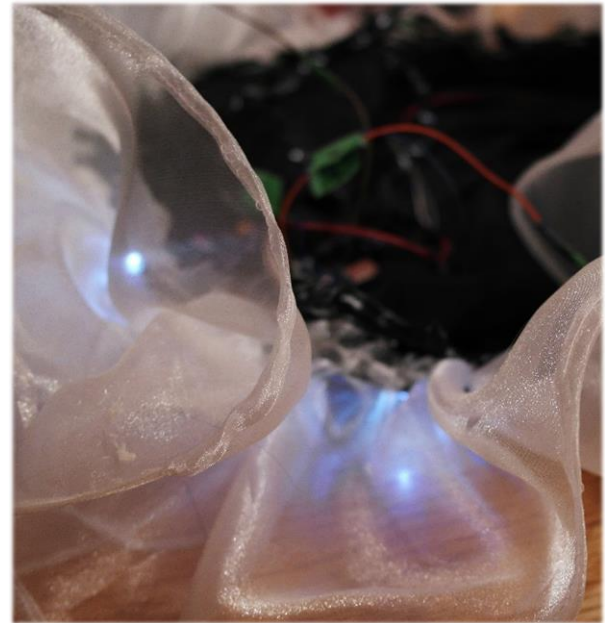
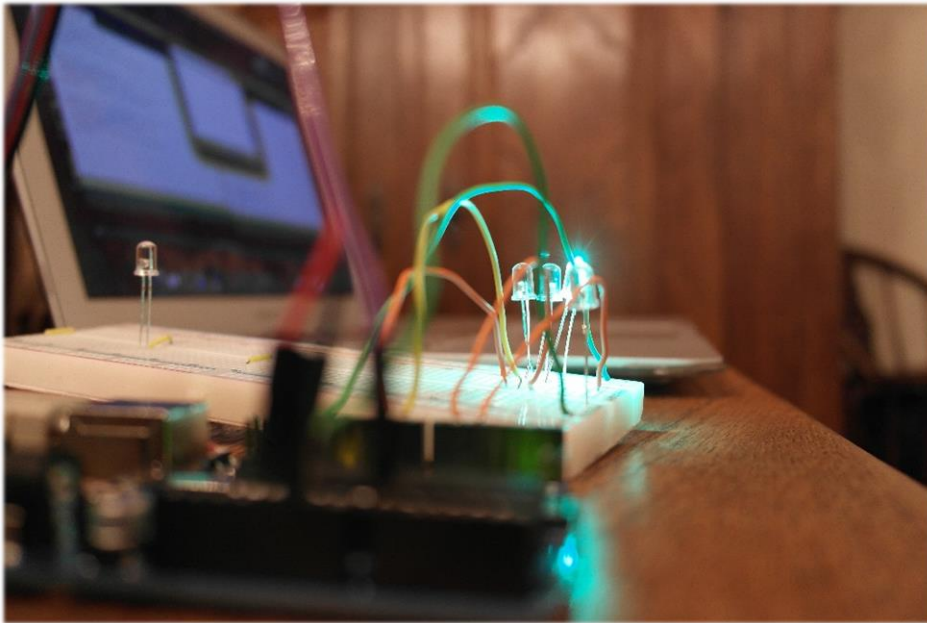
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## ACCOMPLISHED:

The **bottom portion** of the dress will have **sequential lights** which responds to the **BPM of the user**. The sequential lights will become slower when **below 70 BPM**, in a constant speed when **between 70 to 90 BPM** and faster when **above 90 BPM**.

<https://vimeo.com/81570430>



# Final Design

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# Aesthetic Quality

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The dress is made of **black fabric** in order to put more **emphasis on the interactive light** patterns. In addition, the **frills** give an **organic, flowing and rippling feel** to the dress.

# Affect

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## USER

Experience of **excitement** and **nervousness** as the center of attention and an **awkward feeling** from having the user's pulse displayed through lights for everyone to see.

## VIEWER

A feeling of **interest** and change of the **atmospheric mood**.





# Valence

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## POSITIVE

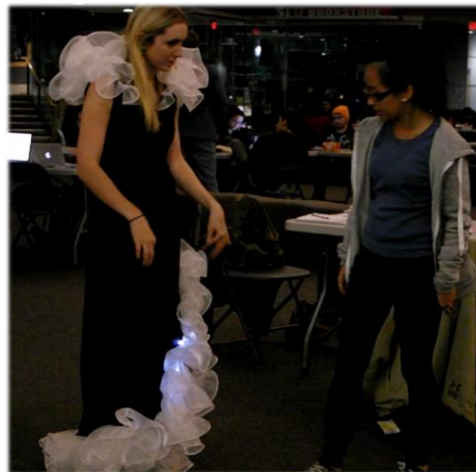
Viewers experience an **appealing atmosphere** as the LEDs create different light patterns and change in colour

User is the **center of attention**

## NEGATIVE

Users feels **exposed** as her pulse is being shown on display

“What you wear **becomes you**”



# Core Affect + Affect Quality

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The sensors reads the user's pulse rate levels and translates the data **into moving patterns with affective lights**.

Depending on whether the user is calm and collected, nervous or excited will change the moving light patterns' speed resulting in a **change of mood or feeling of the viewer**.

The presence of visitors will **stimulate the user** through their interaction resulting in the dress itself changing through the user's responses with pulse rate.





# Interaction

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- 1 **Pulse sensor** detects pulse rate
- 2 Pulse sensor sends **pulse value** to the Arduino Uno
- 3 **Arduino Uno** converts pulse into BPM and communicates with the LEDS around the interactive dress
- 4 Viewers receive an **interactive light display** corresponding with the changes in BPM
- 5 User may change her current state due to viewer interaction which results in a **different pulse reading** (ie. "awkwardness")



<https://vimeo.com/81586884>

# Responses

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Although not having the dark room present, viewers responded to the dress through **staring with curiosity**. They complimented both dress and user as **pleasing to see, formal and interesting**.



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