

# Use Case

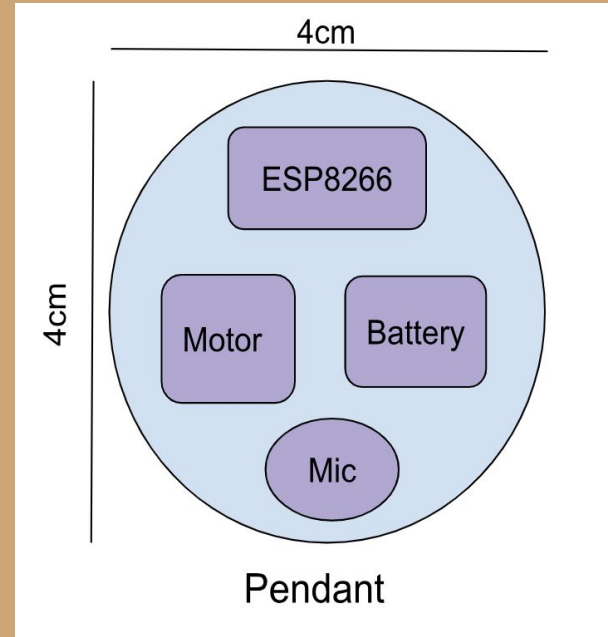
- Goal: advanced safety tech jewelry that allows for physical safety
- Device is designed to be discreetly activated by users in situations where they feel unsafe or threatened
- Includes a smart pendant-ring system
- Target Age Group: 14-25 yrs
  - College students
  - High-school students
- ECE Core Areas:
  - Software Systems and Circuits

# Use Case Requirements

<b>Qualitative</b>	<b>Quantitative</b>
Phone App and Jewelry (ring & necklace) system	Connection to companion app in <10 sec
Inclusion of solutions that already exist in problem space <ul style="list-style-type: none"><li data-bbox="247 572 751 609">• SOS, emergency contacts</li></ul>	Jewelry must last up to 6 hrs of battery life from full charge
Multiple forms of emergency triggers	Contacts emergency services in at most 30 seconds
Customizations preferences for device via app	
False alarm prevention	

# Pendant

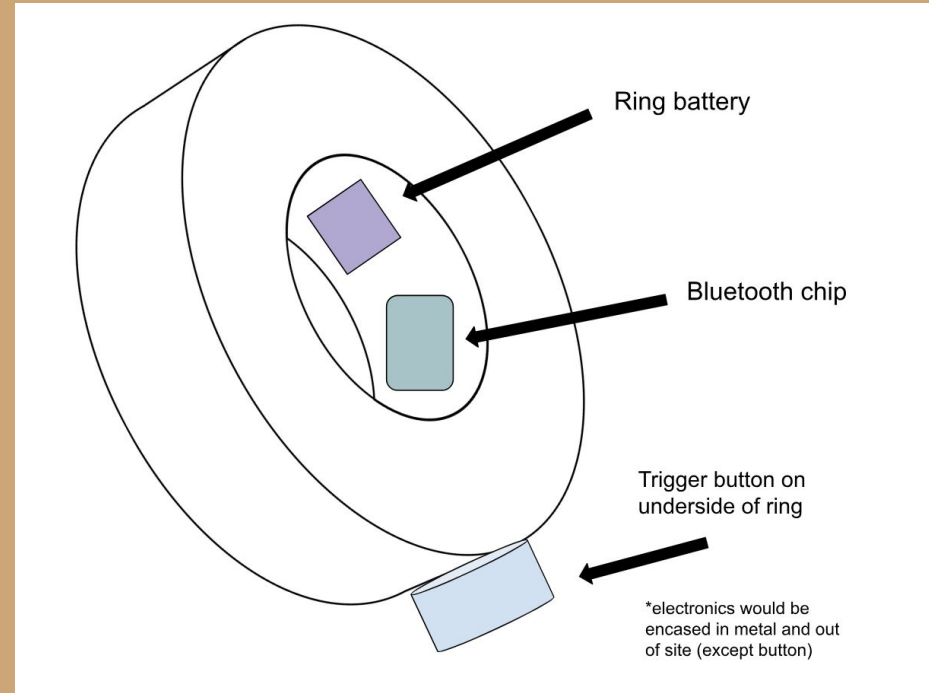
- Pendant is for communicating with the phone and detecting help word
- Includes a Microphone, bluetooth module to communicate with phone and ring, motor for vibration
- Battery



- Esp8266
- BGM121A256
- Batteries

# Ring

- Button (2mm), located on the outside
- Bluetooth microprocessor communicating between ring and Pendant
  - BGM121A256
  - Will be on the inside of the ring
- Battery



# Device Triggers

## 1. Button

- a. Located on the underside of ring for easy access

## 2. GPS Location

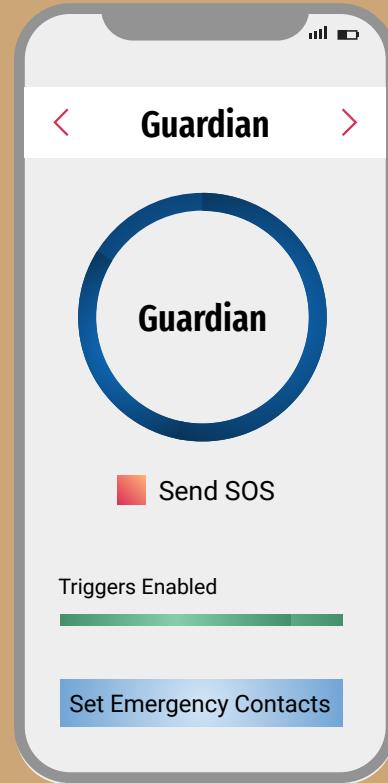
- a. trigger alerts when a person enters or exits a specific area.
- b. On pendant

## 3. Audio

- a. Customize a trigger word to deliver SOS messages
  - b. On pendant
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# Mobile App

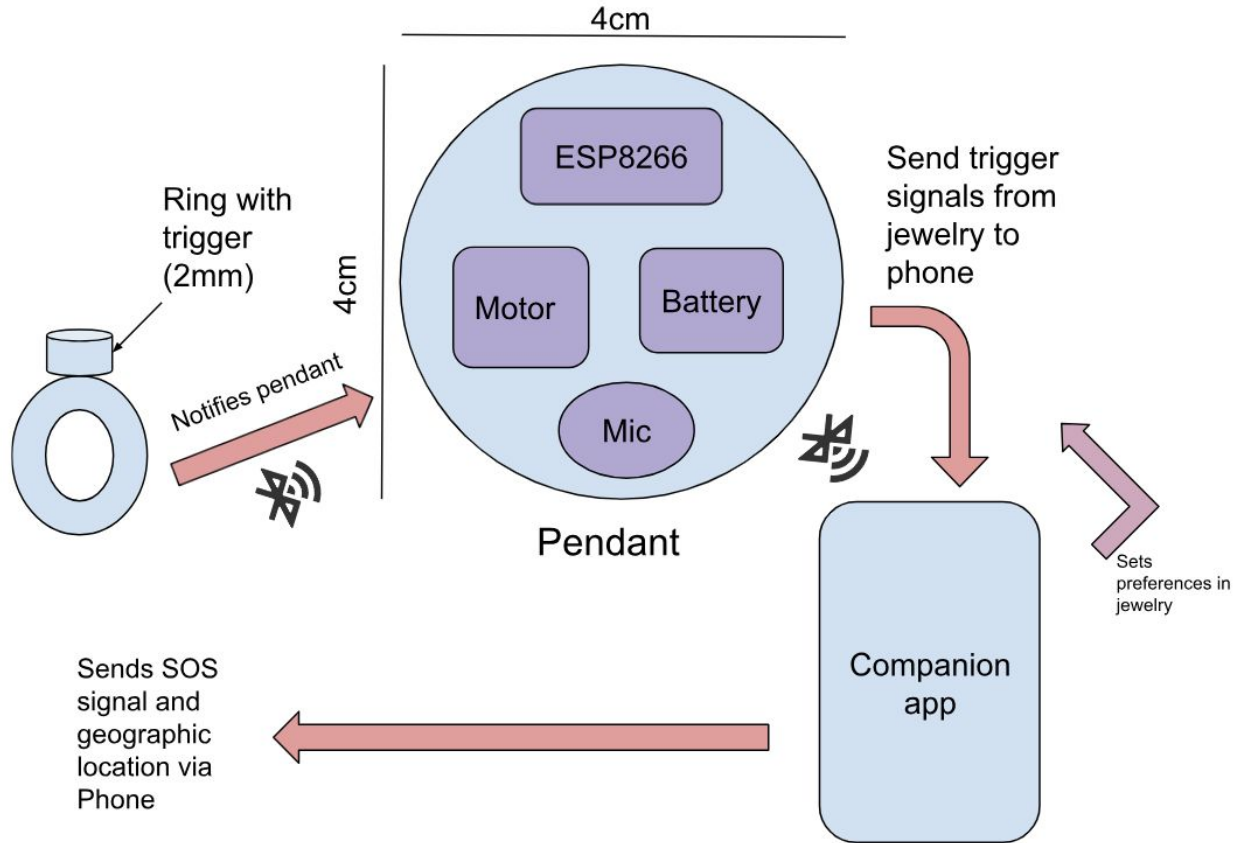
- Jewelry connected to companion app
- SOS texts sent to emergency contacts
- Trigger preferences
  - User control over how triggers are enable for SOS from a set of pre-defined options



# Technical Challenges

- Concise and subtle design to avoid attracting unwanted attention
- Reliable speech recognition
- False Alarm Prevention
- App customization
- Speed of delivery
- Battery Life

# Solution Approach Diagram:





# Testing, Verification and Metrics

- Manually set Emergency Contacts to one of us
- Set various preferences on companion app (from our provided options) - stress test
  - Test all the triggers individually and time response to see if meets our time requirements
    - E.g ensure GPS pings within correct radius
- Check if companion works without cellular data
- Test False triggers/ Fail Safes - <5% error rate

# Tasks and Division of Labor

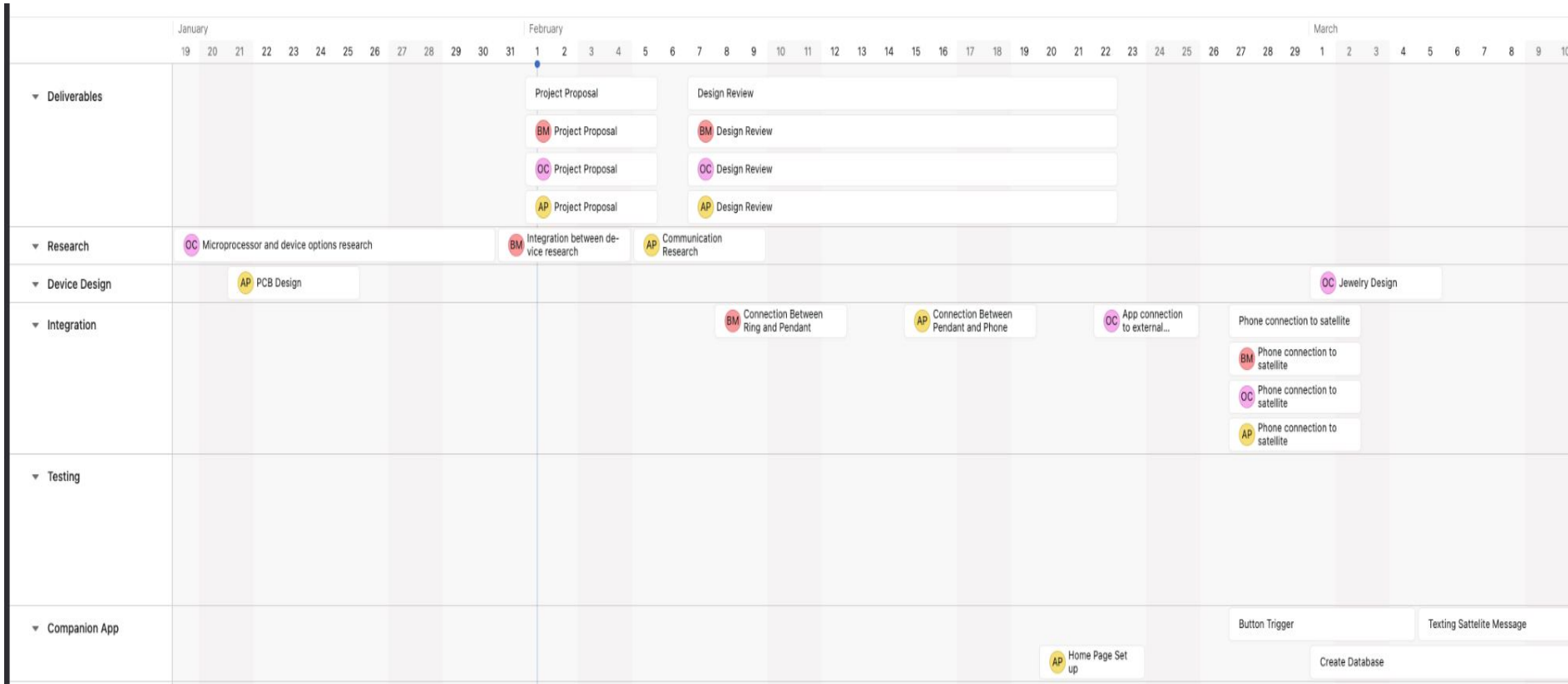
## Hardware:

- Material Allocation - Olivia
- Device/PCB Design - Anika
- Device Construction - Bradley

## Software:

- Serialization/Deserialization Protocol - Olivia
- Microprocessor Communication - Bradley
- Companion App - Anika

# Gantt Chart Part 1



# Gantt Chart Part 2

