



# **WEARABLE STRESS MONITOR**

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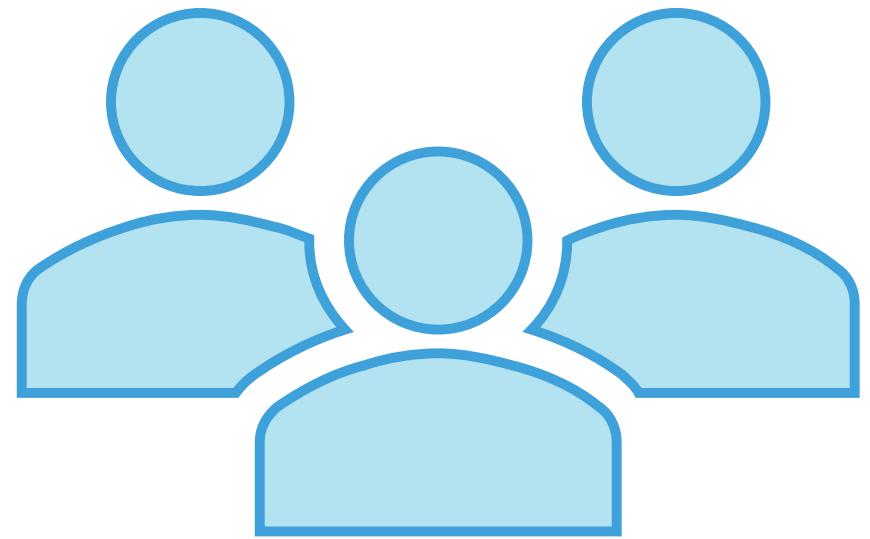
Group Project – Neha, Nana-  
Shireen & Aqdas



# **PROJECT CONCEPT**

We aim to create a working wearable wristband, by the end of our project. This wristband will measure the wearer's temperature to then use these readings to detect the wearer's stress levels and send an alert to the user via the flashing light embedded within the wristband. The light will then show users breathing exercises they can do to help reduce stress again through the light turning on and off. On the wristband, there will also be embroidery to act as a fidget toy to help reduce the users' stress. Our device will be geared towards young people, especially those in higher education.

**TARGET USERS**



# PROJECT MOTIVATION



## SIMILAR PROJECTS

- Within our project, we wanted to take in the user's heart rate data, which a wide range of sensors can do. Looking into already existing projects would help inform us of what current designs are and any positives and negatives of the sensors used.
- The paper "*Design of a Wearable Bead Health Monitoring Bracelet*" focuses on overall health monitoring and early medical data analysis rather than specifically targeting stress reduction, using sensors like ECG, SpO2, EDA, and GPS to relay vital data to external devices for medical use. While it emphasizes aesthetic appeal, affordability, and data protection—values our project also shares—our wearable is tailored for young people with a specific focus on stress detection and real-time support, rather than pre-medical intervention.
- The study "*A Machine Learning Approach for Stress Detection Using Wearable Sensors in Free-Living Environments*" used ECG, skin conductance (EDA), and skin temperature sensors to detect stress in real time with 98% accuracy using a KNN model, showing that non-intrusive, real-world monitoring can be effective without lab conditions. However, concerns such as variable stress responses, high battery consumption from continuous monitoring, machine learning processing, and wireless communication led us to exclude machine learning from our project to prioritise battery life and user convenience.

# MOOD BOARD (DESIGN)

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# MOOD BOARD INSPIRATION

- LED Cable Wristers
- Smart / E-Textiles
- Ubiquitous Computing
- Anthropometric technology (human design)





# MOOD BOARD INSPIRATION

- Breathing Pavilion
- Created by Ekene Ijeoma
- Public Installation
- Made in 2021, Brooklyn

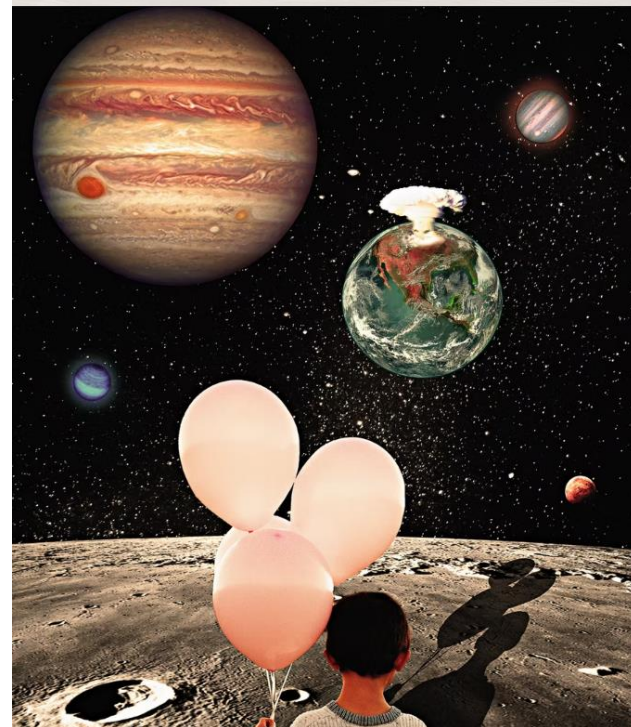




# ARTIST INSPIRATION

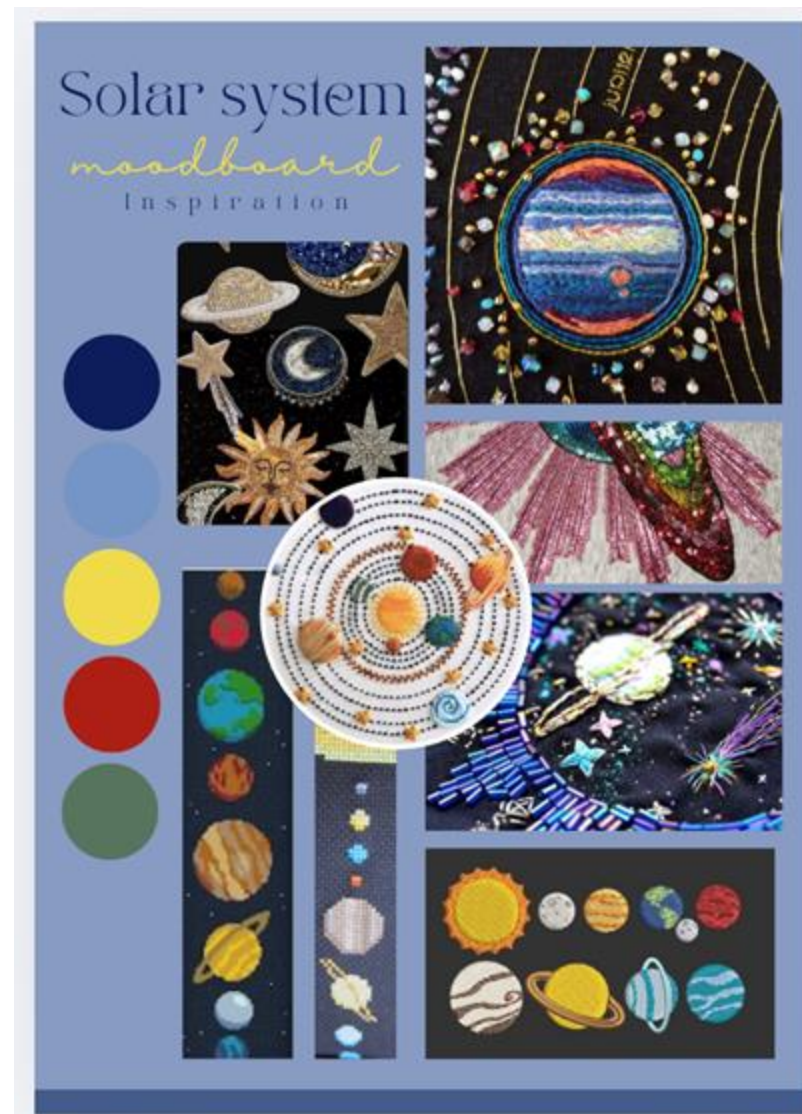
Pandora Mond – Large Scale Oil  
painter of planet.

Morysetta (Larisa Murariu) -  
Graphic Designer and Digital  
Collage Artist focusing on space.



# EMBROIDERY INSPIRATIONS

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# **MATERIAL RESEARCH**







# PROTOTYPE FOR EMBROIDERY



## PROTOTYPE DESIGN FOR WATCH

For our prototype, we focused on integrating key features to enhance functionality and user experience. The wristband includes embedded fidget toys to help users manage stress through tactile interaction. A temperature sensor detects stress-related changes and triggers an LED sequence as a visual alert. Additionally, a screen displays when stress levels are high, offering clear feedback to help users become more aware of their emotional state. These features work together to create an interactive and responsive system for managing stress.

# HARDWARE & SOFTWARE RESEARCH

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# Watch UX Designs



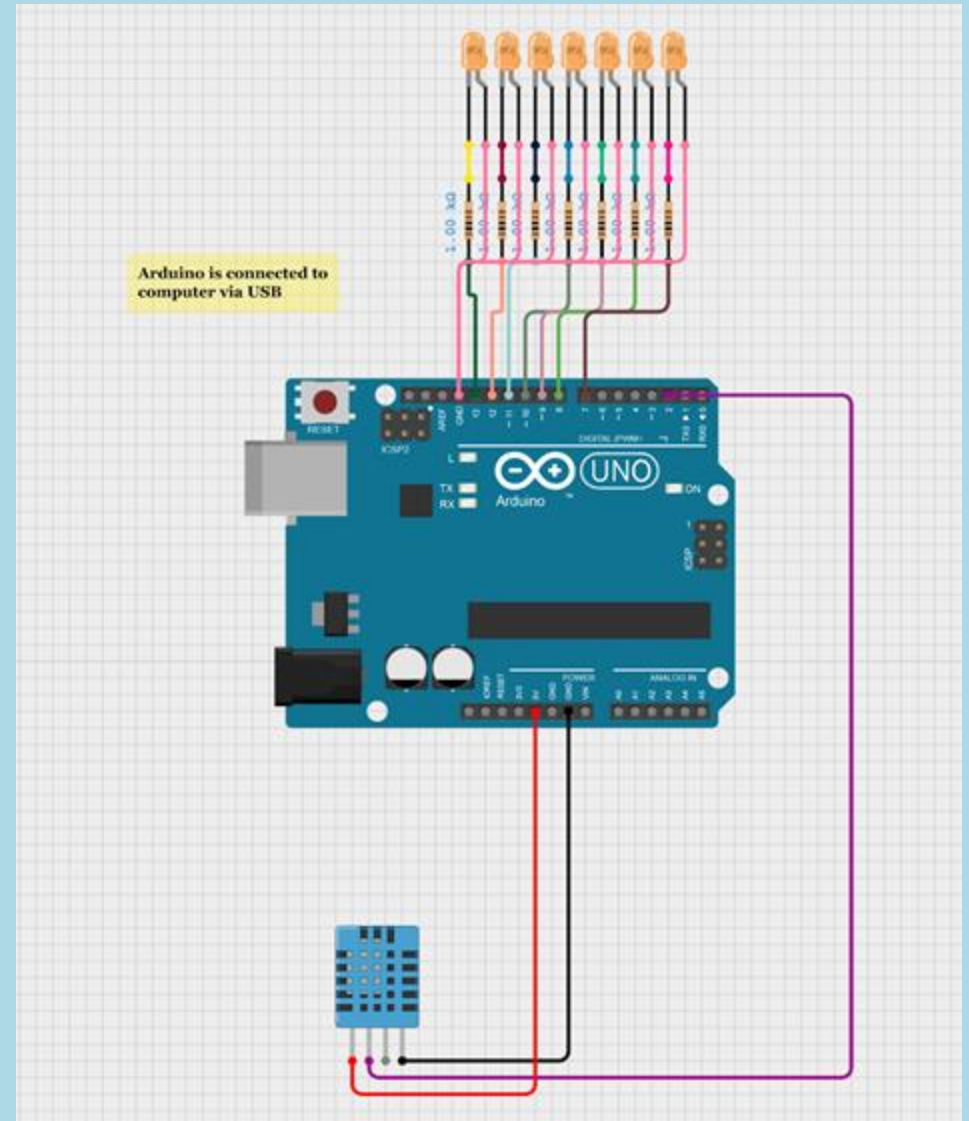
## PROTOTYPE FOR UX

- After making sketches of our UX, modelled similarly to Apple's watch, we decided to make digital prototypes of how the user interface on the watches would look.
- We made the five key screens for our wearable so we could visualise them better and have a clear goal of what we want our final outcome to look like.



# CIRCUIT FOR FINAL PROTOTYPE

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CODE  
EXPLANATION



**FINAL VERSION**



# POSTER

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# REFLECTION

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