GranActivity

An interactive low-cost device to keep elderly people physically active while also reducing screen time usage

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PROJECT DOCUMENTATION

Introduction

We have noticed recently that our grandparents have been spending a lot of time on screens and neglecting physical activity. My grandfather, Mr. Chawla, spends nearly half his day scrolling through his numerous WhatsApp groups and the other half watching television.

After discussing this problem with the entire group, we came to realise that all of our grandparents were in a similar situation. Prolonged screen time and ignorance of any physical activity. After brainstorming for some time, we were able to come up with the idea of a device that promotes physical activity through healthy competition. We presented this idea to our grandparents and they were instantly motivated to do more physical exercises.

We were able to come up with our problem statement:

"Grandparents and elderly people have a lack of physical interaction and also lack the motivation to stay fit which usually leads to excess screen time usage by them."

To begin our project, we first listed down the primary requirements for it:

- It would need to be functional without an OLED screen
- It would need to work across different Wi-Fi networks across cities
- It must be user-friendly and easy to use
- It must be aesthetically pleasing to look at

Existing solutions

After researching for similar products and solutions we were unable to find any device that addressed the problem like our project proposed to and most of the existing similar ideas were in the forms of apps, which neglects one of our primary concerns, limiting screen time usage. Some apps that had a similar idea of keeping elderly people more active include, *'Map My Walk', 'Yoga Studio'* and *'MedWatcher'*.

Plan

We decided to begin bringing our idea to life through possible design sketches and required components for the idea. Our first sketch included a basic design for the project and also how we envisioned the display to look like.

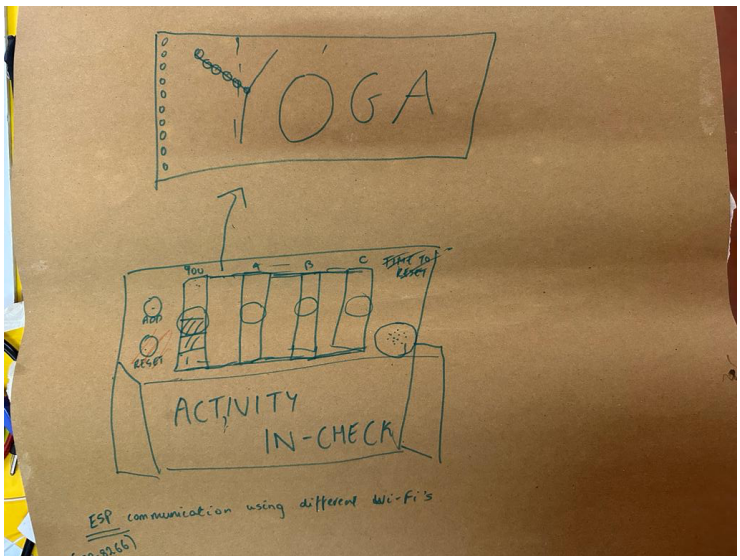
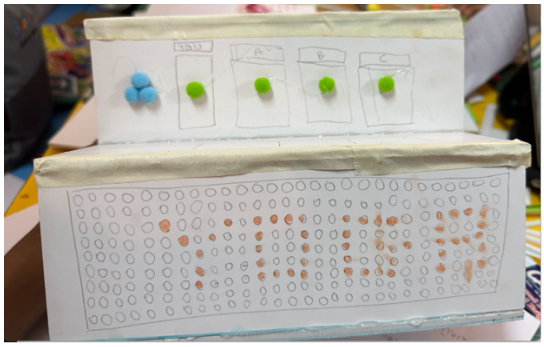


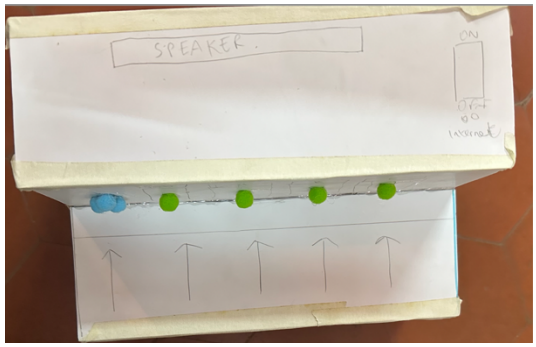
Figure 1: *Initial design of the GranActivity*

Following this design, we began creating our paper prototype for the GranActivity machine.

Prototype

Our paper prototype was constructed out of soft-board, cotton, masking tape and a glue-gun. We were able to modify the design slightly and come up with a 3D representation of our project.





Figures 2 and 3: *Paper prototype of the GranActivity*

Working

The GranActivity would work in the following way:

4 GranActivity machines would be connected to each other through a server we had created using python and an ESP8266 board. After being connected to the same server, every day a new activity would be displayed on the LED Matrix which would indicate the activity for the day each grandparent needs to complete. After completing the activity, the grandparent simply needs to press the white button on the device and this would light up their light on all 4 devices, indicating that they have completed their daily activity task. Through this healthy competition, the grandparents would be motivated to complete their daily goal of doing a physical activity. After clicking the white button, it would send a request to the server which would then send a corresponding instruction to the other devices to switch on the particular LED.

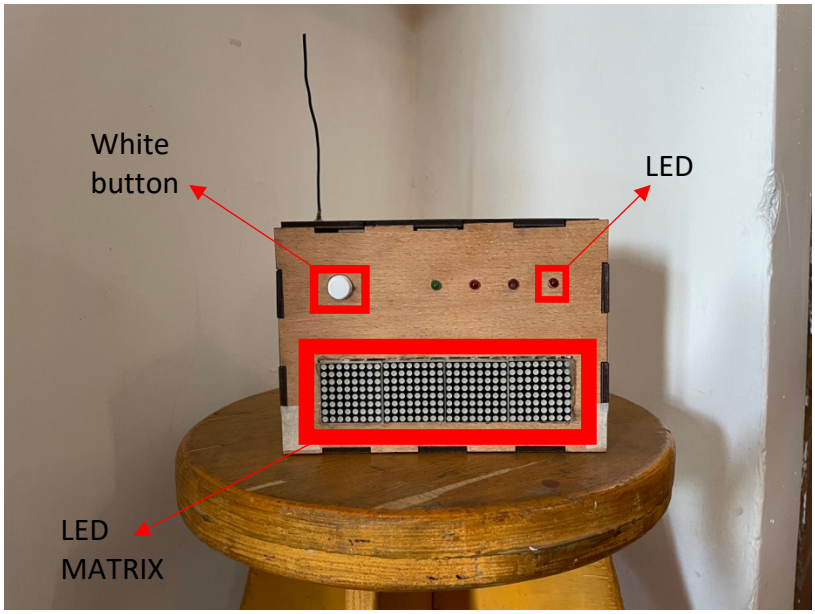
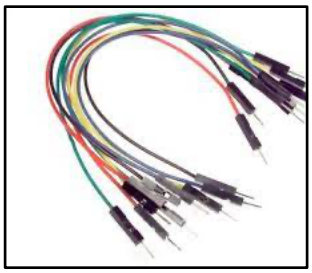


Figure 4: *Annotated picture of the GranActivity*

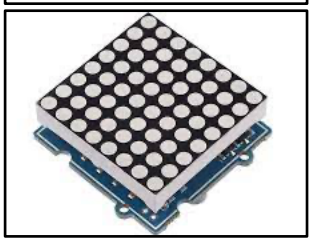
Components

1. ESP 8266 Wi-Fi module: We used this module to run our code and connect to the server

2. LED lights: Display the competition of the activity



3. Jumper cables: To connect the LED, button and matrix to the ESP board.



4. LED Matrix: Display the activity to be completed

5. Button: To light up the LED after completion of activity

Figures 5,6,7,8 and 9: *Pictures of the components used for the GranActivity*

To connect the components, we used a soldering iron along with a breadboard. The breadboard was used to hold all the components and wires of the electronics and was stored in the wooden box. We soldered the button to the wires so it is reliable to use and doesn't fall off. All the components were held in place with the help of a glue gun and masking tape.