

# G.H.O.S.T Busters



# Product G.H.O.S.T. Gun



- Ghost-hunting adventure
- Ergonomic design
- Age-appropriate
- Fun and Learn

# Concept and Design

**Objective:** The game challenges a tag team of kids to identify the "ghost" imposter among them within a limited number of guesses using an Arduino-based gun equipped with sensors.

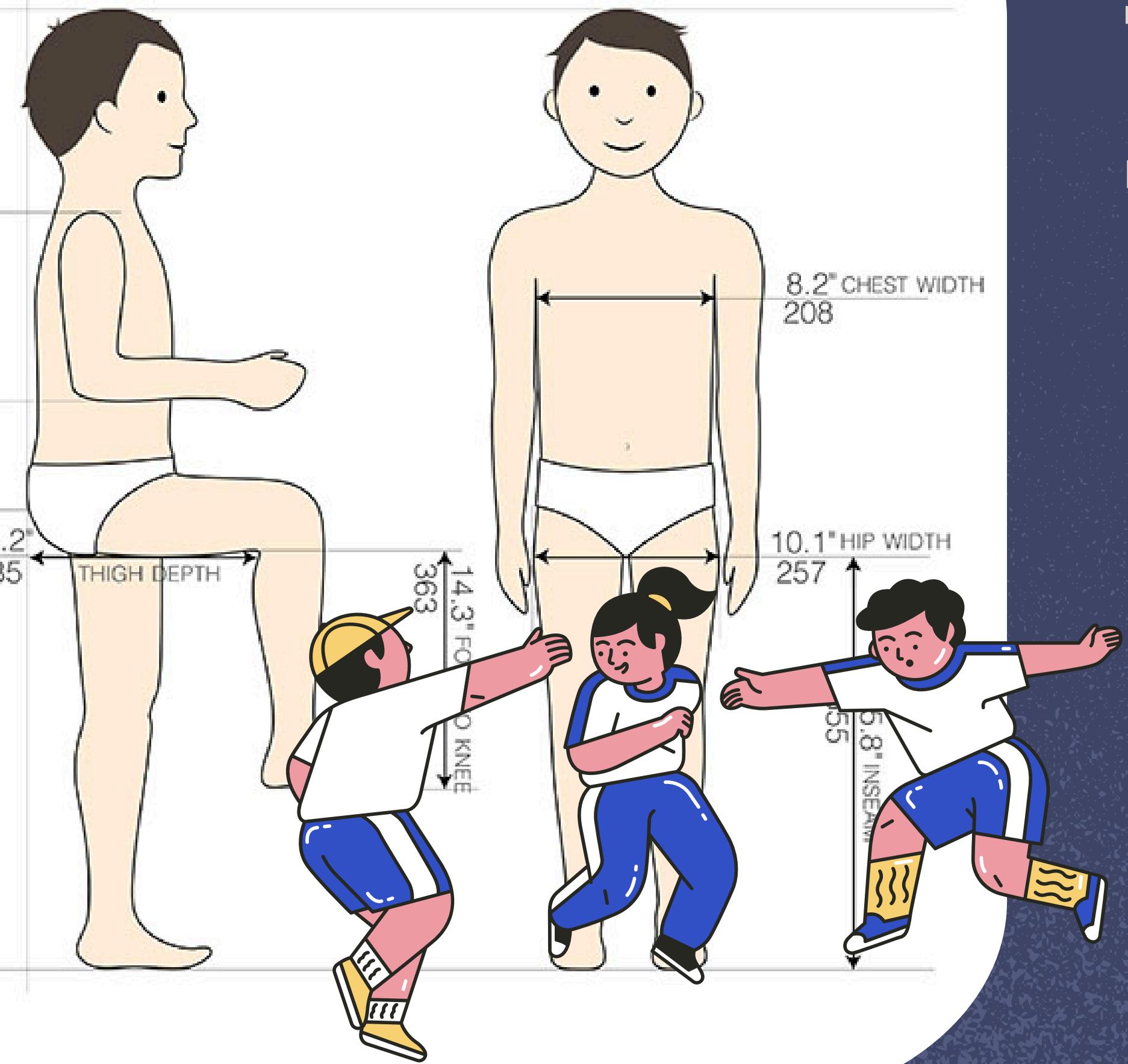
**Gameplay:** Players take turns scanning each other with the gun, which detects EMF Frequencies and sounds above a threshold. By paying attention to sensor readings, they deduce who the ghost is. and shoot down ghost with combination of Light and sounds .

**Educational Value:** The game introduces basic principles of magnetism and sound detection in a playful manner, Engaging mystery-solving ,communication team skills.



10 Years

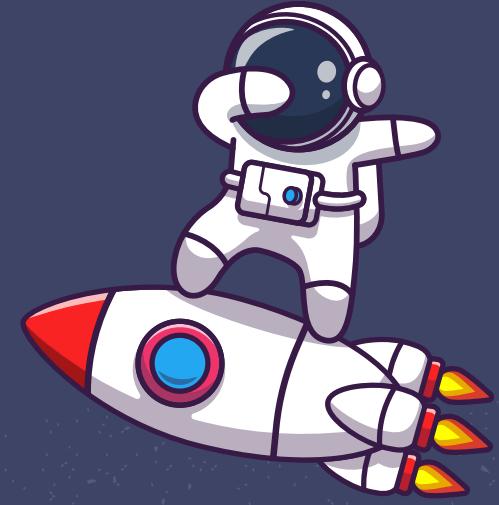
Avg WT. 70.2LB - 31.9KG



# Target Users

Pre-teen : 8-11 years kids

- Rounded edges and soft surfaces to prevent injuries.
- Age-appropriate experience repelling -ve effects of projectile gun of today's guns.
- Story-driven narratives that resonate with emotional experiences of pre-adolescents.
- Group play options to encourage socialization and teamwork.
- Cooperative games fostering communication and collaboration.
- Non-toxic materials ensuring child safety during play.



# Conditional logic used in Arduino

**Detection Algorithm:** The Arduino program employs conditional statements to determine when to trigger the gun's response. For example, if the magnetic field reading exceeds the threshold or if a sound is detected above the threshold, the gun reacts accordingly.

**Decision Making:** Conditional logic guides the Arduino in deciding whether to sound an alert when scanning a player. It ensures that only relevant sensor readings prompt a response, maintaining the game's integrity.

**Response Handling:** Conditional statements dictate how the Arduino responds to sensor inputs, such as illuminating LEDs or emitting sounds to signal detection. This enhances the game's interactivity and immerses players in the ghost-hunting experience.

# Processes In Brief

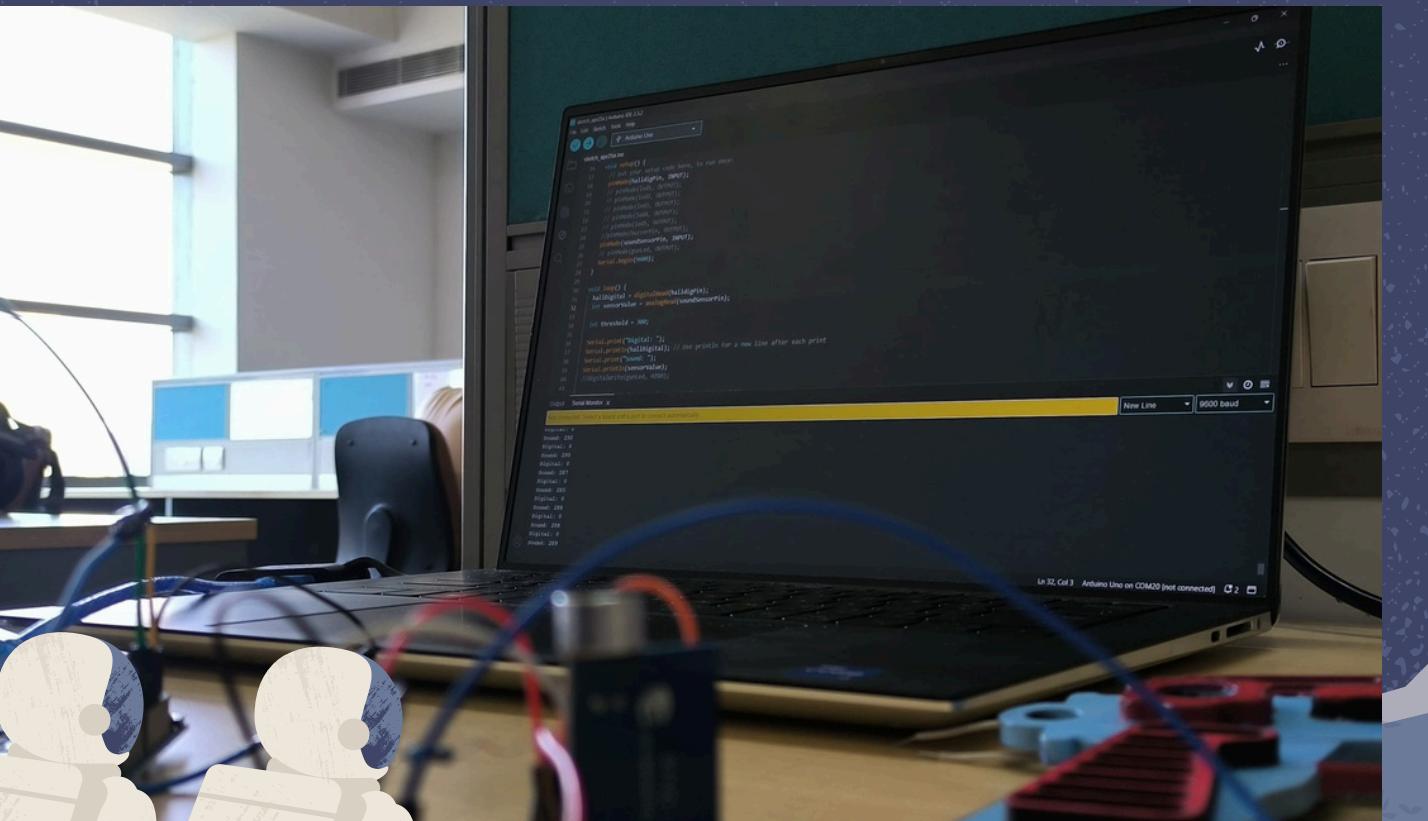
**Magnetic Field Detection:** Magnetism is a fascinating concept for kids and provides a tangible aspect to the game. By using a sensor to detect magnetic fields, we engage children in a hands-on exploration of this phenomenon.

**Sound Detection:** Sound adds another layer of complexity to the game. It encourages players to listen closely and distinguish between normal sounds and those caused by the ghost's actions.



# Conditional logic used in Arduino

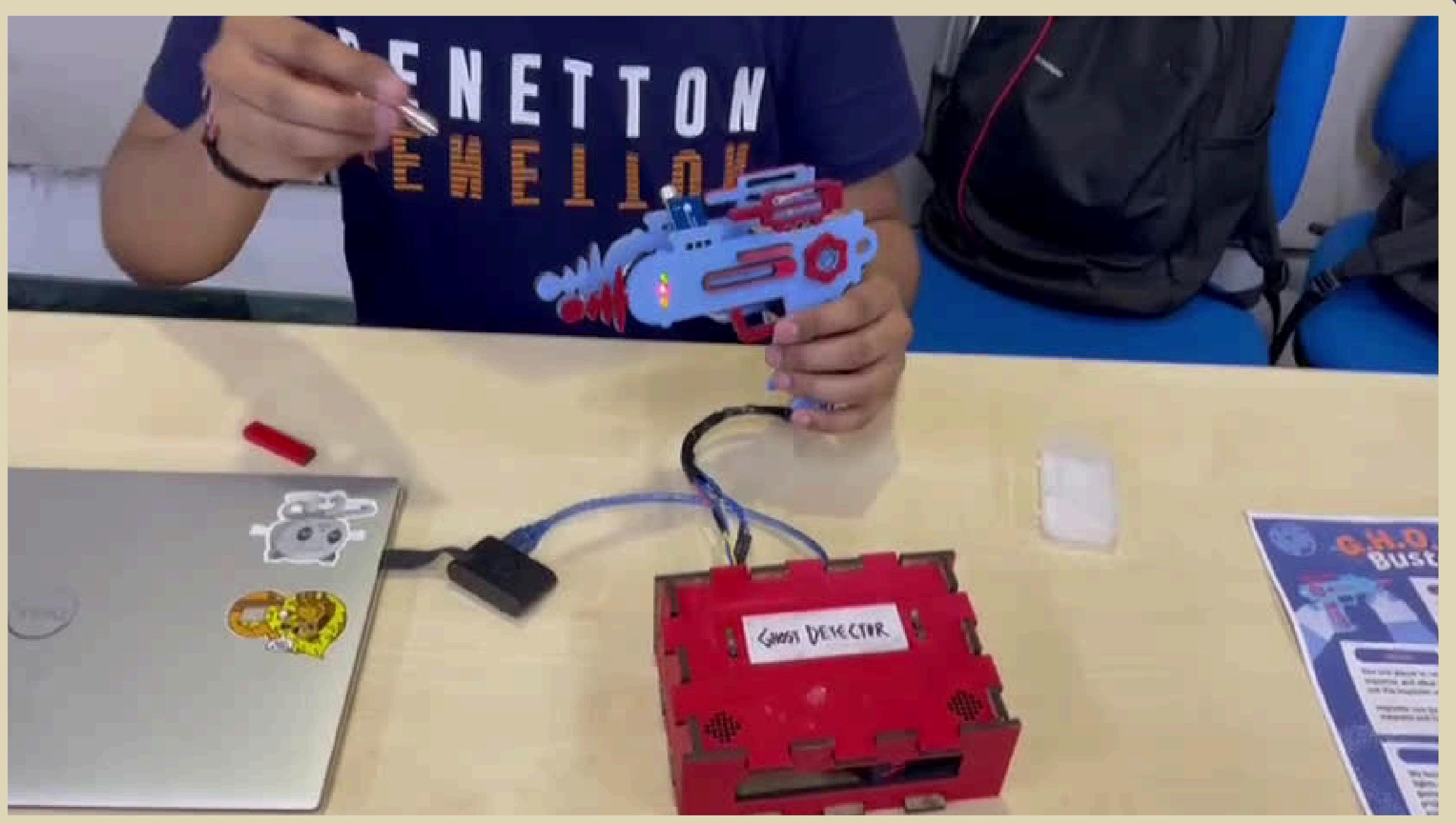
1. Read sensor value from Arduino.
2. Check if sensor reading is valid ( $\geq 1$ ).
3. Constrain reading to 1 to senseLimit range.
4. Map reading to 1 to 1023 range.
5. Calculate rolling average of sensor readings.
6. Determine LED state based on average.
7. Output sensor value for calibration.



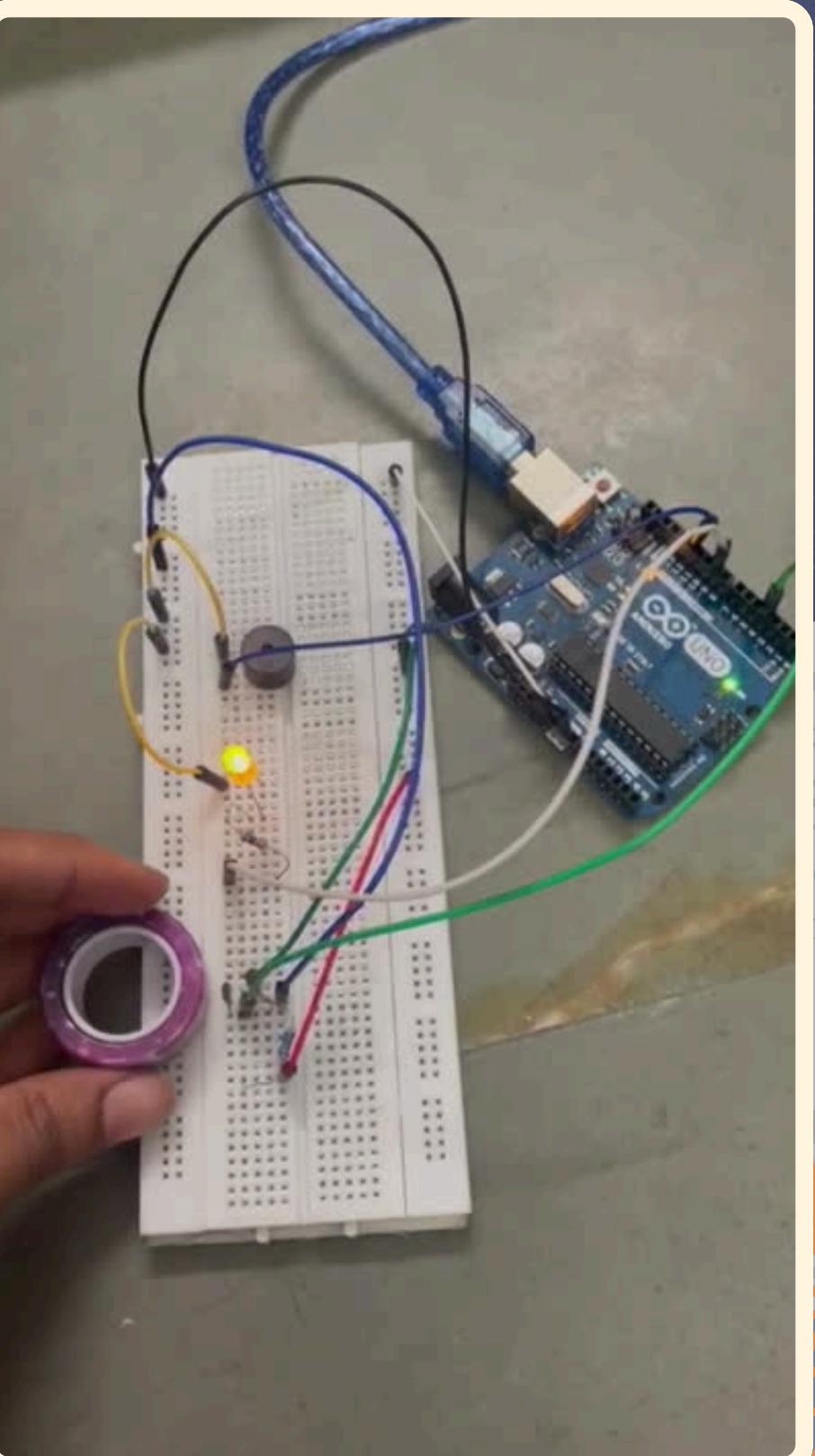
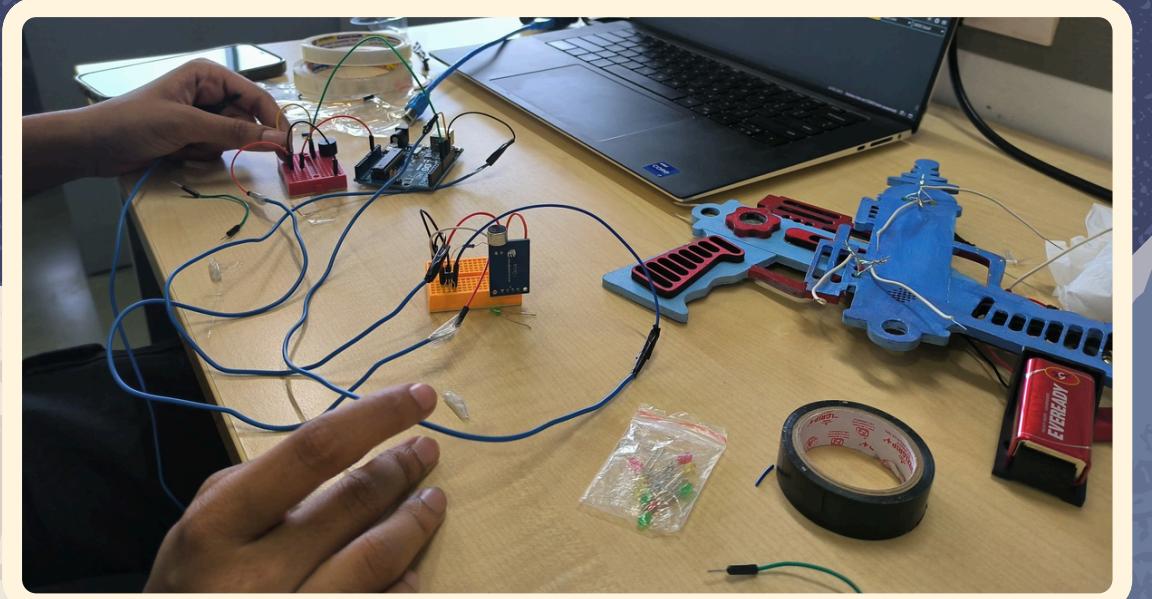
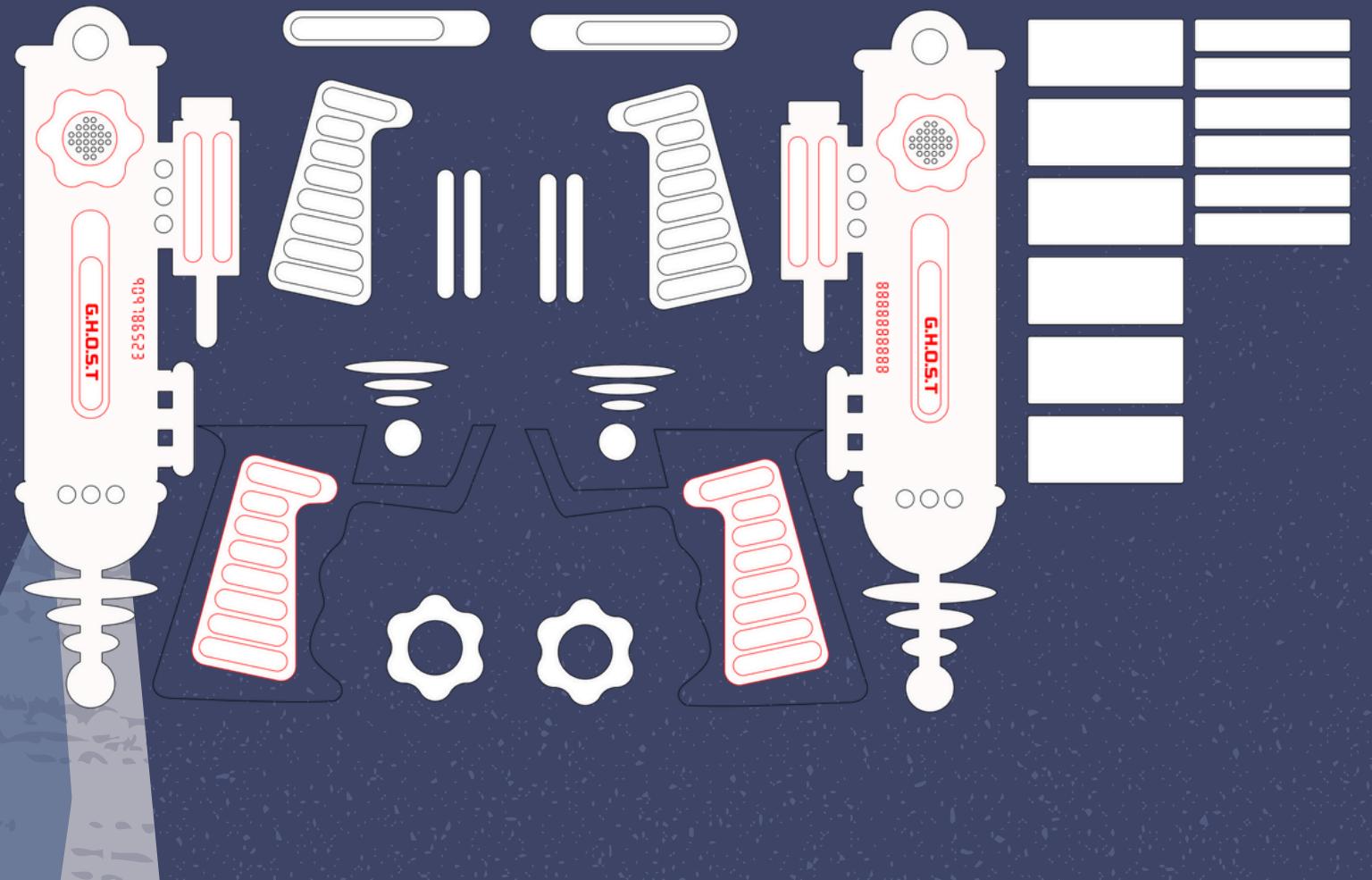
Pseudocode

```
BEGIN
    val = readSensorValue() // Read Sensor Value
    // Check Sensor Reading
    IF val >= 1 THEN
        val = constrain(val, 1, senseLimit) // Constrain Sensor Reading
        val = map(val, 1, senseLimit, 1, 1023) // Map Sensor Reading
        total = total - readings[index] // Calculate Average
        readings[index] = val
        total = total + val
        index = index + 1
    IF index >= NUMREADINGS THEN
        index = 0
    END IF
    average = total / NUMREADINGS
    // Determine LED State
    IF average > 50 THEN
        digitalWrite(LED1, HIGH)
    ELSE
        digitalWrite(LED1, LOW)
    END IF
    // Repeat for LED2 to LED10
    // Output for Calibration
    print val
END
```

# Demonstration

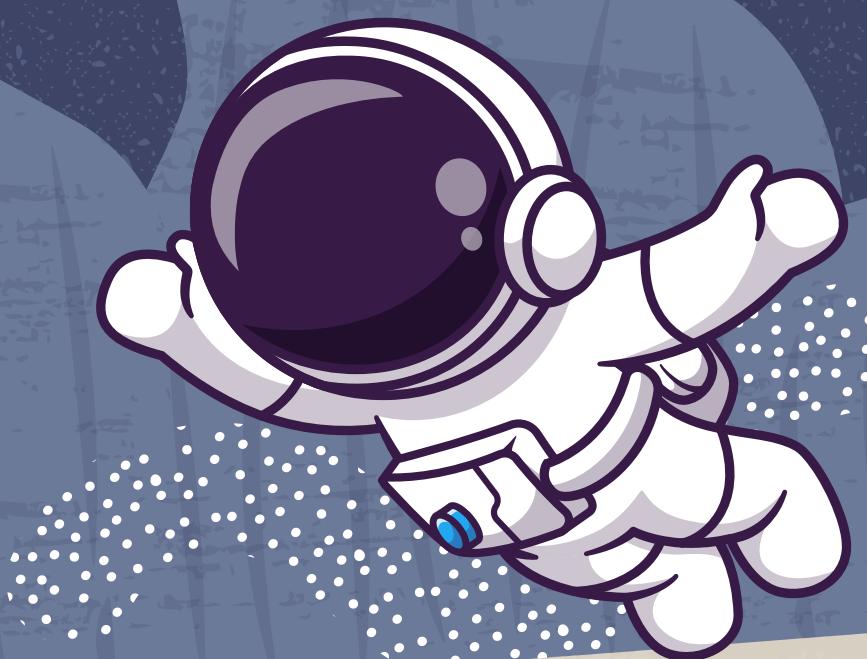


# Making Process :)

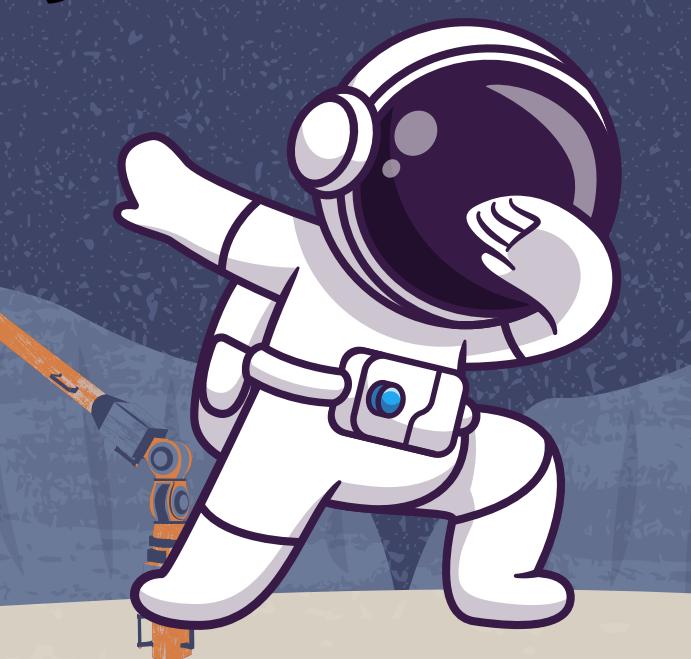


# Team Memebers

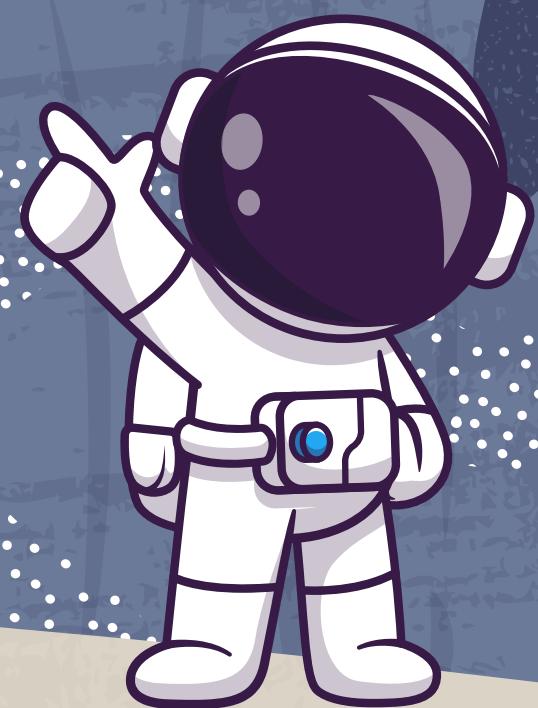
Kabir Kaushal



Siddhant Bali



Anushka Korlapati



# Thank you

