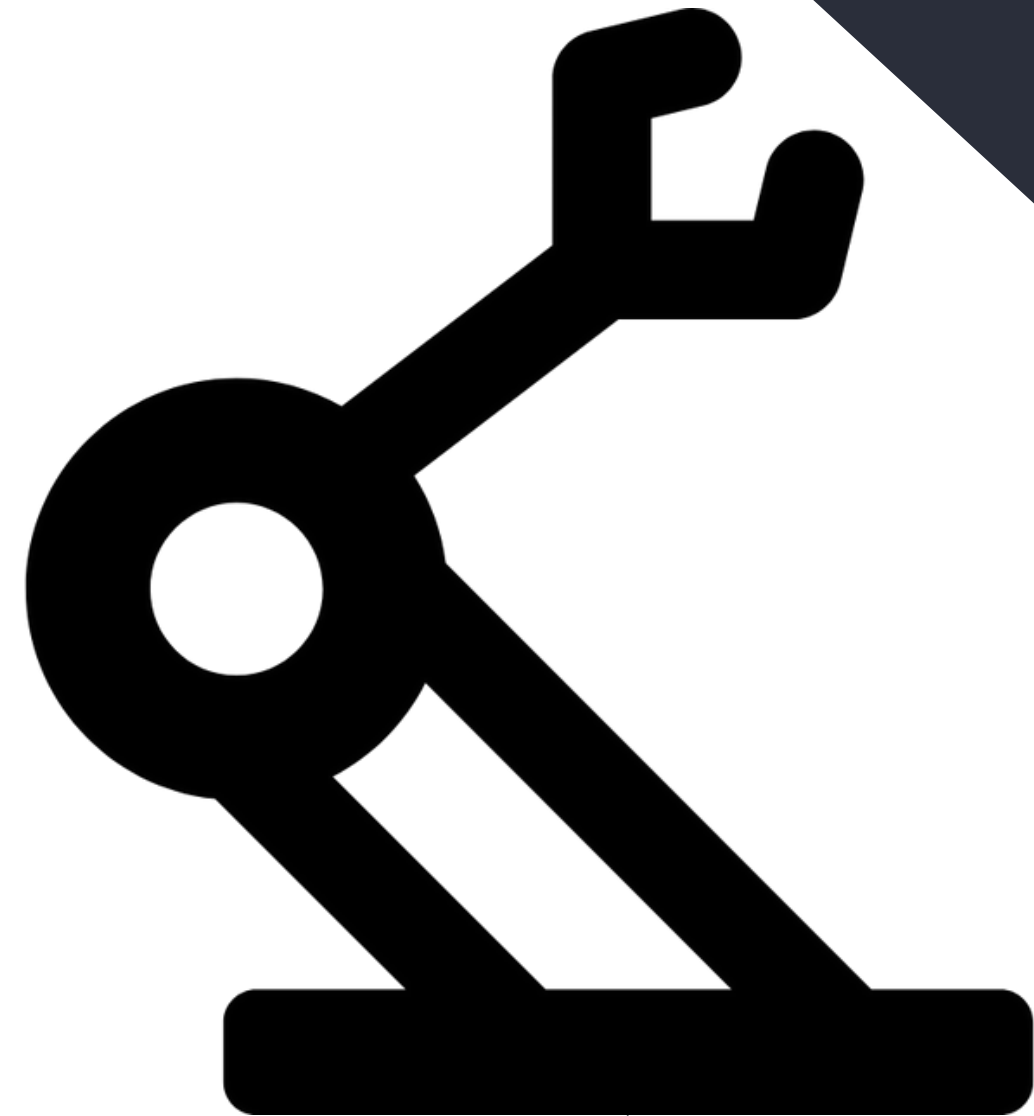


# FlexiMover

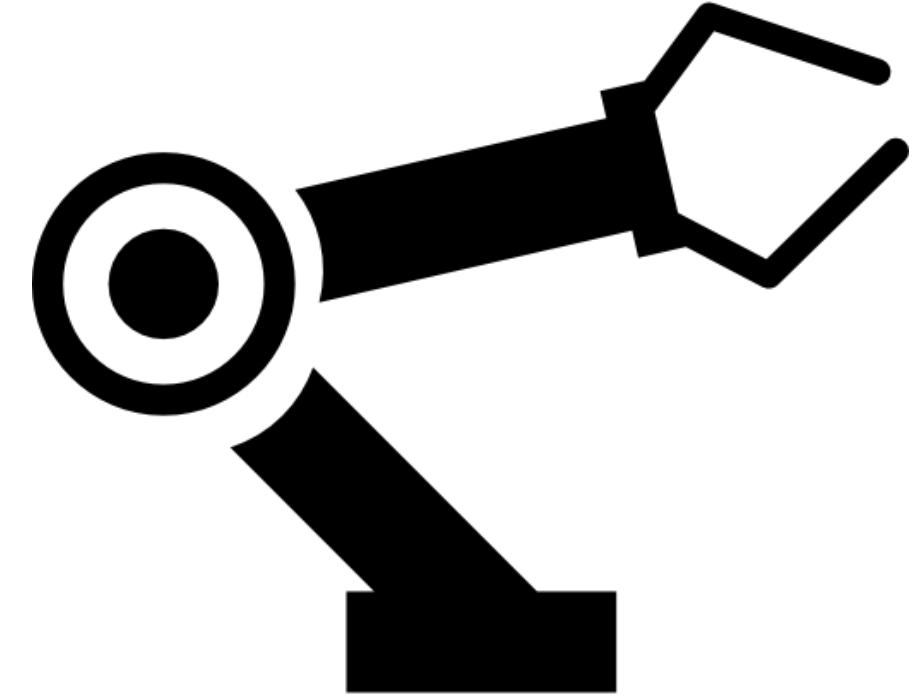
**Presented By :**

**Shareef Nader Salahat  
Momen Anan Ramadan**

**Supervisor:  
Dr. Hanal Abuzant**



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# Introduction

- ▶ Addresses challenges in unstable or impractical environments like disaster sites, poorly lit areas, or business settings.
- ▶ Emphasizes the need for a remotely operated machine for safe exploration, object retrieval, and real-time monitoring.
- ▶ Existing robot solutions lack intuitive control mechanisms or effective real-time feedback, especially in low-visibility situations.
- ▶ Aims to create a reliable and flexible robotic device for remote operations in hazardous areas.

# Primary Goals



**Make a Robot with  
All Directions  
Movement**



**Create a Robotic  
Arm Controlled by  
Glove**

# Primary Goals



**Install Camera for  
Real Time Video  
Broadcast**



**Embed Light  
Sensor for Low-  
Visibility  
Operations**



**Test the solution  
in an operational  
environment**

# Our Constraints



1

Communication Latency

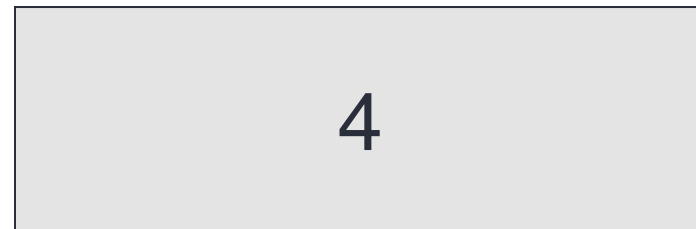
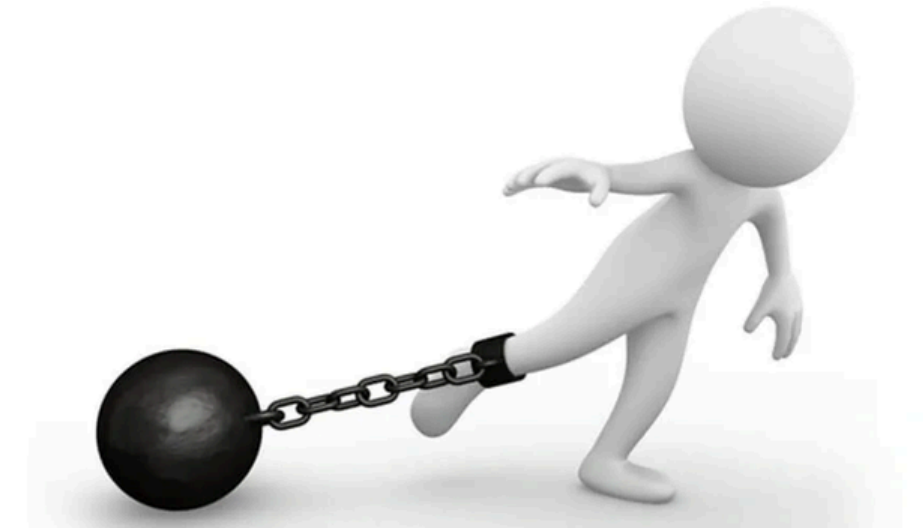
2

Battery Life

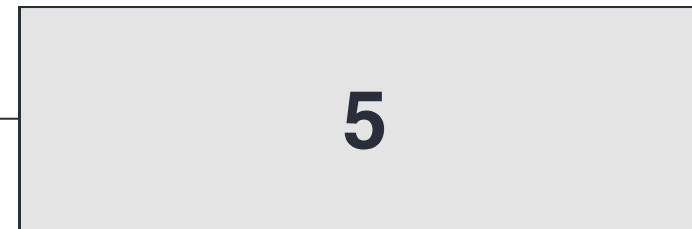
3

Range of Wireless  
Communication

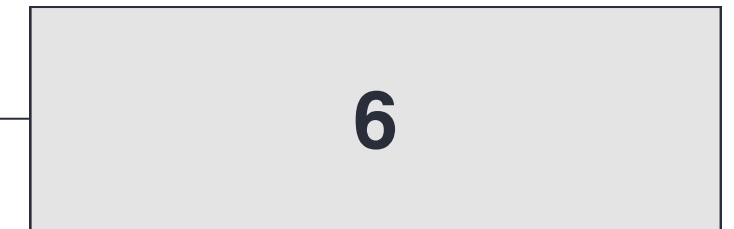
# Our Constraints



**Environmental  
Conditions**



**The security and political situation  
of the country**



**Cost and Resource  
Limitations**

# Our Features

**Gesture-Controlled  
Robotic Arm:**

**Dual Device Integration**

**User-Friendly Design**

**Install Camera for Real  
Time Video Broadcast**

**Embed Light Sensor**



# Hardware Parts

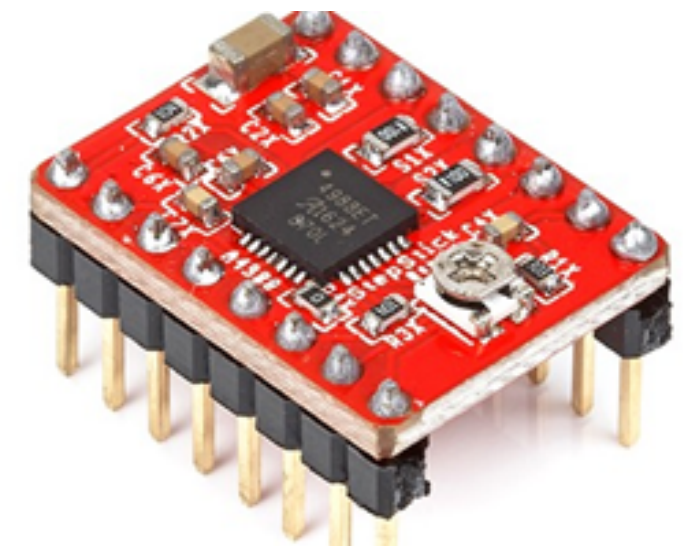
What did I use hardware parts in my project ?



ESP32



NEMA 17



A4988

# Hardware Parts

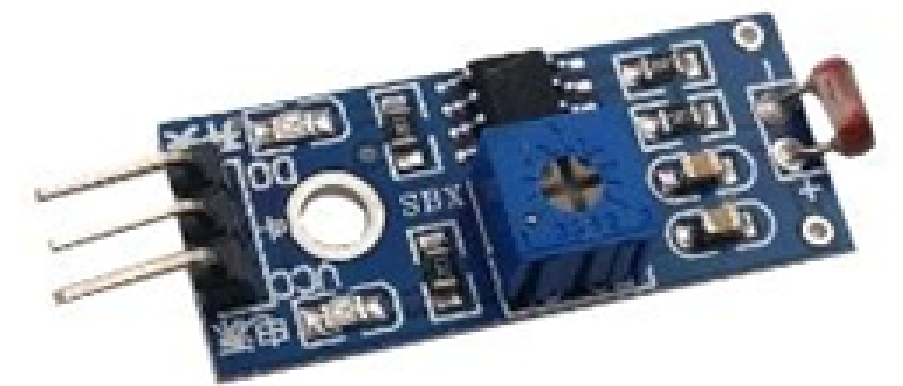
What did I use hardware parts in my project ?



div268n



buck converter



LDR

# Hardware Parts

What did I use hardware parts in my project ?



white led



mpu 6050



push button

# Hardware Parts

What did I use hardware parts in my project ?



esp32 cam



gripper



servo motor

# Hardware Parts

What did I use hardware parts in my project ?



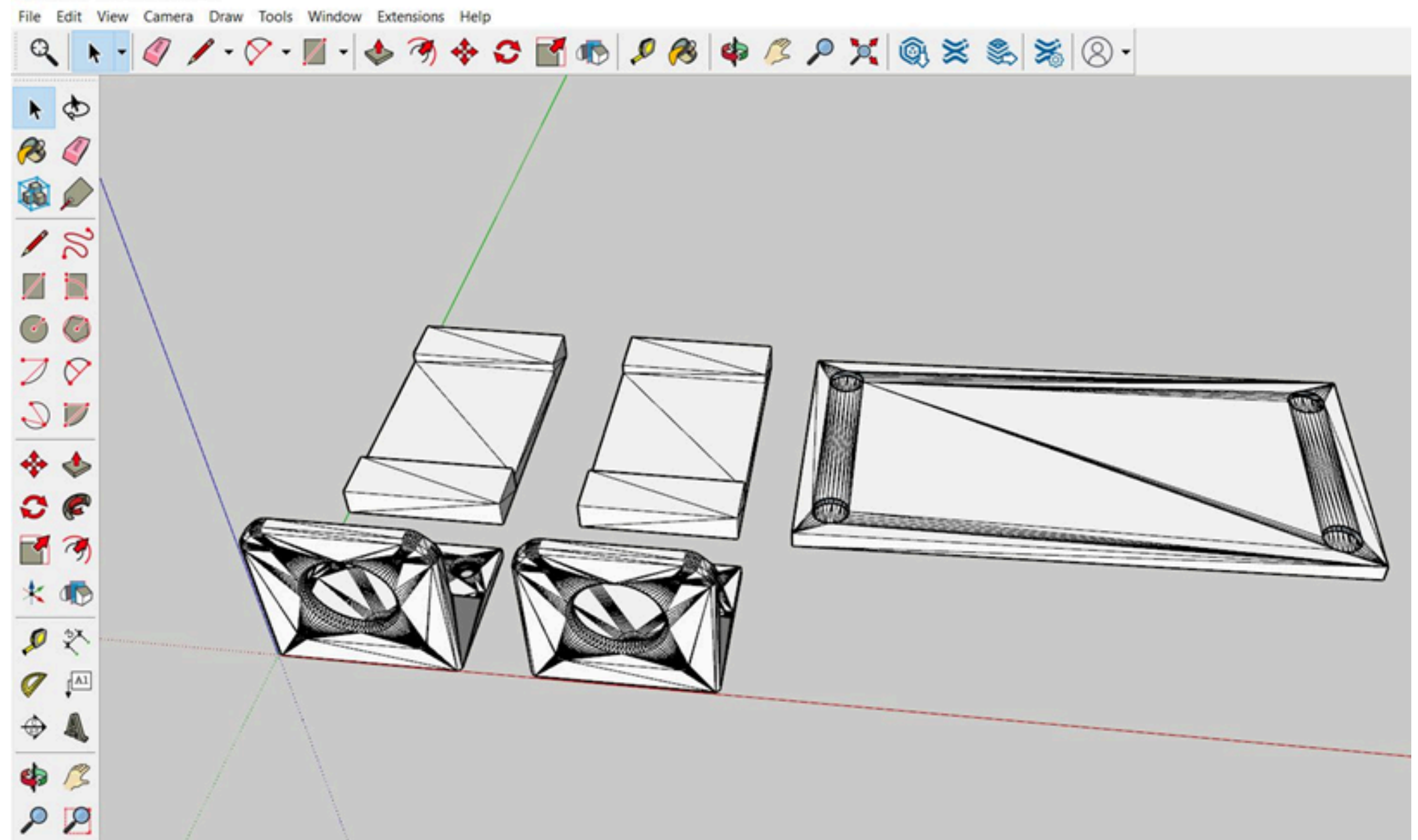
wheels



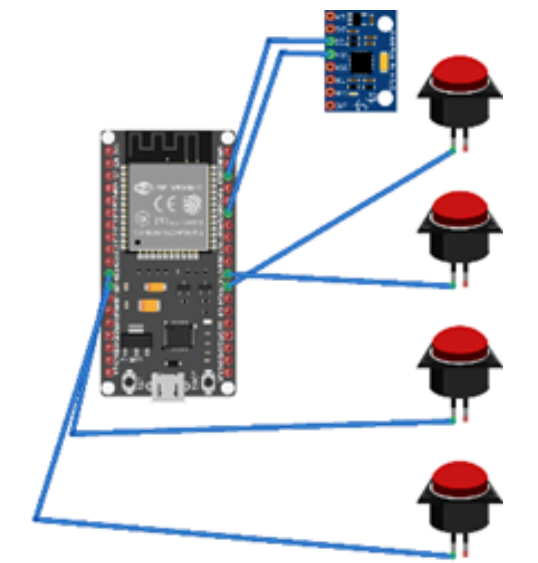
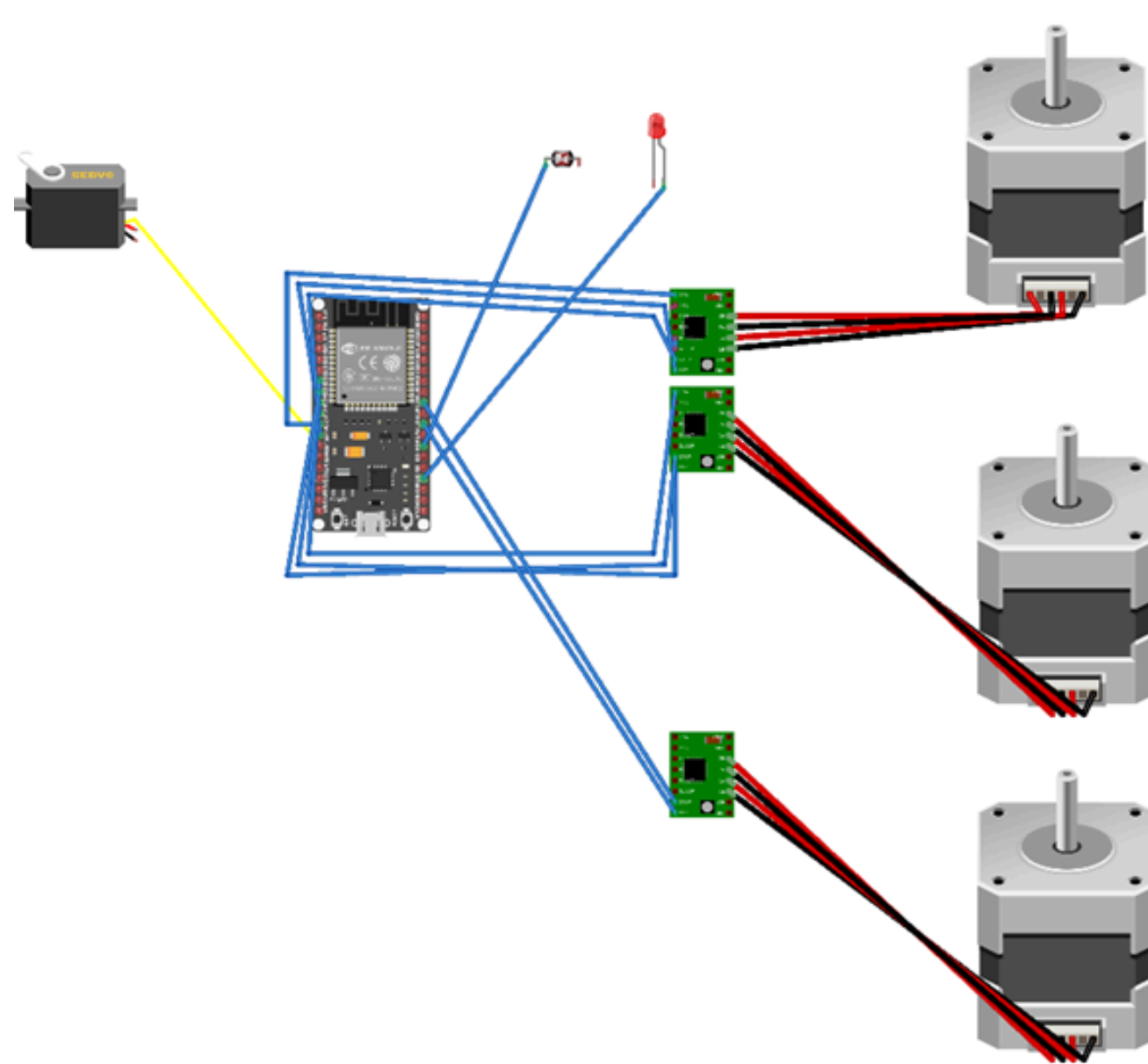
Lithium batteries

# A STEP-BY-STEP OVERVIEW

## ► Robot Design



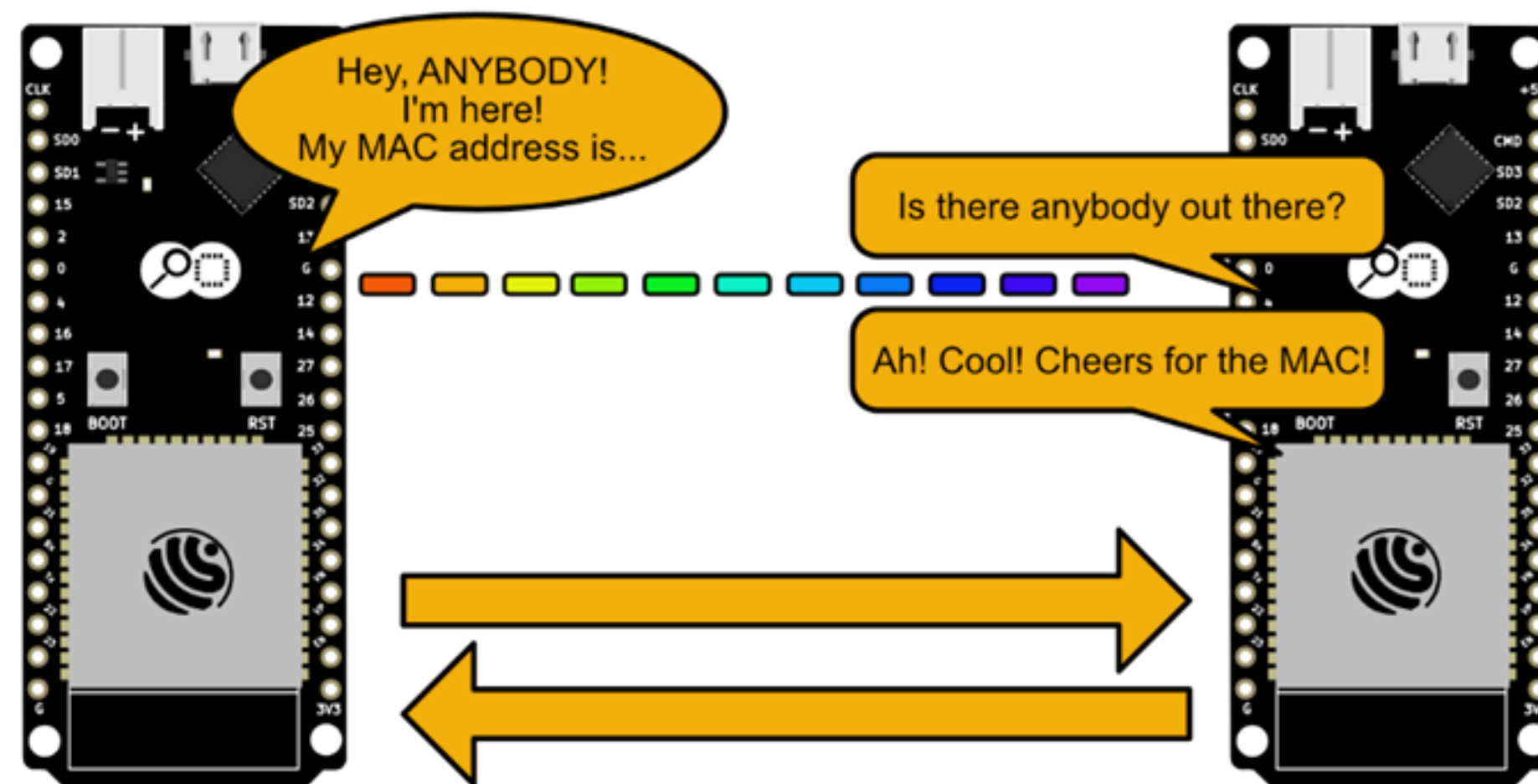
# A STEP-BY-STEP OVERVIEW



## ► Circuits Diagram

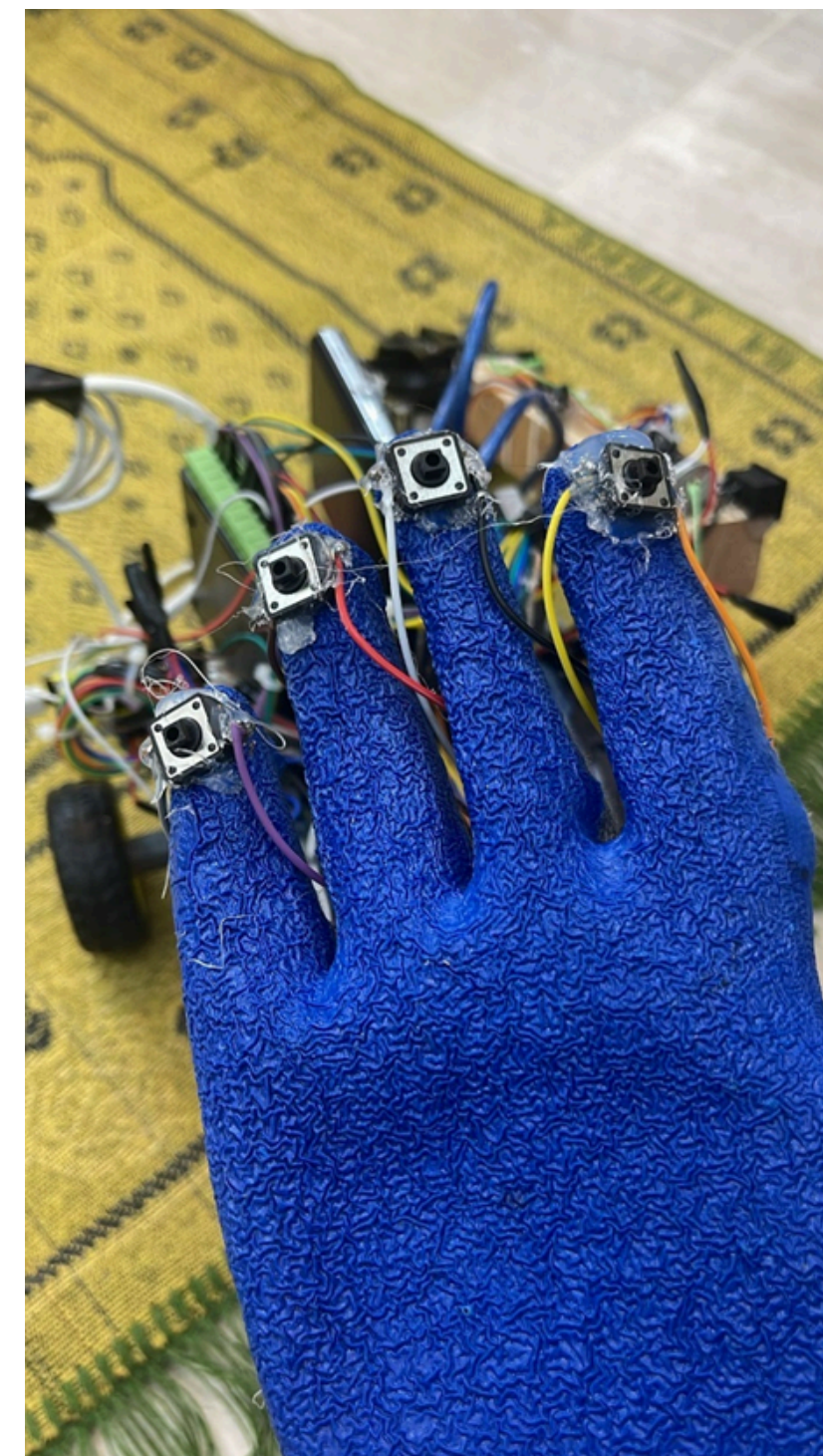
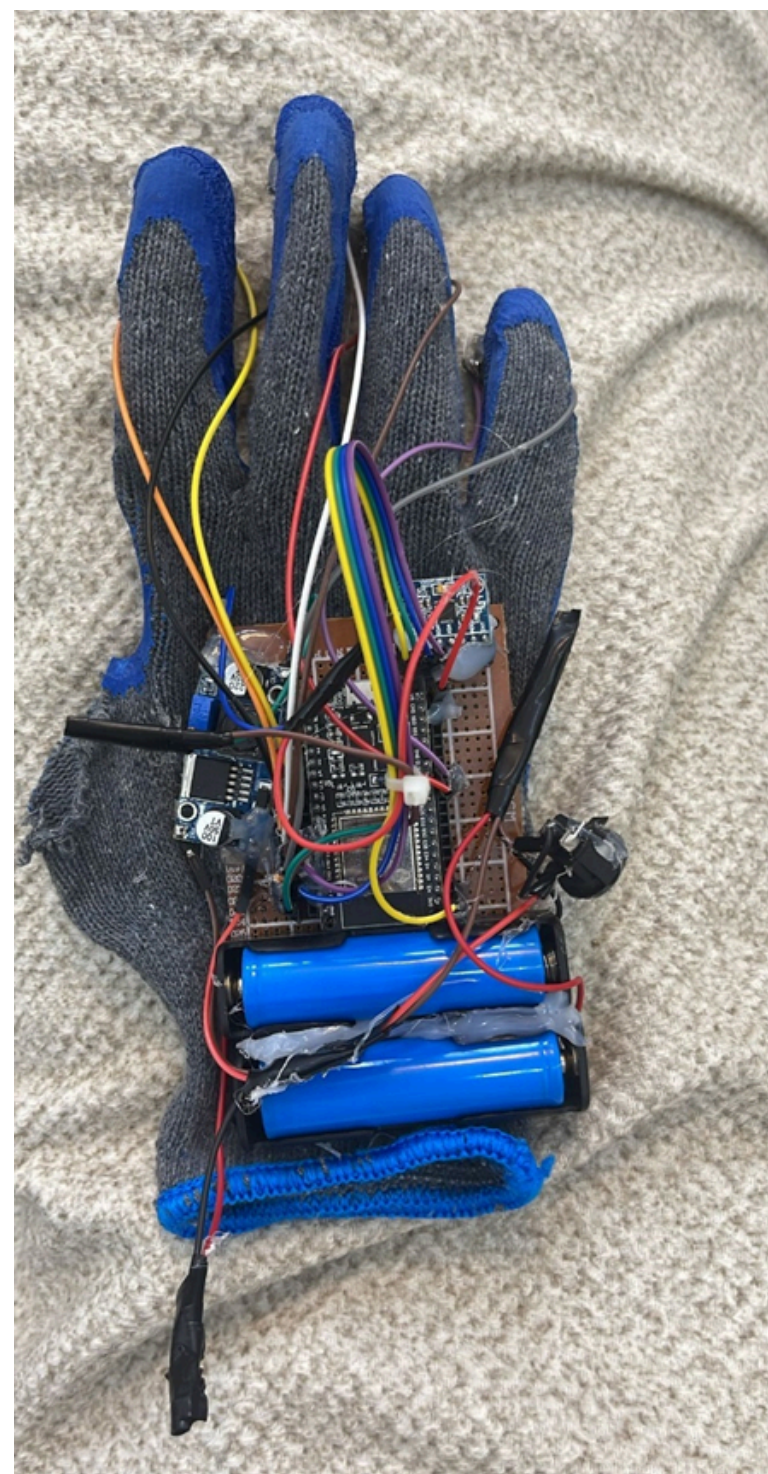
# A STEP-BY-STEP OVERVIEW

## Communication diagram



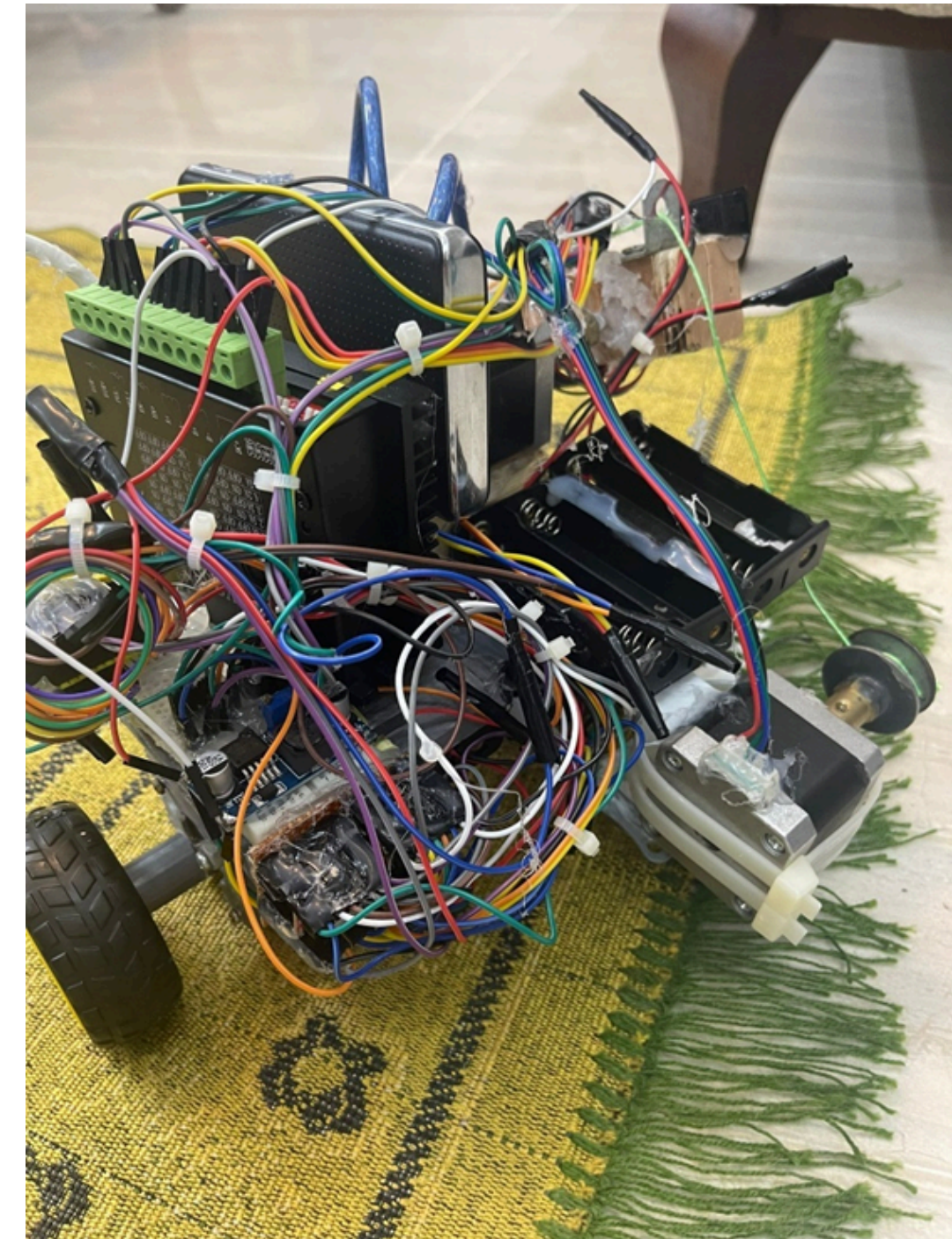
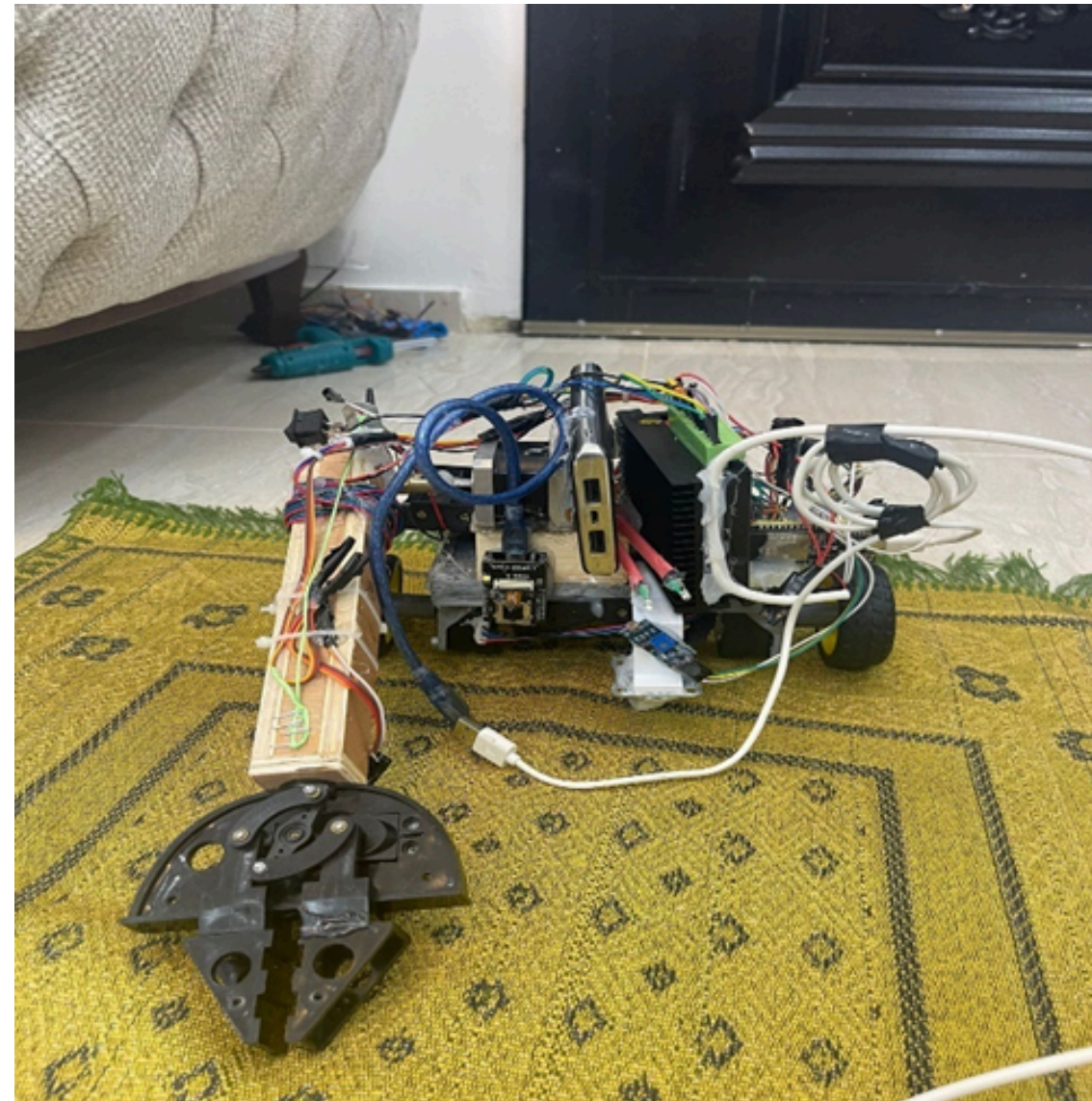
# Final Design

## ► Glove Design :



# Final Design

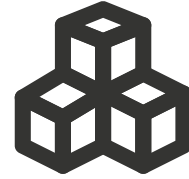
▶ **Robot Design :**



# Future Work



Integrated AI Capabilities



Comprehensive Muscle Control

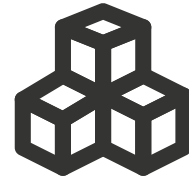


Replace the generator with batteries for better project performance

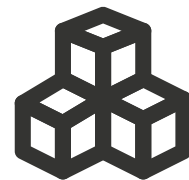
# Future Work



The robot can read the dimensions of the object captured by the arm



Robotic Accessibility in Constrained Spaces



Research into extra efficient energy management structures

**ANY  
Questions?**

*Thank You*

