



SEER

"Secure and Efficient Robotics for Hazardous Work Environments"

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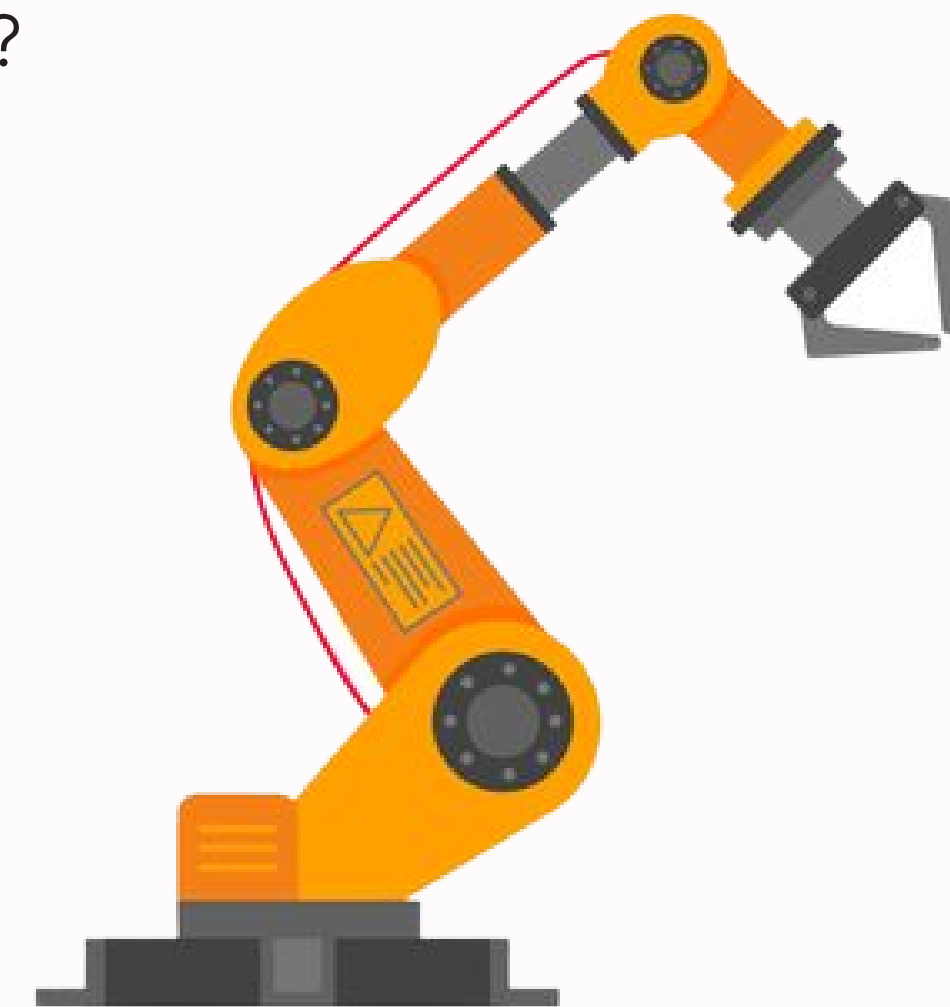
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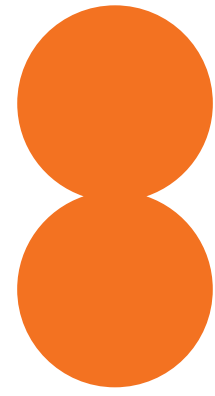
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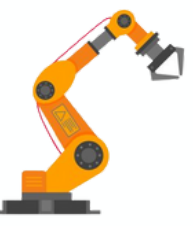




WHAT LED US TO SELECT THIS PROJECT IDEA?

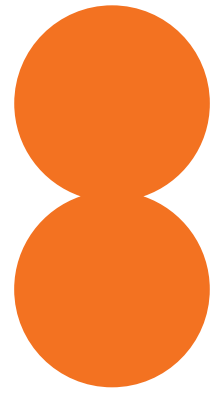


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WHAT LED US TO SELECT THIS PROJECT IDEA?

Every day, countless workers are at risk of workplace injuries, with 860,000 job-related injuries reported by the International Labour Organization. Tragically, hazardous materials alone account for 340,000 worker fatalities each year, underscoring the severity of the issue.



WHAT IS THE SEER PROJECT?

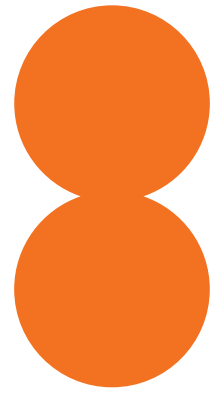


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WHAT IS THE SEER PROJECT?

The Robot arm responds to hand gestures but doesn't mimic them.

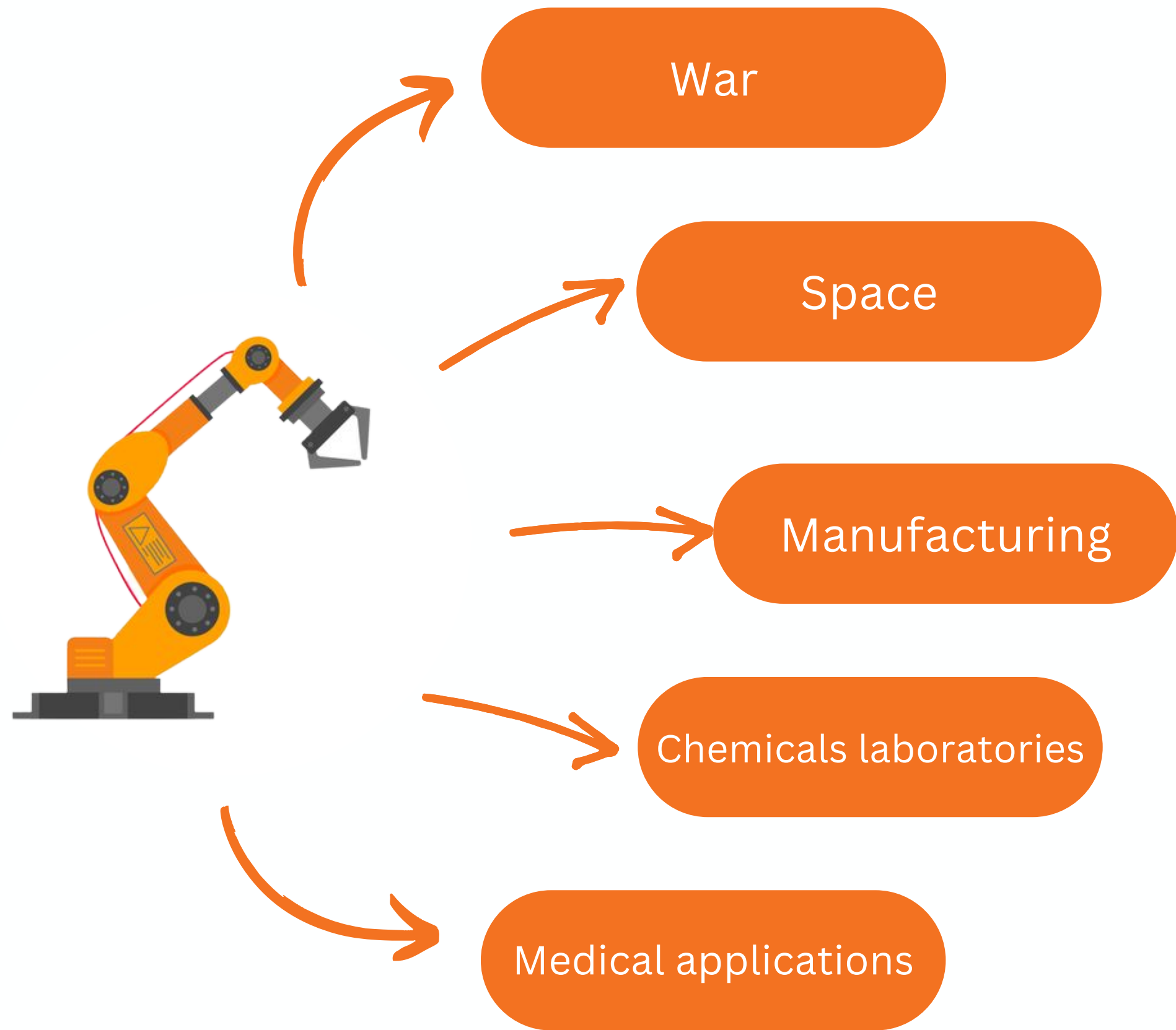


WHERE DO WE USE IT?



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where do
we use it?

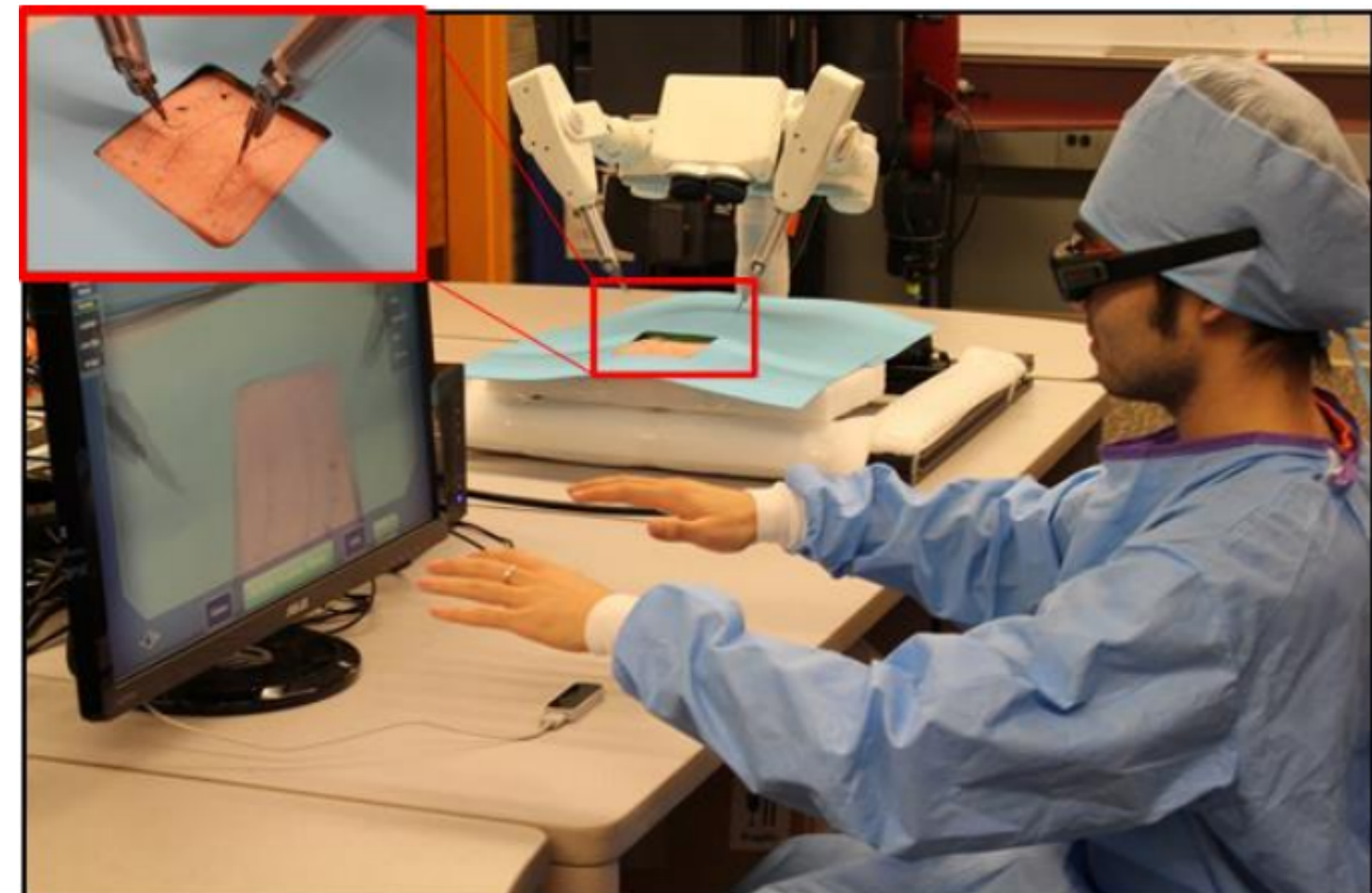




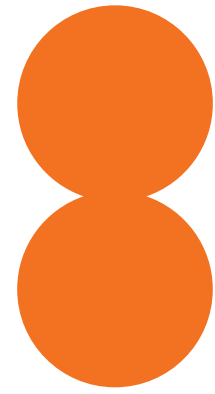
EXAMPLES WHERE THEY HAVE BEEN USED



robot name :Urbie



robot name:Taurus robot



FEATURES AND COMPONENTS



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Features

01



Gesture-Controlled Robotic Arm: The project's standout feature is its ability to interpret hand gestures for controlling the robotic arm. Unlike simple mimicry, the arm intelligently responds to gestures, making it more versatile.

02



Dual Device Integration: The project integrates a robotic arm and a car base, both controlled by the same gesture-responsive gloves, adding versatility to user manipulation.

03



User-Friendly Design: With ergonomic gloves and responsive system, users experience an intuitive and user-friendly interface that responds naturally to their hand movements.

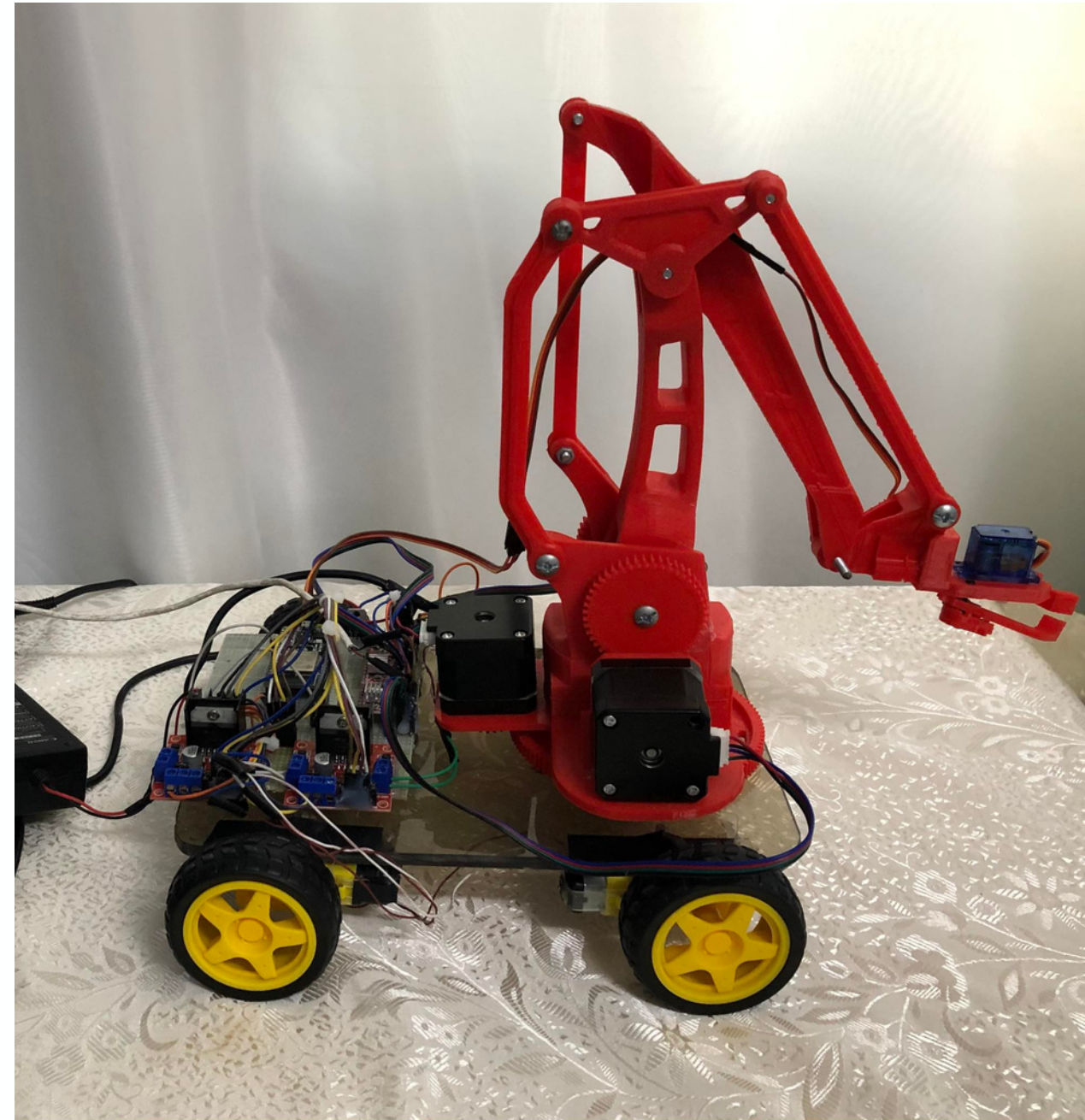
04



Seamless Communication: Effective wireless data transmission between the gloves and system components ensures a fluid operation, powering both the robotic arm and car base.



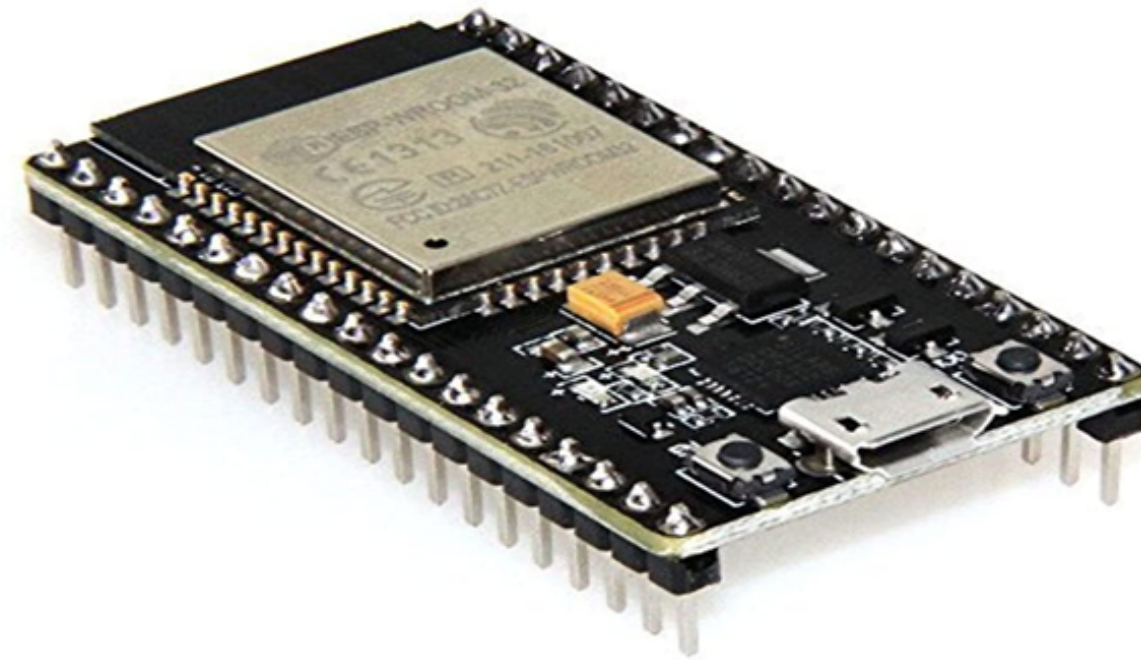
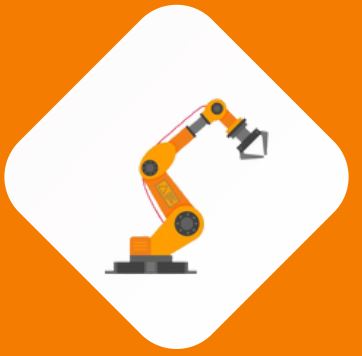
Sender Part



Receiver Part



Components:

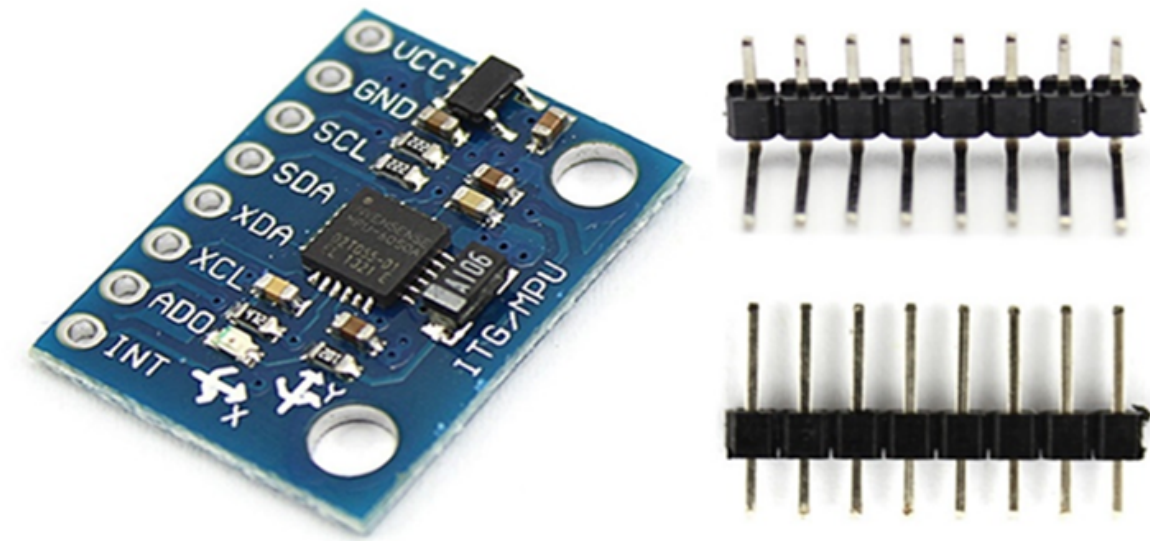


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Components:

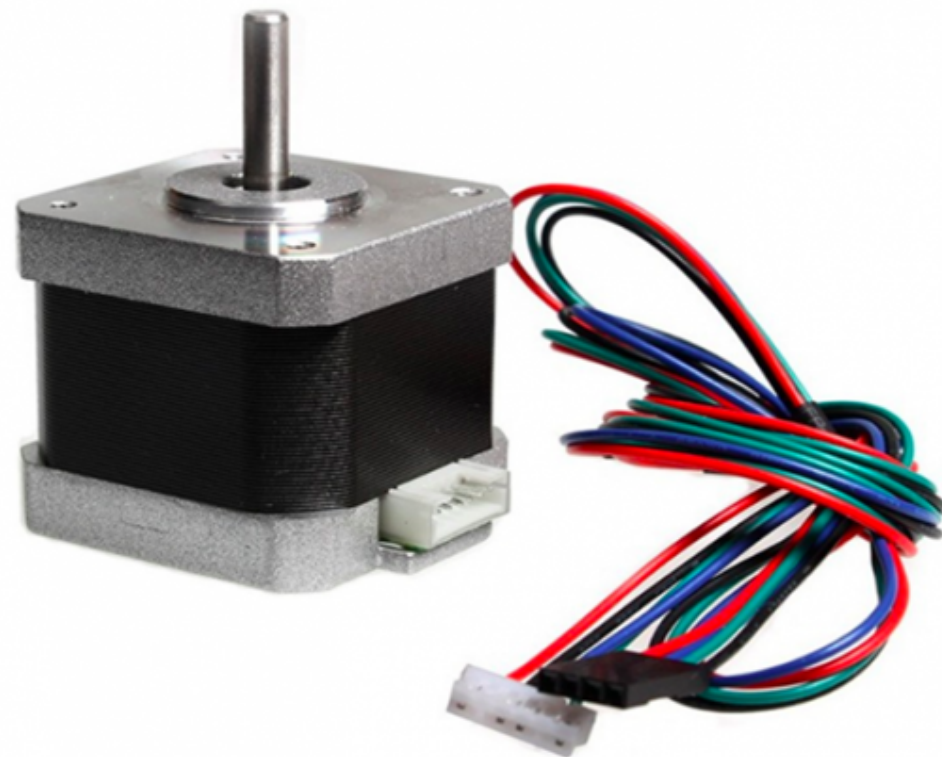


Flex Sensors

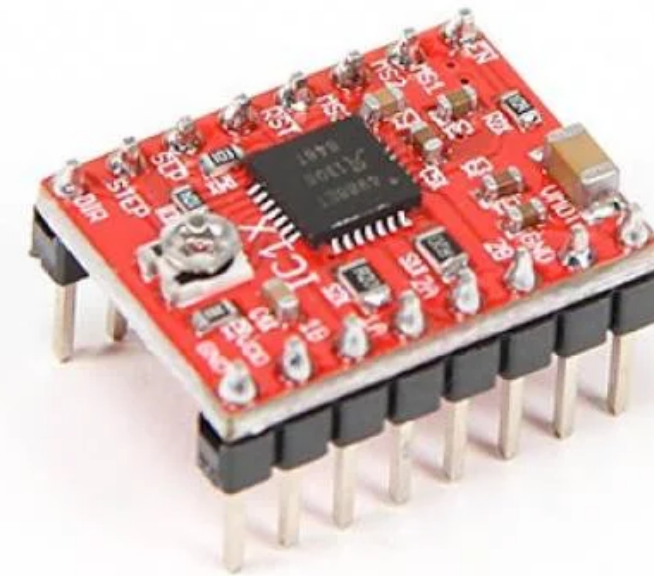


Triple Axis Accelerometer & Gyro Breakout - MPU-6050A

Components:

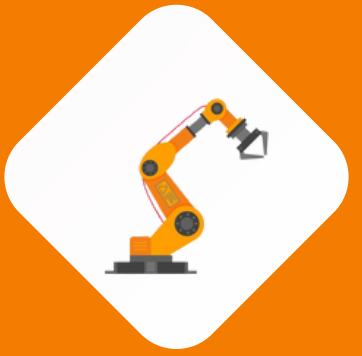


NEMA17 Stepper Motor



A4988 Driver

Components:



Servo Motor

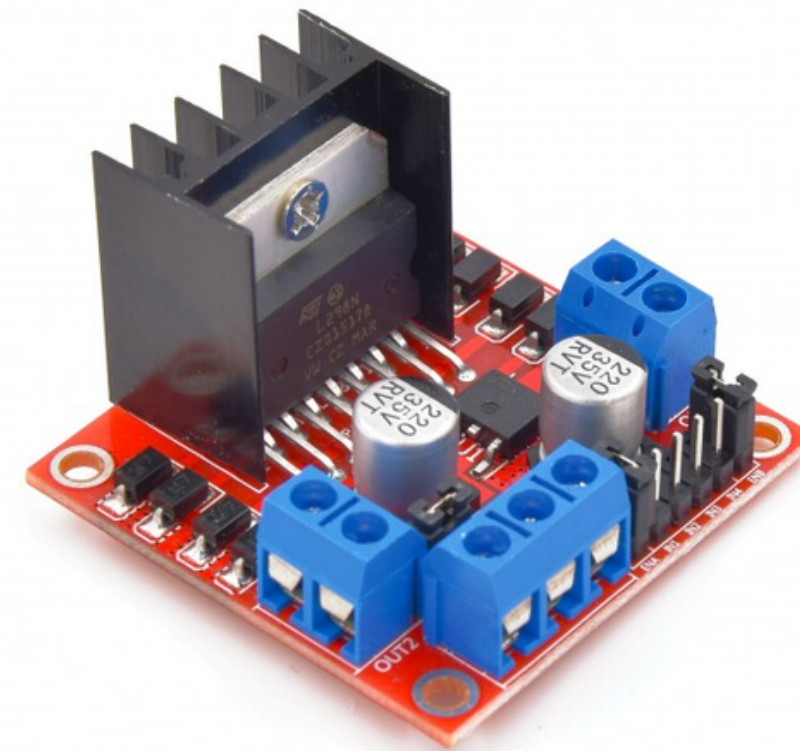


LM7805

Components:



DC Motor



L298N h-bridge

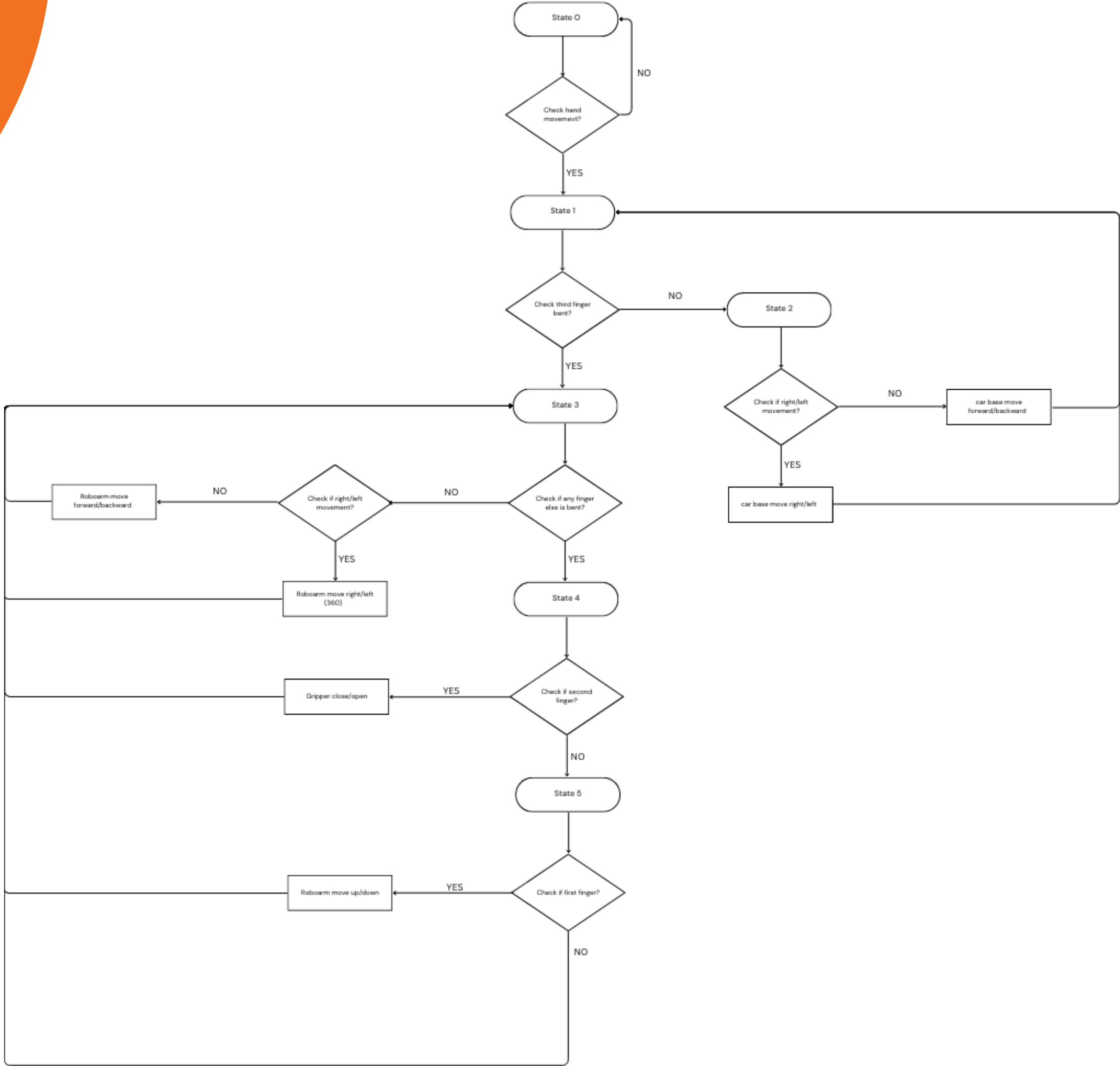


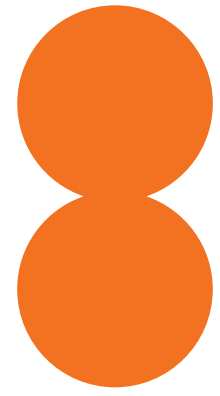
A STEP-BY-STEP OVERVIEW



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UML Designe





CONSTRAINTS



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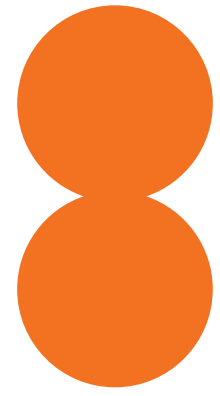
Constraints



Weight Limitation

**Coordinating Arm and Base
Movement**

Securing the Right Arm



FUTURE GOALS



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Future Goals



Goals nº 01

Comprehensive Muscle Control: Further develop the integration of EMG sensors, allowing the robotic arm to be guided not only by hand movements but also by the user's muscle activity. This advancement would introduce an additional layer of natural and intuitive control.



Goals nº 02

Integrated AI Capabilities: Implement an AI system that actively monitors the robotic arm's surroundings, enabling real-time decisions for optimized interactions. This could encompass obstacle detection, object recognition, and predictive learning from user interactions.



Goals nº 03

Expanding Applications: Investigate the feasibility of applying this technology in diverse fields beyond hazardous environments, such as manufacturing, healthcare, and other sectors where human-robot interaction plays a pivotal role.



Goals nº 04

We plan to replace the generator with batteries for better project performance. Additionally, a precise printed glove will be added. The car's base will be redesigned to fit the robot arm, improving durability and weight management. Our main aim is to enhance the overall performance of the SEER project.



THANK YOU!