Internet of Things

Gesture Gloves

Submitted by: Group 6

Number of Group Member- 5

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Contents

I. Introduction

Internet of things

The Internet of Things (IoT) is a network of interconnected physical devices, vehicles, buildings, and other items that are implanted with sensors, software, and network connectivity to collect and share data. In a nutshell, IoT is the process of linking common objects to the internet and allowing them to speak with one another and with us.

The idea behind IoT is to build a huge ecosystem in which devices can seamlessly gather and share information, resulting in increased efficiency, better decision making, and enhanced automation. Simple domestic appliances such as refrigerators, thermostats, and lighting systems are examples of networked devices, as are more complicated systems such as industrial machinery, smart cities, and even wearable devices.

An IoT system's major components are as follows:

- Devices/Sensors: These are physical devices or machines that have sensors or actuators for data collection and transmission. Temperature sensors, motion detectors, GPS trackers, and other devices may be included.
- Connectivity: IoT devices use a variety of methods to connect to and interact with one another and with the internet. Wi-Fi, Bluetooth, cellular networks, and specific IoT networks such as LoRaWAN or Zigbee can all be used to accomplish this.
- Data Processing: After collecting data from IoT devices, it must be processed and analyzed. This can be done locally on the device or on the cloud, which has powerful computer systems capable of handling largescale data processing and complex analytics.
- Cloud Infrastructure: The cloud is critical in IoT because it provides storage, processing power, and scalability for IoT data. It offers

smooth access to data from anywhere and the integration of many devices and applications.

- Apps and Services: IoT generates a vast amount of data, which apps and services may use to give important insights and functionality. Smart home automation, industrial monitoring and control systems, healthcare solutions, and many other applications are examples of these applications.

Project Members

Members Name	**Roles**
SAI AUNG HSO MUNG	Report and Presentation
THIN MYAT ZAW	Design and Report
PYAE PHYO THIHA	Design and Coding
SAW WIN NWE (Leader)	Main Coding
KHANT KYAW MIN	Presentation

II. Project Proposal explore of IoT Functions & Functionality

Project proposal 1- Gesture Gloves

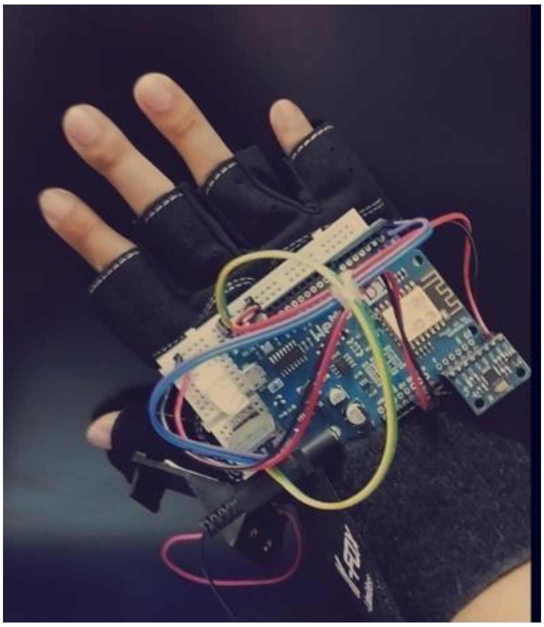
Introduction

Toy automobiles with remote controls have long been a popular source of fun for both children and adults. A new idea has developed to improve the user experience: remotely driving toy vehicles with gloves. By just wearing specially constructed gloves, users may operate numerous aspects of the toy car. In this post, we'll look at the features and details of remote-controlled toy cars that use gloves.

Gloves Design

The gloves used for remote control of toy automobiles have sensors and electronic components incorporated in. These components allow signals to be transmitted from the gloves to the toy car, resulting in a smooth control experience. The gloves are usually light and comfortable, allowing the user to move their hands freely and precisely.

Requirement
Uno Arduino Board
Adapter
MPU 6050 accelerometer sensor
Glove
Mini Breadboard
9V battery
Cable ties
Jumper wires



Gloves Design

Car Design

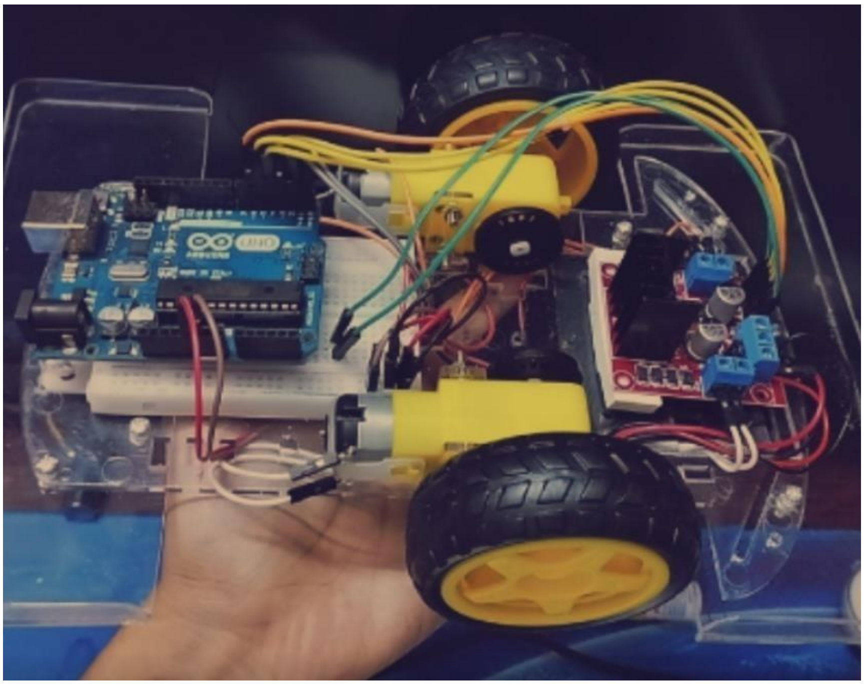
Embedded sensor modules on the car's exterior detect and interpret movements made by the driver while wearing gesture control gloves. These sensors are deliberately placed in order to correctly capture hand movements and offer seamless contact between the driver and the vehicle.

The interior design is around producing a driver-centric cockpit with an emphasis on ergonomics and comfort. The configuration allows for simple access to controls and displays while limiting distractions and allowing the driver to concentrate on the road.

Gesture Recognition System: The interior of the vehicle is outfitted with advanced gesture recognition technology that analyses signals received from the gesture control gloves. This technology reads the driver's hand movements and converts them into particular commands for the car's numerous functions.

Interactive Displays: The car has interactive displays that give the driver visual input. These displays can show icons or animations that reflect the identified gestures and their associated functions, ensuring clear communication between the driver and the car.

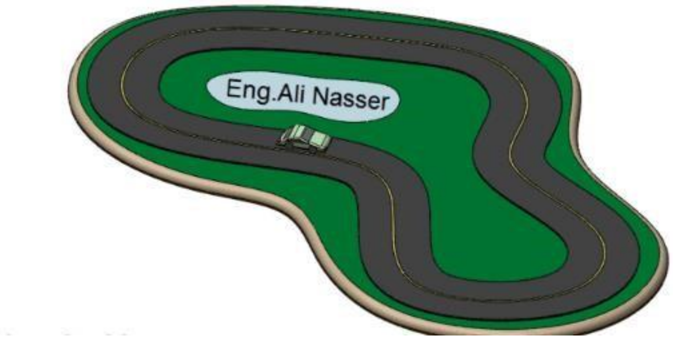
Requirement
Uno Arduino Board Antenna Adapter Bridge motor Mini Breadboard batteries Cars Jumper wires



Car Design

Road Design

Plan A: All of our group members will physically draw the road design like the actual road in real world and use coloring to make more realistic and we will make marks with coloring so color sensor can detect and show the display on the phone.



Road design

Project proposal 2- Protection Vest

Introduction

This article digs into the realm of IoT-enabled safety vests, examining the numerous benefits they provide and the unique functionality they bring to various industries. We will obtain a better grasp of how these vests improve safety, expedite operations, and contribute to a safer and more connected work environment by analyzing the key IoT technologies embedded into them.

Vest Design

Designing a protection safety vest with IoT capabilities necessitates considering both functional and aesthetic factors. Here are some things to think about when developing an effective and visually beautiful vest:

- Material with High Visibility: The fundamental function of a safety vest is to ensure visibility, particularly in dangerous areas. Choose a high-visibility material that meets safety requirements and laws, such as fluorescent or reflecting cloth. The material used should be long-lasting and resistant to wear and tear.
- Ergonomic Fit: The vest should be designed to give the wearer with a pleasant and ergonomic fit. Consider features like adjustable straps, breathable fabric, and lightweight construction to ensure comfort and

longevity. It should allow for flexibility while still providing the required level of protection.

- IoT Sensor Integration: Incorporate IoT sensors into the vest's design in a way that does not hinder or interfere with the wearer's comfort or range of motion. Consider strategic sensor placements, such as the chest for vital sign monitoring or the shoulder for fall detection.
- Wireless connectivity components, such as antennas or modules, should be integrated in a simplified manner. These components should fit seamlessly with the vest's design while maintaining dependable communication capabilities for data transfer and alarms.
- Enhancements to Visibility: Incorporate additional elements such as LED lights or illuminated strips to improve visibility. These can help with lowlight visibility or provide visual cues for specific alerts or cautions.
- Customization and branding: Consider including the organization's logo, colors, or other branding features on the vest. This not only increases brand visibility, but also aids in employee identification and fosters a sense of unity.
- While practicality is important, attention to aesthetics can make the vest visually appealing. To achieve a professional and modern image, balance the use of contrasting colors, reflecting components, and design features.
- Compliance with Safety Standards: Make certain that the design complies with all applicable safety standards and regulations. Conduct extensive testing and certification methods to ensure the vest's effectiveness and compliance with industry standards.

By taking these design considerations into account, a protection safety vest with IoT capabilities can combine usefulness, comfort, and visual appeal, thereby improving safety and usage for individuals in numerous industries.

Requirement

Uno Arduino Board
Wheels
Battery
Bridge motor
Mini Breadboard
Vest
Camera
Jumper wires
Motion Sensor
Buzzer
Fire sensor
Gas sensor
GPS tracker

Protection vest

Project proposal 3: Animal smart bell

Collar Design

A smart collar for animals is designed to provide various functionalities beyond the traditional collar's basic purposes, such as identification and leash attachment. This smart collar typically incorporates electronic components and connectivity features, enabling them to gather data, track location, monitor health, and offer additional benefits for both pet owners and their furry companions.

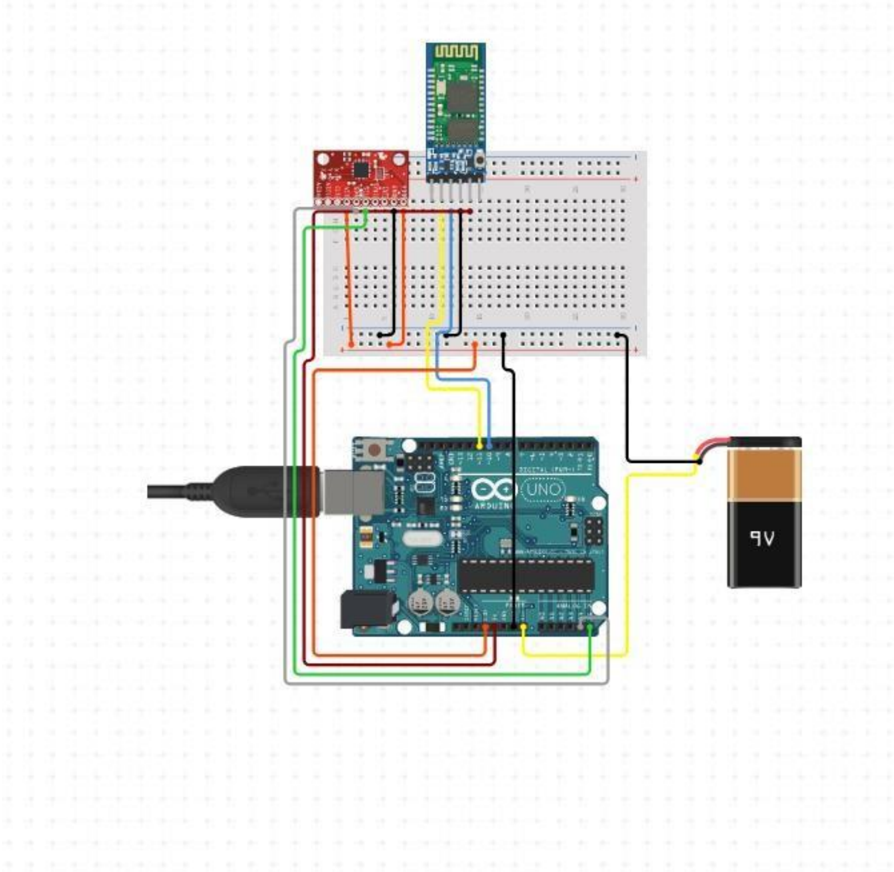
Requirement
Raspberry Pi Zero W
PICamera

Pulse sensor
Piezo
GY – 87
RGB LED
Battery
USB

Figure 1: Collar design III. Review standard architecture, frameworks, tools, hardware and APIs for

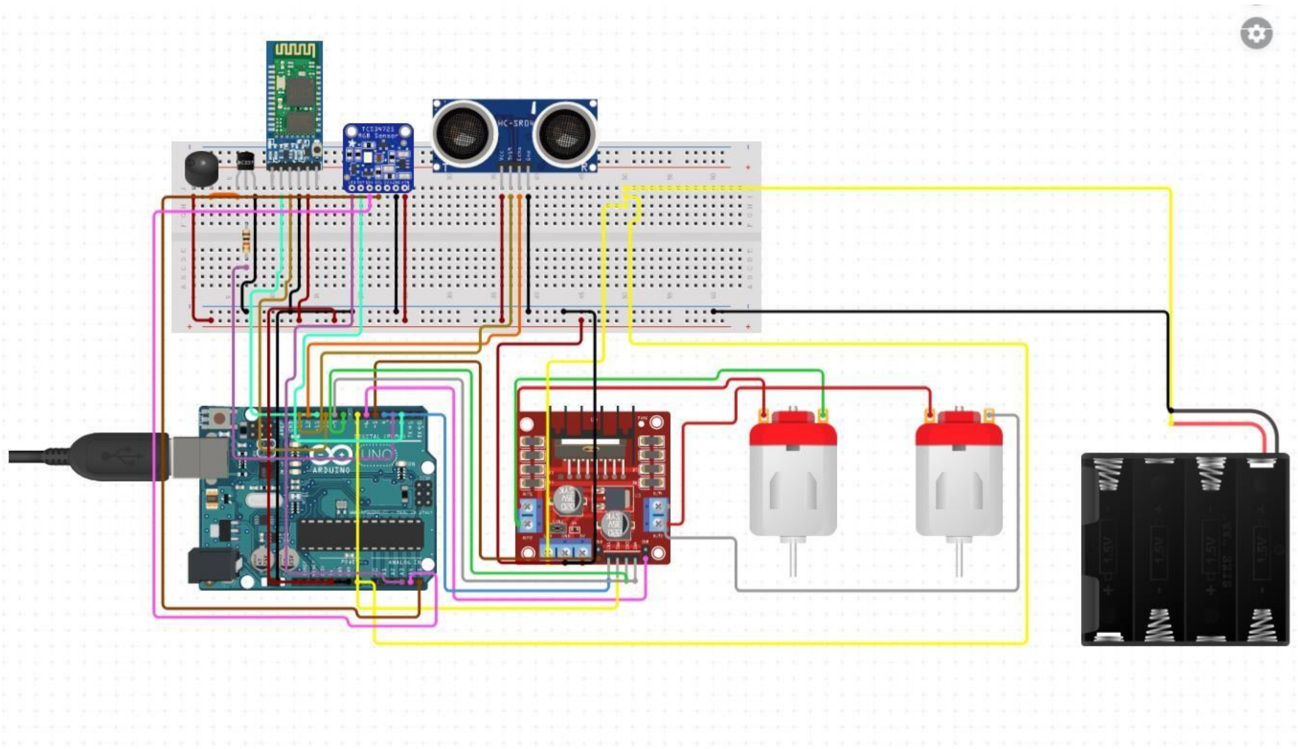
use in IoTs

Circuit Diagram



Gloves set up

This is the set up for gloves with transmitter and we use it WEMOSE D1 R2 MINI board but we cannot find that board when we draw thee circuit diagram so we use UNO board in the diagram but in our project, we use WEMOSE D1 R2 MINI board for both left and right gloves.



RC car set up

This is the set up of car connected with Bluetooth devices as receiver and our project include 2 cars and one of them used with WEMOSE D1 R2 MINI board and another one-use UNO board and as we mentioned for the gloves, we cannot find the board so we drew UNO board instead.

Standard architecture

- Gesture Acquisition: Gesture-Sensing Gloves: Gloves outfitted with sensors (flex sensors, accelerometers, and gyroscopes) to record hand motions and movements.
- Gesture Recognition: Microcontroller: A microcontroller embedded inside the gloves that analyses sensor data and extracts relevant hand gesture information.
- Gesture Recognition Algorithm: Uses machine learning or signal processing techniques to identify specific gestures based on extracted data.

- Bluetooth Communication: Bluetooth Module: Wirelessly transmits recognized gesture data to the RC car's control system.

Microcontroller in the RC Car: Receives gesture data through Bluetooth and converts it into control commands for the RC car's movement.

- Motor Management: Motor Drivers: Controls the RC car's motors and actuators according on the orders received.
- Feedback and safety: Emergency Stop: A system that allows the automobile to stop moving in an emergency.
- Feedback Mechanism: Gives the user visible or audible feedback, validating acknowledged motions and activities.
- Power Control: Batteries: Power the gesture-sensing gloves as well as the RC car's control mechanism.
- Calibration Process: Allows users to calibrate the gloves for accurate gesture detection.
- Data Logging and study (Optional): Data Storage: Saves gesture data for study and optimization of gesture recognition algorithms.

Google Cloud Framework

Using Google Cloud as a foundation for your project has various advantages, including sophisticated cloud services, scalability, and simplicity of integration. However, it is critical to investigate alternative solutions based on the unique requirements of your project. Here's a look at some additional viable options:

Why Use Google Cloud:

- Extensive Services: Google Cloud offers a diverse set of services, including computation, storage, machine learning, and data analytics. This allows you to effortlessly develop, deploy, and manage your project components.
- Machine Learning and AI: Google Cloud provides sophisticated machine learning technologies like as TensorFlow and AutoML, which may be helpful for gesture detection and boosting your system's intelligence.

- IoT Integration: Google Cloud IoT Core enables simple integration and administration of IoT devices, making it ideal for IoT-based control applications.
- Scalability: The architecture of Google Cloud is built to accommodate projects of any scale. If you intend to extend your project or serve a big number of consumers, scalability is critical.

  Data Analytics: The data analytics capabilities provided by Google Cloud may assist you in gaining insights from gesture and usage data, allowing for ongoing development.

  Security: Google Cloud offers a variety of security solutions to keep your data and infrastructure safe.
- Google Cloud features excellent documentation and an active community, which makes it easy to get started, troubleshoot, and discover answers.

Other viable options include:

- Amazon Web Services (AWS): Advantages: AWS, like Google Cloud, provides a wide range of services, such as machine learning, IoT, and data analytics (Amazon, n.d.).
- Benefits of Microsoft Azure: Azure offers a full portfolio of cloud services and interacts nicely with Microsoft technologies. Azure's AI and IoT solutions can be beneficial (Microsoft, n.d.).
- IBM Cloud: Advantages: IBM Cloud provides a variety of AI, IoT, and analytics services, as well as cloud infrastructure (IBM, n.d.).

V. How to Solve with IoTs and benefits

Gesture Gloves

Item	Quantity
WE MOSE D1	3
ARDUINO UNO	1
Bluetooth sensor	4
Motor Bridge Driver	2
Gloves	1
Car motors	4
MPU 6050 Accelerometer Sensor	2
Wheels	4
Buzzer	1
Jumper Cable	

Gloves

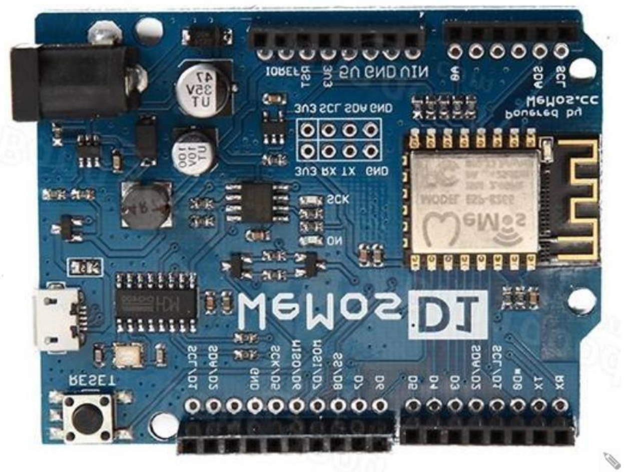
WEMOS D1 R2 Mini Board

The WEMOS D1 R2 Mini is a small development board based on the ESP8266 microcontroller, which is popular in Internet of Things (IoT) applications due to its low cost, built-in Wi-Fi capabilities, and ease of use. When used with RC vehicles, the WEMOS D1 R2 Mini acts as the brain or controller for the gloves, allowing them to connect wirelessly with the RC car and control its motions via hand gestures.

Here are some of the reasons why the WEMOS D1 R2 Mini is a good fit for this application:

- Wi-Fi connection: The ESP8266-based WEMOS D1 R2 Mini includes built-in Wi-Fi connection, allowing the gloves to interact wirelessly with the RC car. This implies that no extra modules are required to make a wireless connection.
- modest Size: Because the WEMOS D1 R2 Mini is modest in size, it can be easily integrated into hand gesture gloves without adding any thickness or weight to the design.
- Low Power Consumption: The ESP8266 microcontroller is intended to be power-efficient, which is critical for wearable applications such as hand gesture gloves. You don't want the gloves' charge to run out rapidly while wearing them.
- Sensor Integration with GPIO Pins: The WEMOS D1 R2 Mini has General Purpose Input/Output (GPIO) pins that may be utilized to interact with sensors on the gloves. These sensors detect hand gestures or movements, which the microcontroller processes and converts into control impulses for the RC car.
- Cost-Effectiveness: The WEMOS D1 R2 Mini is quite affordable, which is advantageous if you intend to make numerous pairs of hand gesture gloves or if your project has a limited budget.

You may build a fun and interactive method to control the motions of RC vehicles by utilizing the WEMOS D1 R2 Mini in hand gesture gloves. The gloves can detect and interpret numerous hand movements, such as moving your hand up, down, left, or right, into precise orders for the RC vehicle to obey, resulting in an intuitive and entertaining user experience.



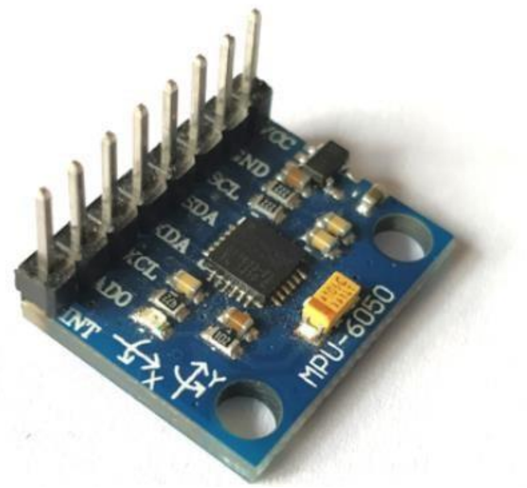
MPU 6050

Using an MPU 6050 (Motion Processing Unit) with hand gesture gloves to control RC cars has various advantages. The MPU 6050 is a well-known and commonly used sensor module that combines a gyroscope and an accelerometer to precisely monitor motion and direction. Here are some of the benefits of using hand gesture gloves with RC cars:

- Capabilities for Motion Sensing: The MPU 6050 can recognize numerous hand gestures and movements such as tilting, spinning, and shaking. These movements may be assigned to particular commands for operating the RC car, resulting in a more natural and immersive control experience.
- accurate Control: The MPU 6050 delivers real-time data on the motion of the glove, enabling for accurate and responsive RC car control. This degree of precision guarantees that the automobile responds to the user's movements correctly, improving the entire driving experience.
- Compact and lightweight: The MPU 6050 is a small and light sensor module that may be included into hand gesture gloves without adding much bulk or weight. This enables for a glove that is both comfortable and inconspicuous.

- Wireless Communication: The MPU 6050 may connect wirelessly with the RC car's control system by interacting with microcontrollers or other processing units. This eliminates the need for physical connections between the glove and the automobile, allowing the user to move freely.
- Gesture Customization: The MPU 6050 allows you to program and configure individual motions for the RC car's many functionalities. Tilting the hand forward, for example, may cause the automobile to speed, while tilting it backward may cause it to brake or reverse. This customization increases the glove's control scheme's versatility and adaptability.
- Hand gesture gloves used to control an RC vehicle may be a pleasant and accessible method for individuals of all ages and skill levels to engage with the car. It may also be appealing to individuals who find standard remote controls difficult to operate.

In conclusion, the MPU 6050 is a flexible motion sensor that may be efficiently integrated into hand gesture gloves to drive remote controlled autos. Its motion detecting capabilities, accurate control, and customization choices make it a fantastic choice for creating a fun and engaging driving experience.



Bluetooth Module HC05

Using an HC-05 Bluetooth module in hand gesture gloves with RC vehicles provides various benefits and functions that improve the user experience and RC car handling. The HC-05 Bluetooth module is a common choice for such applications for the following reasons:

- Simple to set up and use: The HC-05 module is simple to set up and use, making it suitable for amateurs and DIY enthusiasts who wish to build their own gesture-controlled RC vehicles.
- Bluetooth technology ensures a solid and dependable connection between the gloves and the remote-control automobile. This guarantees that the user's orders and gestures are correctly sent to the automobile for seamless operation.
- Cost-effective: The HC-05 Bluetooth module is a low-cost solution for adding Bluetooth functionality to hand gesture gloves, making it an appealing option for low-budget projects.
- The HC-05 module is extensively supported and interoperable with a broad range of devices, including smartphones, tablets, and PCs. This enables the incorporation of additional control interfaces, such as utilizing a smartphone app to drive the RC car.
- Customizability: The HC-05 module may be readily incorporated into various projects and configured to meet individual needs. This adaptability enables users to adjust the hand gesture control system to their specific tastes and requirements.

Because of its wireless capabilities, ease of usage, low power consumption, and low cost, the HC-05 Bluetooth module is a popular and adaptable choice for hand gesture gloves with RC vehicles. It allows users to drive their RC vehicles with intuitive gestures, bringing a fun and innovative addition to the classic remotecontrol experience.

RC Cars

Other equipment- WEMOS D1 R2 Mini (same as gloves) and Bluetooth Module

HC-05 (same as gloves)

Bridge Motor Driver

Using a bridge motor driver in hand gesture gloves with RC vehicles can give a number of advantages and features for operating the vehicle. A bridge motor driver is a motor driver circuit that permits bidirectional control of motors, which means it can control the rotation of the motor in both directions (forward and backward). Here's why it's useful in RC vehicle hand gesture gloves:

- Bridge motor drivers may change the direction of rotation of the motor, letting the RC vehicle to travel forward and backward. This is necessary for efficiently directing the car's movement with hand gestures.
- Bridge motor drivers often provide fine-grained speed control. You can properly change the car's speed by adjusting the voltage provided to the motor, providing smooth and precise movement in reaction to hand gestures.

- Regenerative braking is supported by some sophisticated bridge motor drivers. When you use hand gestures to slow or stop the automobile, the motor driver can convert the kinetic energy of the moving car back into electrical energy and store it for later use. This can increase energy efficiency and battery life.
- Bridge motor drivers frequently have built-in safety measures like as overcurrent protection and thermal shutdown. In the event of a problem or a motor stall, these characteristics can assist safeguard the motor and the driver circuit from damage.
- Microcontroller compatibility: Bridge motor drivers can readily interact with microcontrollers or other control systems. Microcontrollers are frequently used in hand gesture gloves for RC vehicles to interpret the gestures and provide suitable control signals for the motor driver.

Overall, the bidirectional control, accurate speed control, regenerative braking, safety features, and compatibility with microcontrollers of the bridge motor driver make it a good choice for building hand gesture gloves to operate RC vehicles effectively and intuitively.

<u>DC motor</u>

- DC motors are very basic technologies, making them cost-effective and straightforward to include into the design of hand gesture gloves. They are readily accessible and come in a variety of sizes and power levels to meet the needs of the RC car.

- Controllability: DC motors are highly controllable, allowing users to change the speed and direction of the RC car with hand gestures. This feature makes the interaction more straightforward and user-friendly, which is especially beneficial for novices.
- Response Time: DC motors often have fast response times, allowing the RC car to respond quickly to the user's motions. This responsiveness improves the entire control experience of the RC car.
- Battery Efficiency: Depending on the design and application, DC motors can be more energy efficient than other types of motors. This feature can increase the RC car's battery life, allowing for more gameplay before recharging.
- Customization: Because DC motors are easily adaptable to unique design needs, they are suitable for a wide range of RC vehicle types and hand gesture glove designs.

Other types of motors, such as brushless DC motors or servo motors, can also be utilized in hand gesture gloves with RC vehicles, depending on the unique application needs and design concerns. Each motor type has benefits and disadvantages; therefore, the decision is determined by considerations such as cost, performance, power efficiency, and the complexity of the control system.

Advantage of project

- Hands-Free Control: Hand gesture control allows users to drive the RC car without using physical buttons or joysticks, allowing for a hands-free experience. This is especially handy when users need to free up their hands for other chores or operations.
- Hand gesture control can provide a more immersive experience for users by allowing them to feel a stronger connection with the RC car by steering, accelerating, and stopping it with their hands.
- Hand gesture gloves are often tiny and portable, allowing users to drive the RC car without having to carry large remote devices. This mobility might be useful in outdoor settings or when traveling.
- Hand gesture control systems may be created with the flexibility to modify and map certain movements to different tasks, allowing users to select their preferred control gestures.
- Educational Value: This project may be used to expose students and hobbyists interested in electronics and robotics to concepts like as gesture recognition, sensor integration, and motor control.

Disadvantage of the project

- Gesture Recognition Complexity: Developing an accurate and dependable gesture recognition system may be difficult. To effectively understand hand movements, advanced algorithms and sensor integration are required. False positives or misinterpretations may result in unintentional control of the RC car, perhaps resulting in accidents or annoyance for the user.
- Users' Learning Curve: Mastering gestures and comprehending the proper movements for certain instructions may take some time and effort. It may be less intuitive or convenient for users to use typical controllers such as buttons or joysticks.
- Battery Consumption: Using gesture detection and motor control technologies might raise the total power consumption of the setup. This may result in reduced battery life for both the hand gesture gloves and the RC car.
- Integrating the necessary sensors and control modules into the gloves and RC vehicle might increase size and weight, potentially making the gloves less pleasant to wear and impairing the RC car's performance.

<u>Functions of this project</u>

Hand gestures controlling an automobile in a racing project can give an intuitive and engaging approach for the driver to manage many components of the vehicle without depending on traditional physical controls such as a steering wheel or pedals. Hand gestures may improve the racing experience by making it more immersive and perhaps faster.

Here's an example of how hand gesture control may be used in a racing vehicle project:

- Gesture Recognition: To effectively monitor the driver's hand motions and gestures, the automobile would be outfitted with sensors, cameras, or depth-sensing technology (such as infrared cameras or LIDAR). In real time, these sensors record the driver's hand placements and gestures.
- Calibration and Personalization: Before utilizing the gesture control system, the driver may need to undertake a calibration step to guarantee that the system detects their hand motions properly. This technique may require the driver to make precise motions in order to create a baseline for recognition.
- Safety Measures: A critical part of any racing project is safety. To prevent undesired actions, the gesture control system should have fail-safe techniques. Accidental gestures or misinterpretations, for example, should not result in hasty and risky moves.
- Indicators and feedback: The system should offer visual or audible feedback to the driver indicating that a gesture has been identified and what action it relates to. This input can assist the driver in remaining informed and avoiding misunderstanding.
- Fallback method: While gesture control can be exciting and novel, it is critical to have a fallback method in place in case the driver has difficulty using the gestures or the system fails. As a backup, traditional controls such as a steering wheel and pedals may still be accessible.
- Customizability: Different drivers may prefer different gesture mappings or require adaptations due to their driving style or physical restrictions. Providing users with the opportunity to adjust gesture mappings can increase usability and accessibility.

- Integration with Other Systems: The hand gesture control system must be flawlessly connected with the vehicle's overall control system, which includes the engine, gearbox, brakes, and any other features such as adaptive suspension or aerodynamics.
- Training and Familiarization: For drivers who are unfamiliar with the gesture control system, it is critical to provide training and familiarization sessions so that they can use and profit from the technology successfully. Hand gesture control in a racing project is an intriguing notion that may provide drivers with a futuristic and exciting experience. However, when investigating such cutting-edge technology, it is critical to consider safety and usefulness.

Budget

- Prioritization and Scope: We went over the project scope again, identifying key features and components. We could manage resources more efficiently and minimize superfluous expenditures if we focused on essential features.
- Cost Analysis: By doing a thorough cost analysis, we were able to find areas where we might save money without sacrificing quality. We examined both direct and indirect expenses, looking for possible cost-cutting options.

Coding

- Problem Identification: The first step was to fully comprehend the code issue. We examined the problem to see where our code was failing or not giving the expected results.
- Underlying Cause Analysis: To uncover the underlying causes of the coding problem, we performed a detailed investigation. This entailed studying the coding, reading pertinent documentation,

and finding any inconsistencies or flaws that may have caused the problem.

- We encouraged free communication and collaboration among team members. Each person provided a distinct viewpoint to the subject, giving ideas that helped develop a thorough grasp of the challenge.
- Testing and Debugging: Thorough testing was essential in detecting problems and vulnerabilities in the code. We traced the flow of the software and identified places that needed to be corrected using different debugging tools, breakpoints, and logging methods.
- Refactoring: In certain situations, we discovered that the current code structure needed to be improved in order to remedy the issue. We worked on code restructuring, reorganization, and optimization to make the codebase more modular, legible, and efficient.
- When confronted with extremely complicated or unfamiliar issues, we consulted appropriate resources such as internet forums, manuals, or colleagues with experience in the specific programming languages or technology involved.
- Iterative technique: To solve the challenge, we used an iterative technique. We tackled one problem at a time, tested the adjustments, and steadily built on our success. This method assisted us in avoiding the introduction of new defects while correcting old ones.
- Version Control: Using version control systems like Git allowed us to log changes, communicate smoothly, and rollback to prior states if necessary, protecting our work while we solved the coding challenge.
- Documentation: We kept extensive records of the problem, its analysis, the methods taken to remedy it, and the outcomes

throughout the process. This documentation will be useful for future reference and for sharing thoughts with team members.

- Validation and Testing: Following the implementation of solutions, we did extensive testing to ensure that the code issue had been effectively rectified. This entailed conducting a number of test cases, simulations, and scenarios to check that the system's functionality was restored.
- We conducted peer code reviews before completing the solution. Colleagues assessed the modifications made to guarantee code quality, best practices adherence, and to spot any potential oversights.
- Even after we solved the immediate coding issue, we developed monitoring methods to track the system's performance over time. This proactive strategy assists us in identifying any potential relapse or new concerns.

VI. Timetable & Budget

Total Budget					
Items	Qty	Order Date	Arrival Date	Total Budget	Member Budget
MPU 6050 Accelerometer sensor	2	July 17,2023	July 18,2023	10000	2000
Bridge motor driver	2	July 17,2023	July 18,2023	11000	2200
WEMOSE D1 Arduino Board	4	July 17,2023	July 18,2023	58000	11600
Jumper Cable	3	July 17,2023	July 18,2023	6000	1200
Mini Breadboard	4	July 17,2023	July 18,2023	8000	1600
DC motor Cars	2	July 21,2023	July 22,2023	32700	6,540
Gloves	1	7-Aug-23	7-Aug-23	18000	3600
Bluetooth	4	July 25,2023	July 21,2023	50000	9800
Accidental Items	2	31-Jul-23	1-Aug-23	34,700	6,900
Decoration Requirements	5	7-Aug-23	7-Aug-23	25000	5000
Wheels	4	7-Aug-23	7-Aug-23	8000	1600
Total				261400	52,040

Writing Report					
Member Roles	**Responsibility**	**Durati on**	**Start Day**	**End day**	**Complete yes/no**
SAI AUNG HSO MUNG	**Arduino Boards**	2 Weeks	10/7/202 3	21/07/202 3	Yes
	Asus tinker Board 2				
	Odroid-C4				
	Latte-panda 3 Delta				
	SEEED odyssey				
	UD volt V8				
	Smart Glasses for Augmented Reality (AR)				
KHANT KYAW MIN	**Sensor**	2 Weeks	10/7/202 3	21/07/202 3	Yes
	Fire Sensor				
	Water Sensor				
	Motion Sensor				
	Color Sensor				
	Line follower sensor				
	Sound Sensor				
	Smart Ring for Contactless Payments				

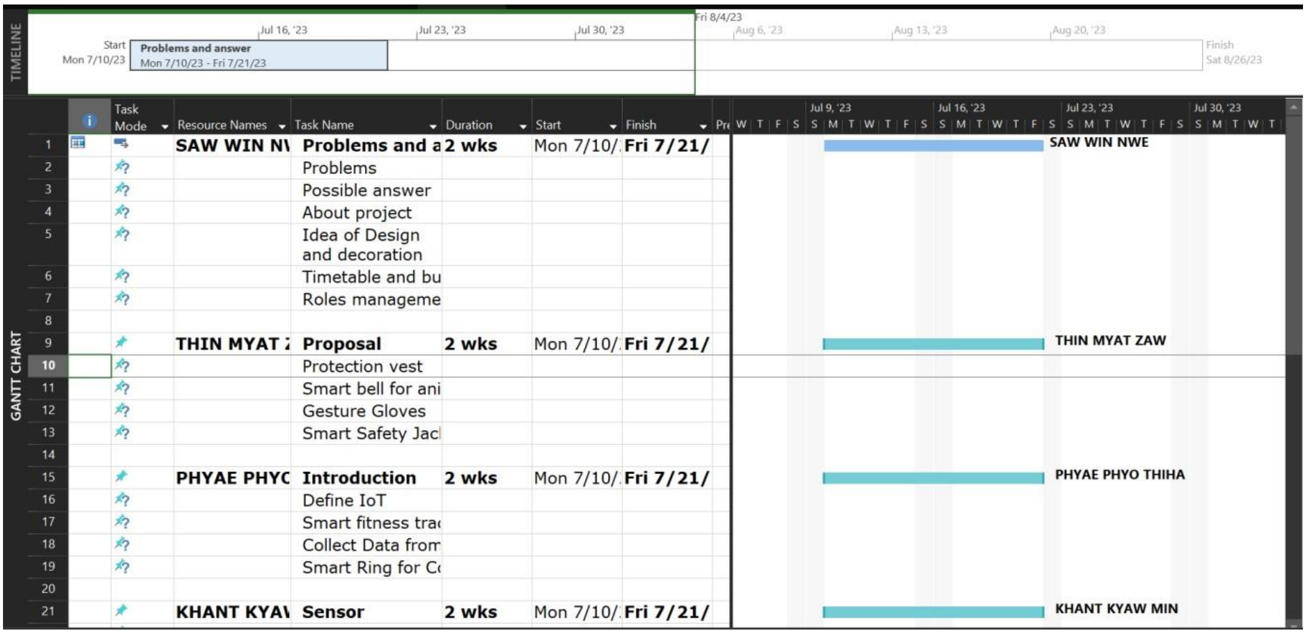
	Bridge Motor Driver				
	MPU 6050 accelerometer sensor				
	Proposal				Yes
THIN MYAT ZAW	Protection vest	2 Weeks	10/7/2023	21/07/2023	
	Smart bell for animal				
	Gesture Gloves				
	Smart Safety Jacket				
PHYAE PHYO THIHA	**Introduction**	2 Weeks	10/7/2023	21/07/2023	Yes
	Define IoT				
	Smart fitness tracker				
	Collect Data from members and abject				
	Smart Ring for Contactless Payments				
SAW WIN NWE	**Problems and answer**	2 Weeks	10/7/2023	21/07/2023	Yes
	Problems				
	Possible answer				

	About project Idea of Design and decoration Timetable and budget Roles management				

Design						
Design	Started date	Member	Duration	Process	Task	Complete yes/no
Car Design	22 July, 2023	All	1 day	1 car set up	1 car set up	yes
Car Coding	22 July, 2023	SAW WIN NWE & THIN MYAT ZAW	1 day	Code Testing and Running	Testing	yes
Gloves Design	23 July, 2023	All	1 day	1 glove set up	1 glove set up	yes
Gloves Coding	23 July, 2023	SAW WIN NWE & PHYAE PHYO THIHA	1 day	Code Testing and Running	Testing	Yes
Road Decoration	8 August, 2023	SAI AUNG HSO MUNG & KHANT KYAW MIN	2 days	Buy requirement and design decoration for the project	Decent decoration	Yes

Meetings					
Date	Attendance	Absent	About	Duration	Problem
20/07/2023	All	Non	budget and project preparation	1 hour and 30min	none
31/07/2023	All	Non	Ordering requirements	1hour	none
8/8/2023	All	Non	Design discussion	2 hours	Different opinion
12/8/2023	All	Non	Installation meeting	4 hours	Researching
20/8/23	All	Non	Finishing Up	3 hours	none

Timeframe



	Task Mode	Resource Names	Task Name	Duration	Start	Finish
1		**SAW WIN N**	**Problems and a**	**2 wks**	Mon 7/10/	**Fri 7/21/**
2			Problems			
3			Possible answer			
4			About project			
5			Idea of Design and decoration			
6			Timetable and bu			
7			Roles manageme			
8						
9		**THIN MYAT**	**Proposal**	**2 wks**	Mon 7/10/	**Fri 7/21/**
10			Protection vest			
11			Smart bell for ani			
12			Gesture Gloves			
13			Smart Safety Jac			
14						
15		**PHYAE PHYC**	**Introduction**	**2 wks**	Mon 7/10/	**Fri 7/21/**
16			Define IoT			
17			Smart fitness tra			
18			Collect Data from			
19			Smart Ring for C			
20						
21		**KHANT KYA**	**Sensor**	**2 wks**	Mon 7/10/	**Fri 7/21/**

VII. Run end user experiments and examine feedback.

User Name	Rating	Feedbacks	Suggestions
MS. MYAT HMONE NATHAR Educator	5/5	Normally, vehicles like the one in this project require the use of a phone or remote control, but now I can operate it using only my hand. As I move my hand, the gloves detect the motion and cause the vehicle to drive ahead or backward, which is so fascinating and thrilling for me to use.	If you can handle a larger budget and include more features like as a camera and voice recommendation, among other things, I feel the project will be much better and more useful to people.
Anonymous	4/5	Project is creative and innovative to use.	Project will be better if you put, location tracker route history, driving mood and speed, choosing feature, fire prove deign cover.

Dr. MYO MYINT OO	5/5	The vehicle sleek appearance and high-quality construction amazed me. It's apparent that the makers put in time and effort to create a premium feeling product. Setting up the Bluetooth connection was surprisingly simple; the included instructions walked me through the steps, and I was up and running in no time.	Same the MS. MYAT HMONE NATHAR, you should add voice recommendation and camera.

Teacher THITHITHANDER	4/5	I was able to tailor the driving experience to my preferences, making it suited for both relaxed play and more severe racing challenges.	Adding sound sensor linked with ultrasonic sensor will be better. If the vehicle detects the object that block the way, the sound sensor will alarm the user to back up.

IX. Summary

The Hand Gesture Bluetooth Control RC Car IoT project makes use of cutting edge technology to provide an engaging and intuitive remote-control experience. This project provides a novel approach to drive an RC car by combining gesture detection, Bluetooth connection, and IoT principles. Hand gestures allow users to direct the car's motions, improving the user experience, accessibility, and engagement.

Finally, the gesture-controlled toy vehicle concept goes beyond enjoyment to encompass a wide range of applications with far-reaching good consequences. It demonstrates how technology can stimulate creativity, improve sustainability, and save lives. Gesture control technology exemplifies the revolutionary potential of innovation by encouraging environmentally friendly habits, assuring safety in a variety of contexts, and playing an important part in rescue operations. It demonstrates how a single effort may help to make the world a safer, more sustainable, more technologically sophisticated place.

To summarize, the influence of gesture-controlled technology in rescue operations includes underwater exploration and communication among first responders. These applications demonstrate how creative solutions may improve the safety, efficiency, and overall success of rescue missions in high-stress and dangerous situations.

Accessible disaster assistance is an important use of gesture-controlled technology, allowing those with mobility issues to participate actively in times of need. This technology enables people to communicate efficiently, request help, and even engage in rescue operations remotely, encouraging a more inclusive and humane approach to disaster response.

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