

GalaxyRVR Project

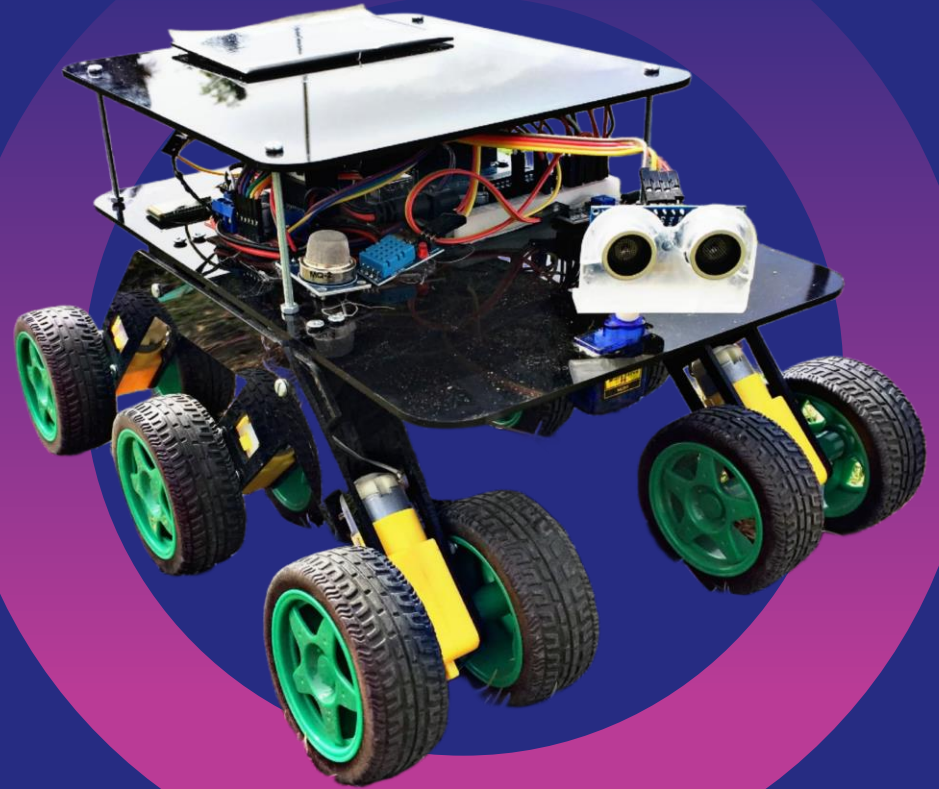


Team Members

Serial	Student Name	Student ID	Task
1	Abdullah Amr Saad Abdelwahab	٢٣٢.٣٦٣	Coding Robot & APP + Photography - Photos&Video + Documentation
2	Abdullah Mohamed El-Sayed Mohamed Fathallah	٢٣٢.٣٦٥	Coding Robot & APP + Presentation
3	Abdelrahman Mohamed Ali Abdelaty	٢٣٢.٣٤١	Circuit Diagram
4	Abdelaziz Ashraf Mohamed Abdelaziz	٢٣٢.٣٤٧	Circuit Diagram
5	Mahmoud Ahmed Mahmoud Awad	٢٣٢.٥٧١	Circuit Diagram
6	Mohamed Mahdy Shaaban Youssef	٢٣٢.٥٥٨	Hardware Setup and Connections
7	Mohamed Ragab Mohamed Abdelkarim	٢٣٢.٥٠٦	Hardware Setup and Connections
8	Mohamed Nabil Ahmed Matawa	٢٣٢.٥٦٠	Hardware Setup and Connections
٩	Ahmed El-Laithy Mahmoud El-Laithy	٢٣٢.٠١٩	Hardware Setup and Connections
١٠	Lamyaa Abdallah Fathy Abdallah	٢٣٢.٤٦٣	Documentation + Robot Design
١١	Sara Faheem Abdelfattah Faheem	٢٣٢.٠٩٠	Documentation
١٢	Roua Sayed Owais Taha Mahmoud	٢٣٢.٩٢٢	Connections
١٣	Tasneem Hosny Mohamed Salman	٢٢٢.٥٥٠	Connections
١٤	Dohaa Ismail Mohamed	٢٣٢.٣٠٤	Circuit Diagram
١٥	Fatma Nasser Khodr Mohamed	٢٣٢.٤٣٢	Documentation + Arithmetic operations

Project Overview

RoverCar is a smart rover car controlled via Bluetooth using a mobile app interface. The system is built using an Arduino UNO board and utilizes the RemoteXY platform for easy mobile control. The goal of the project is to demonstrate how software and hardware work together in real embedded





Rover Car Specifications

The RoverCar is an off-road robot equipped with:

- 6 Motors & 12 Wheels for movement on rocky terrain.
- Solar Power for sustainable energy.
- Distance, Gas, & Temperature Sensors for environmental monitoring.
- Off-road Capabilities to navigate rough surfaces.

It combines mobility, sustainability, and sensing for exploration and surveillance in challenging environments.

Robot capabilities



Terrain Mastery: Effortlessly **traverses rocky terrain and overcomes** obstacles.

Hazard Detection: Accurately detects **flames, gases, and distances**.

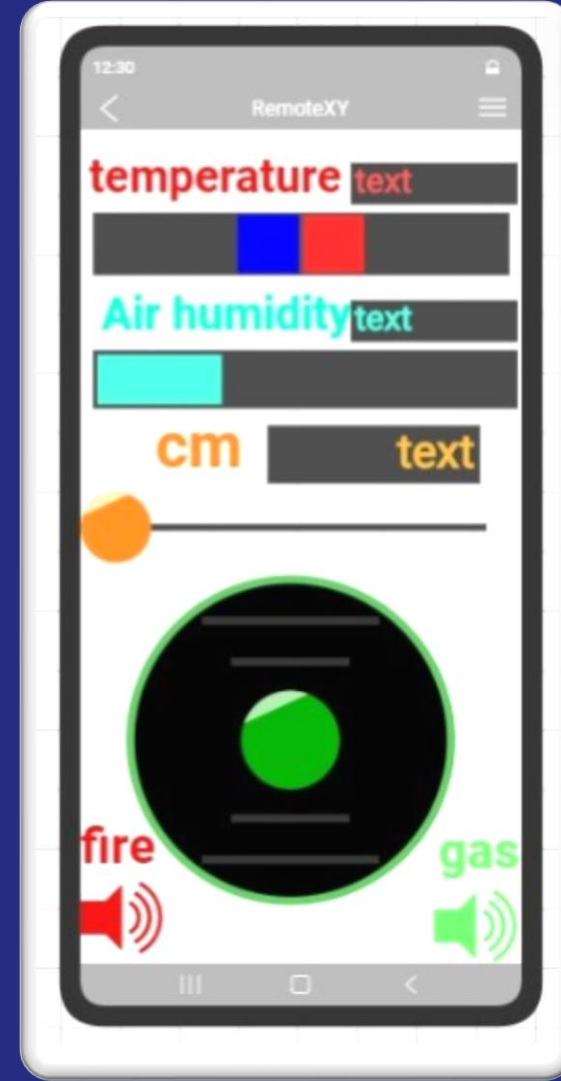
Mobile Control: Seamlessly **controlled via mobile** device for precise navigation



Application

The **RoverCar Mobile App** allows remote control of the rover via Bluetooth.

- **Wireless Control:** Control movement, camera, via Bluetooth.
- **User-Friendly Interface:** Simple design using RemoteXY.
- **Real-Time Feedback:** Displays rover status
- **Control Functions:** Forward, backward, left, right movement



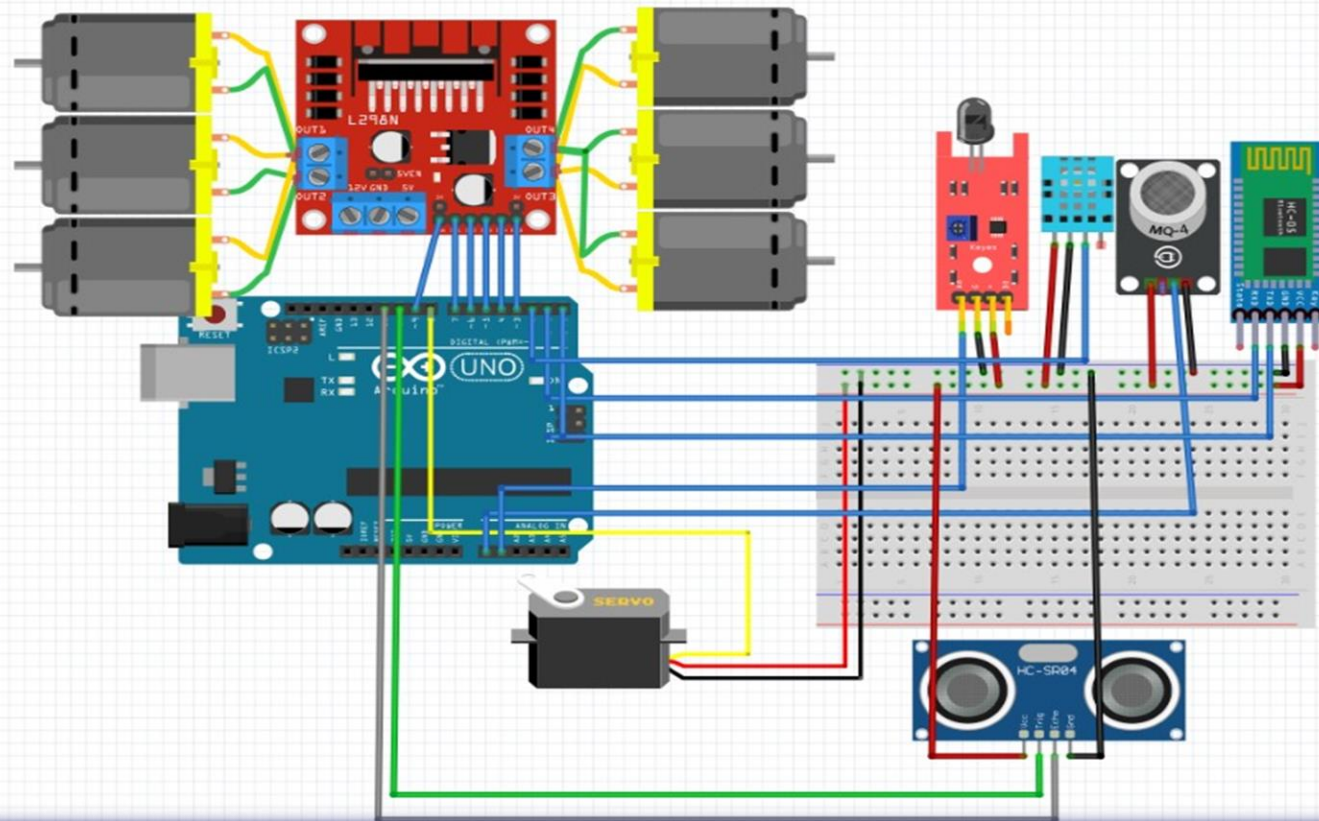


Mobile Control

Motion Control: Control the robot's movement via mobile app.

Real-time Sensor Data: Monitor distance, gas, and temperature readings in real-time.

Connecting circuits



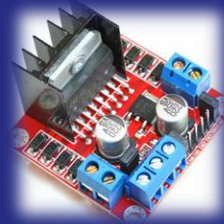
Artificial Intelligence

Tools



- **6 DC Motors** – Provide movement and drive control for the rover.
- **12 Wheels** – Ensures enhanced stability and traction, suitable for rough terrain.
- **Solar Panel** – Supplies renewable energy for power efficiency and extended operation.
- **Ultrasonic Sensor** – Enables obstacle detection and distance measurement.
- **DHT11 Temperature & Humidity Sensor** – Monitors environmental temperature and humidity levels.
- **Flame Sensor** – Detects flame presence for fire hazard awareness.
- **MQ-4 Gas Sensor** – Detects methane and other combustible gases for environmental safety.
- **Motor Driver Module** – Controls the motors' speed and direction.
- **Breadboard** – Facilitates prototyping and easy circuit connections without soldering.
- **Jumper Wires** – Connect various electronic components within the circuit.
- **Micro Servo Motor** – Provides precise angular motion for mechanical components.
- **Battery Holder & Batteries** – Portable power source for the rover system.
- **Arduino Uno Board** – Acts as the main microcontroller unit for processing and control.
- **Bluetooth Module (HC-05)** – Enables wireless communication and remote control via Bluetooth.

Tools

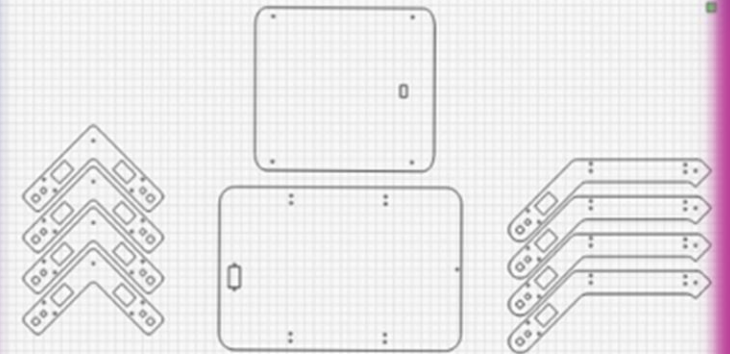


Desgin

The mechanical design is fundamental to the Galaxy Rover project, where the structure is designed to be lightweight yet strong enough to endure movement across rugged terrains. The design includes:

- The **structural frame** made of **acrylic** to reduce weight while increasing durability.
- The **smart suspension system** to ensure stability and flexibility during movement.
- **Axles and motors** that provide the necessary propulsion to move the rover
- **Optimal component distribution** to achieve balance and stability.

The design aims to achieve integration between the mechanical and electronic components to ensure optimal performance in various environments.





Thank You!