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> [LAFVIN 4WD Robot Car Kit V2.0 User Manual](#)

LAFVIN LA038

LAFVIN 4WD Robot Car Kit V2.0 User Manual

Model: LA038

1. INTRODUCTION

This manual provides comprehensive instructions for the LAFVIN 4WD Robot Car Kit V2.0. Designed for STEM programming learners, this kit offers a hands-on experience in programming, electronics, and robotics. It features an upgraded design with XH2.54 standard interfaces for easier installation and supports various functions including APP control, graphical programming, light seeking, object following, and gravity induction.

Please read this manual carefully before assembling and operating the robot car to ensure proper functionality and a safe learning experience.

2. PRODUCT COMPONENTS OVERVIEW

The LAFVIN 4WD Robot Car Kit V2.0 includes various electronic and mechanical components. Familiarize yourself with each part before beginning assembly.

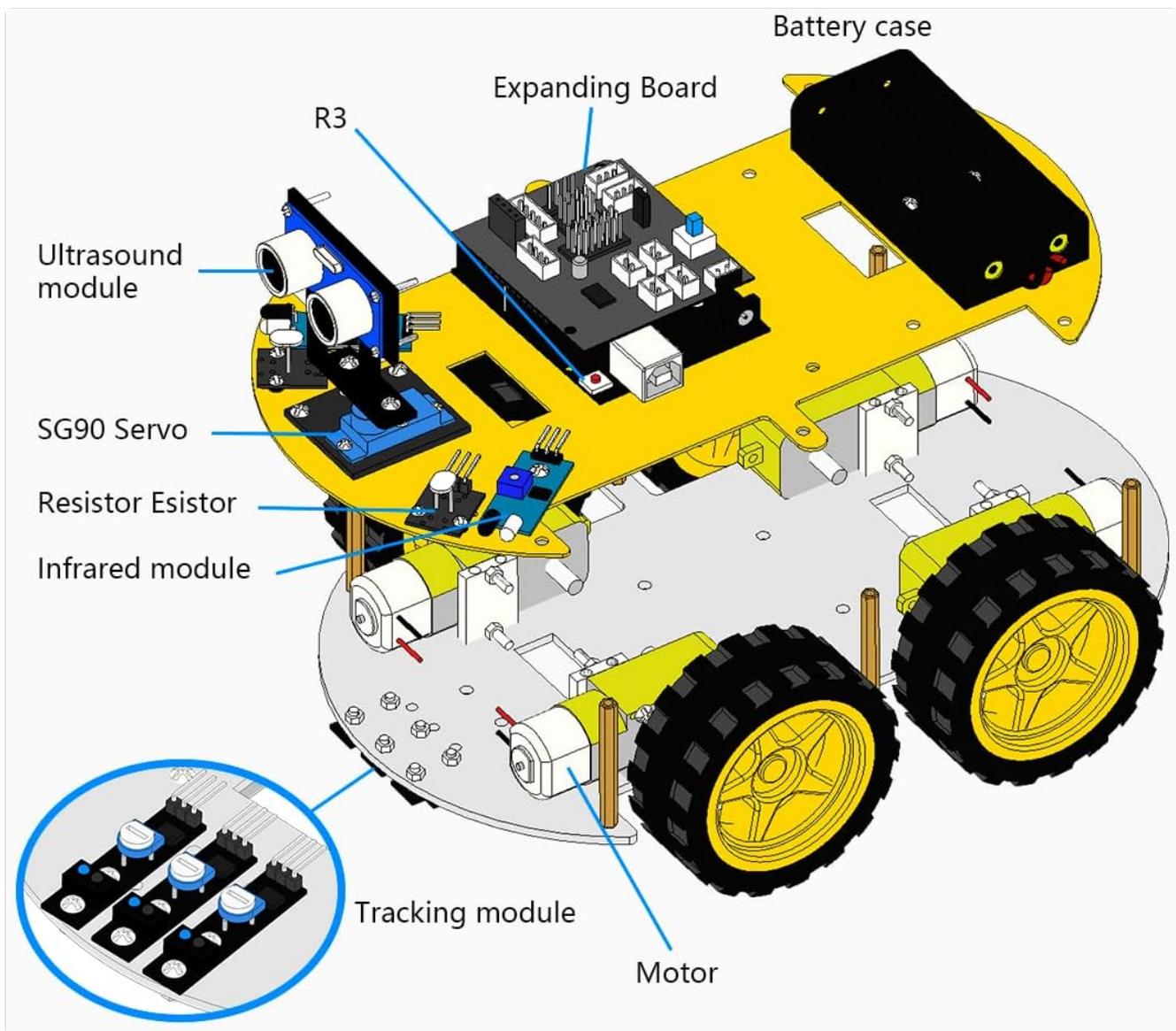


Figure 2.1: Exploded view of the LAFVIN 4WD Robot Car Kit V2.0 showing key components such as the Ultrasound module, SG90 Servo, Resistor, Infrared module, Tracking module, Motor, Expanding Board, and Battery case.

Key components include:

- **Ultrasound Module:** Used for distance measurement and obstacle avoidance.
- **SG90 Servo:** A small servo motor often used for controlling the direction of sensors.
- **Infrared Module:** Used for line tracking and additional obstacle detection.
- **Tracking Module:** Specifically designed for line following functionality.
- **Motor:** Provides propulsion for the robot car. The kit includes four motors for 4WD capability.
- **Expanding Board:** The main control board where other modules connect.
- **Battery Case:** Holds the power source for the robot car.

3. ASSEMBLY INSTRUCTIONS

Follow these steps carefully to assemble your LAFVIN 4WD Robot Car Kit V2.0. Ensure all connections are secure and components are correctly oriented.

1. **Prepare the Chassis:** Attach the motors to the main chassis using the provided screws and nuts. Ensure the motor wires are routed correctly.
2. **Install Wheels:** Securely attach the wheels to the motor shafts.

3. **Mount Sensors:** Install the Ultrasound module, SG90 Servo, Infrared module, and Tracking module onto their designated positions on the chassis.
4. **Connect Wiring:** Connect all modules to the Expanding Board using the XH2.54 standard interfaces. Pay close attention to the wiring diagram provided in the detailed tutorial.
5. **Install Battery Case:** Secure the battery case to the chassis and connect it to the power input on the Expanding Board.
6. **Power On Test:** After assembly, ensure the power switch is in the OFF position before inserting batteries. Once batteries are installed, switch to ON to check for basic power-up.

Your browser does not support the video tag.

Video 3.1: This video demonstrates the assembly process and initial operation of the LAFVIN 4WD Robot Car Kit V2.0. It covers attaching components, wiring, and basic functionality tests.

4. OPERATING MODES AND FUNCTIONS

The LAFVIN 4WD Robot Car Kit V2.0 supports multiple operating modes and functions, enhancing its versatility for various projects and learning scenarios.

4.1. Obstacle Avoidance (Ultrasound & IR)

The robot car can detect and avoid obstacles using its Ultrasound and Infrared (IR) modules. This mode allows the car to navigate complex environments autonomously.



Figure 4.1: The robot car actively avoiding obstacles using its front-mounted ultrasonic sensor and side-mounted infrared sensors.

4.2. Line Tracking

Utilizing its tracking module, the robot car can follow a black line on a light-colored surface. This function is ideal for learning about sensor-based navigation.



Figure 4.2: An overview of the robot car's capabilities, including line tracking, remote control, and obstacle avoidance.

4.3. Light Seeking

In light seeking mode, the robot car will move towards a light source. This demonstrates basic light sensor integration and reactive behavior.

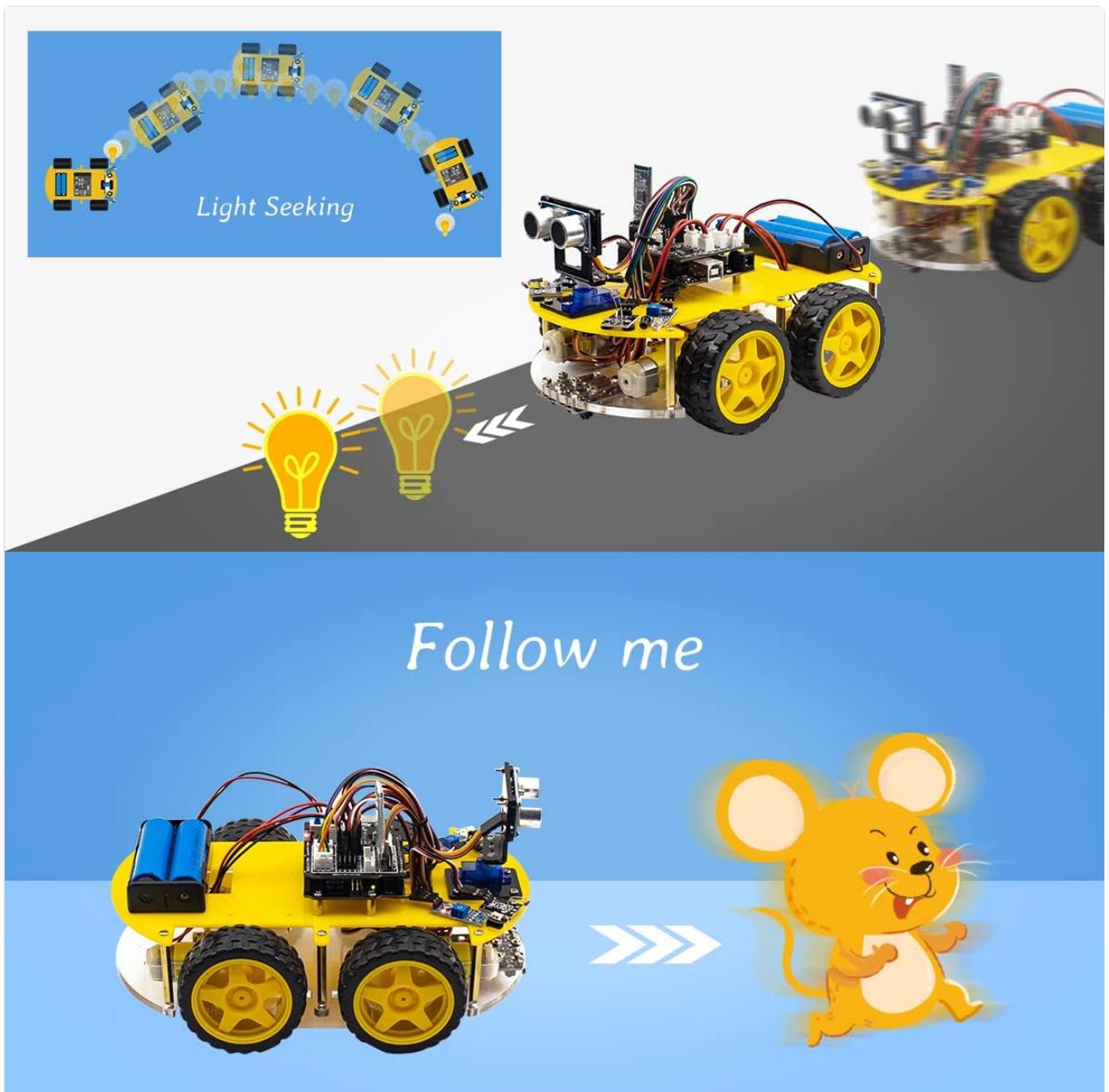


Figure 4.3: The robot car moving towards a light source, illustrating its light-seeking capability.

4.4. Object Following ("Follow Me")

The robot car can be programmed to follow an object placed in front of it, maintaining a certain distance. This uses the ultrasonic sensor for distance detection.

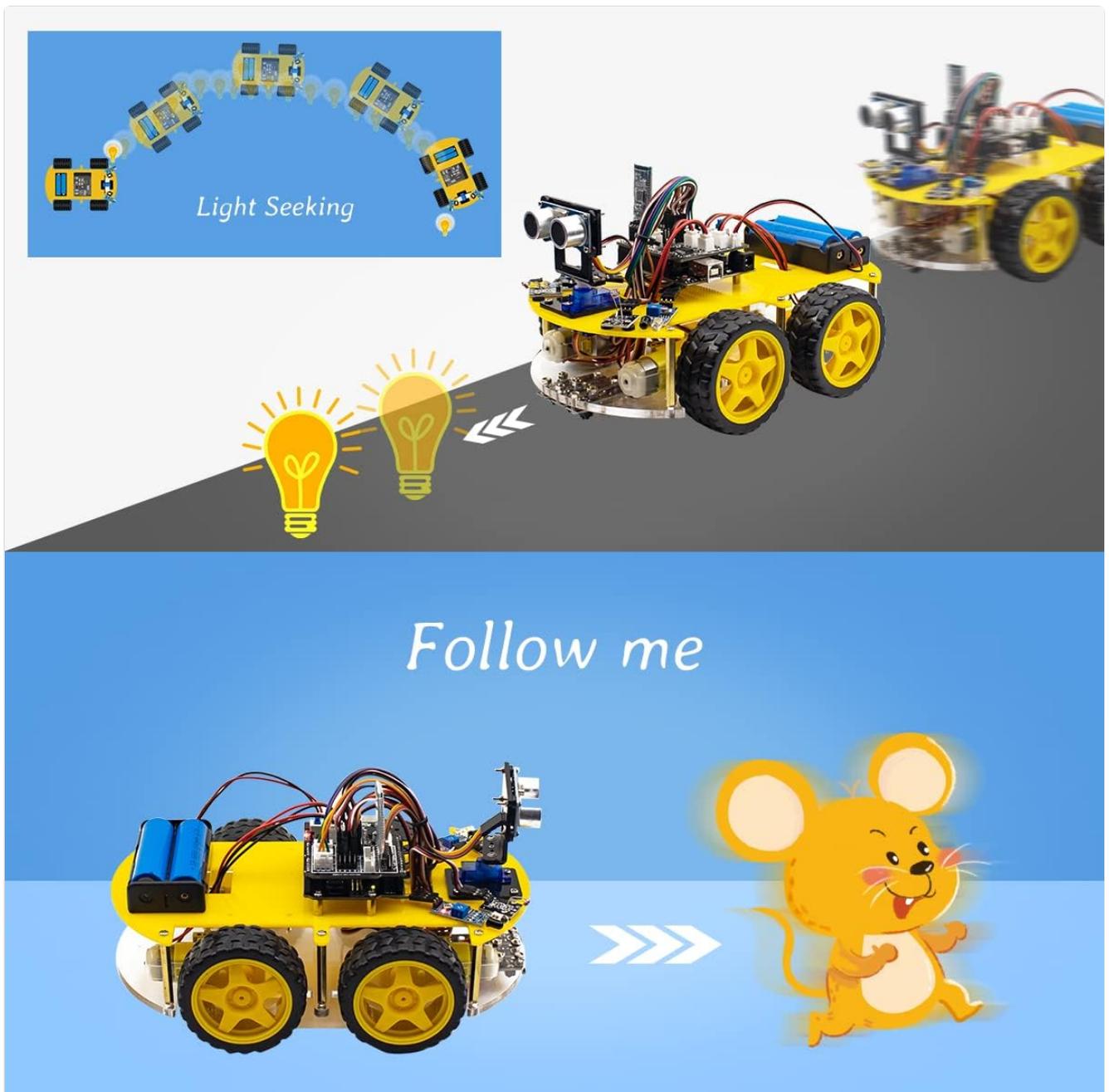


Figure 4.4: The robot car following an object, showcasing its "Follow Me" function.

4.5. Remote Control (IR & Bluetooth/APP)

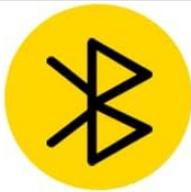
Control the robot car manually using either an infrared remote control or a smartphone application via Bluetooth. The app also supports gravity induction control.



Figure 4.5: The robot car being controlled remotely using both an IR remote and a smartphone application.

5. PROGRAMMING THE ROBOT CAR

The LAFVIN 4WD Robot Car Kit V2.0 is compatible with Arduino IDE and supports graphical programming environments like Mixly, making it accessible for beginners and advanced users alike.



APP Bluetooth



IR Control



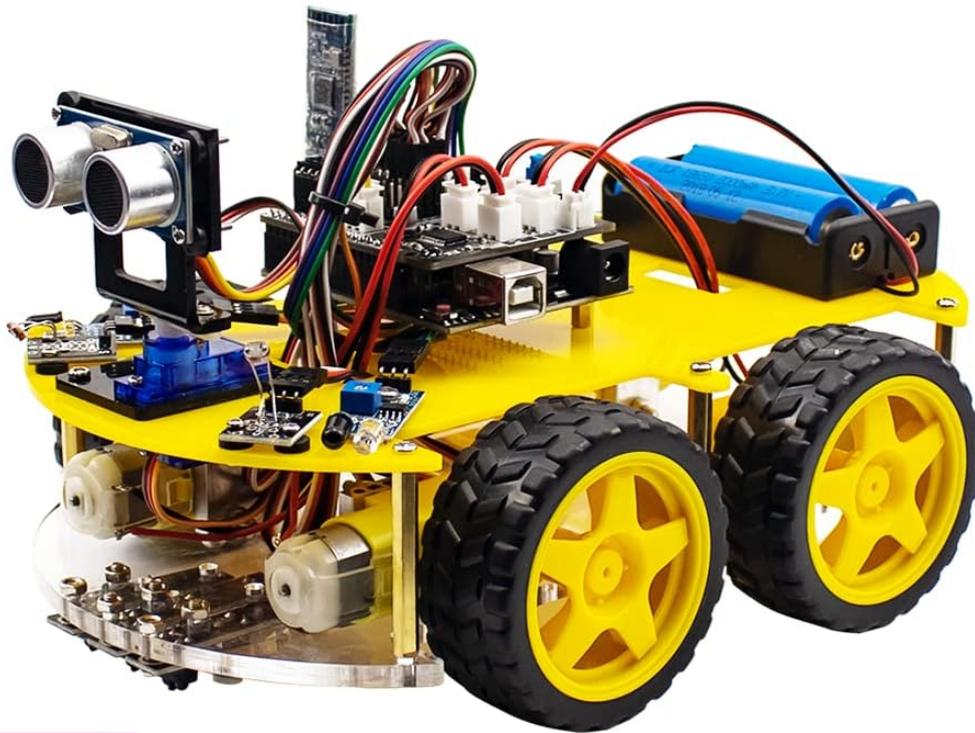
Ultrasound



Gravity Sensor



Video Guide



```

Ultrasonic Sensor Module
do
  Declare Local variable Distance as int value 0
  Distance value Ultrasonic(Trig:D12 Echo:D13)
  Serial print in line " Distance: "
  Serial print in line Distance
  Serial print Automatic Wrap " CM "
  Delay millis 100

```

4WD Robot Car V2.0 Upgraded

Figure 5.1: The robot car displayed alongside a graphical programming interface, illustrating its compatibility with visual coding tools.

A detailed tutorial is provided with graphical programming test code and support for Mixly. This allows users to drag-and-drop code blocks to create programs without extensive text-based coding knowledge. For more advanced users, direct coding in Arduino IDE is also supported.

Refer to the included tutorial for specific programming examples and setup instructions for your chosen programming environment.

6. MAINTENANCE

Proper maintenance ensures the longevity and optimal performance of your robot car kit.

- **Cleaning:** Regularly clean the chassis and wheels to remove dust and debris that can affect movement and sensor performance. Use a soft, dry cloth.
- **Battery Care:** Always remove batteries when the robot car is not in use for extended periods. Use only recommended battery types (e.g., Lithium-Ion 18650) and ensure they are charged correctly.
- **Connection Checks:** Periodically inspect all wire connections to ensure they are secure. Loose connections can lead to erratic behavior or non-functionality.

- **Component Inspection:** Check sensors and motors for any physical damage or obstructions.

7. TROUBLESHOOTING

If you encounter issues with your LAFVIN 4WD Robot Car Kit V2.0, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Robot does not power on.	<ul style="list-style-type: none"> ◦ Batteries are not installed or are drained. ◦ Power switch is off. ◦ Loose battery connection. 	<ul style="list-style-type: none"> ◦ Ensure fresh batteries are correctly installed. ◦ Flip the power switch to the ON position. ◦ Check battery case connections to the main board.
IR Obstacle Avoidance sensor is always HIGH/active.	Interference between the source LED and receptor LED on the sensor.	Shield the sending LED with black tape to prevent self-interference.
Wheels are loose or fall off.	Missing or loose screws for attaching wheels to motor axles.	Ensure all screws are present and tightened to secure the wheels to the motor shafts.
Robot does not respond to remote control/app.	<ul style="list-style-type: none"> ◦ Incorrect wiring of IR receiver or Bluetooth module. ◦ Incorrect code uploaded to the board. ◦ Remote control batteries are low. 	<ul style="list-style-type: none"> ◦ Verify all connections according to the wiring diagram. ◦ Re-upload the correct program for remote control. ◦ Replace remote control batteries.

8. SPECIFICATIONS

Feature	Detail
Brand	LAFVIN
Model Number	LA038
Item Weight	1.94 pounds
Product Dimensions (LxWxH)	10 x 7.6 x 3.5 inches
Battery Type	Lithium-Ion (not included)
Power Source	Battery
Compatibility	Arduino IDE, Mixly (Graphical Programming)
Interface Standard	XH2.54

9. WARRANTY AND SUPPORT

For any questions, technical assistance, or support regarding your LAFVIN 4WD Robot Car Kit V2.0, please refer to the official LAFVIN website or contact their customer service. Detailed tutorials and resources are typically available

online to assist with assembly, programming, and troubleshooting.

Please retain your proof of purchase for any warranty claims. Specific warranty terms and conditions may vary and are usually outlined in the product packaging or on the manufacturer's website.