OSOYOO V2.1 IoT Smart Robot Car Kit

OSOYOO V2.1 IoT Smart Robot Car Kit for Arduino

Instruction Manual

Introduction

This manual provides detailed instructions for the assembly, operation, and maintenance of your OSOYOO V2.1 IoT Smart Robot Car Kit for Arduino. This kit is designed as a comprehensive STEM learning platform, offering hands-on experience in electronics, programming, and robotics. Please read all instructions carefully before beginning assembly or operation.

Setup and Assembly

1. Component Identification

Before starting, verify all components are present. The kit includes:

- Basic board for Arduino
- OSOYOO Uart WIFI shield V1.3 for UNO
- HC Bluetooth module
- Line tracking module
- Ultrasonic sensor
- OSOYOO Model X motor drive board (improved L298N module)
- Micro servo motor
- IR receiver and IR Remote
- IR obstacle sensor
- Battery and charger (2 Lithium Ion batteries, 3.7V)
- Tracking sensor, ultrasonic sensor, model X motor shield
- Various wires, screws, and mechanical parts for assembly

Refer to the detailed tutorial (online videos and PDF) for a complete list and visual identification of all parts.

2. Assembly Instructions

The OSOYOO V2.1 Robot Car Kit features a user-friendly design with an exclusive Model X Motor Driver Module that simplifies connections, reducing messy wiring. Follow the step-by-step DIY robotics kit tutorial, available online as videos and PDF documents, for a smooth building experience.

Caution: Pay attention to battery polarity during installation. Reversing polarity can damage the device and cause fire hazards.

The physical layout of components mirrors the logic in your code, making it easier to understand the fundamentals of electronics and programming.

Figure 1: Key components and features of the OSOYOO V2.1 Robot Car.

3. Initial Power-Up

Once assembly is complete and batteries are correctly installed, power on the robot car. Observe the indicator lights to ensure proper function. If the car does not power on, recheck battery installation and all connections.

Operating the Robot Car

The OSOYOO V2.1 IoT Smart Robot Car supports multiple control and operational modes:

1. Control Modes

- **WiFi Control:** Use the custom Android/iOS App to control the robot car via WiFi. This allows for remote operation and interaction.
- **Bluetooth Control:** Connect to the robot car via Bluetooth using the dedicated app for direct control.
- **IR Remote Control:** Utilize the included IR remote for basic directional control.
- **Gravity-Sensing Control:** The Android/iOS App also supports gravity-sensing control for an intuitive driving experience.

Figure 2: Controlling the robot car via a smartphone app.

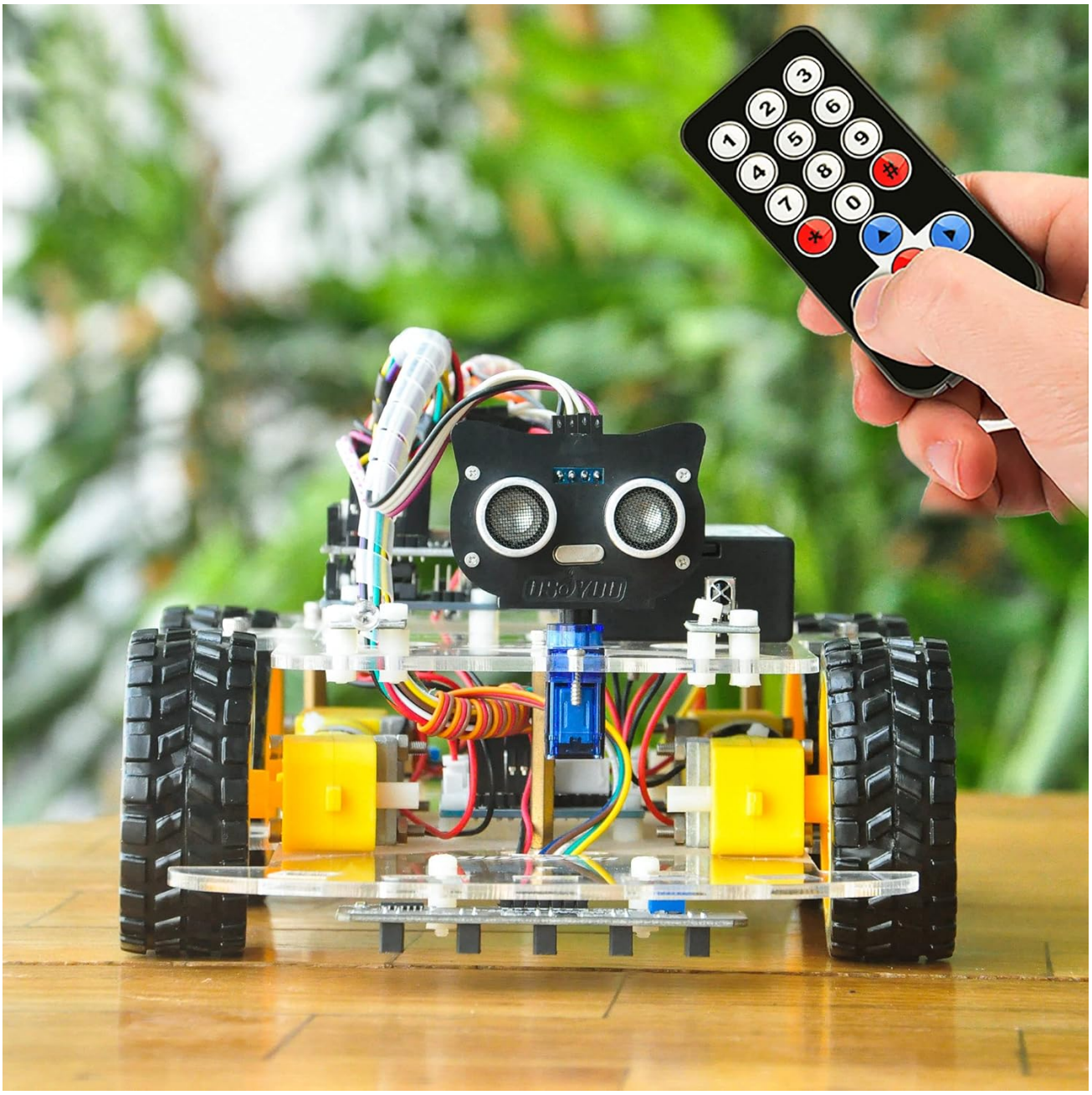

Figure 3: Operating the robot car with the IR remote control.

2. Pre-programmed Modes

The kit comes with several pre-programmed modes to explore:

- **Auto-go:** The car moves autonomously.
- **Line Tracking:** The car follows a designated line path using its line tracking module.
- **Obstacle Avoidance:** The car detects and navigates around obstacles using its ultrasonic sensor.
- **Object Following:** The car can be programmed to follow a moving object.

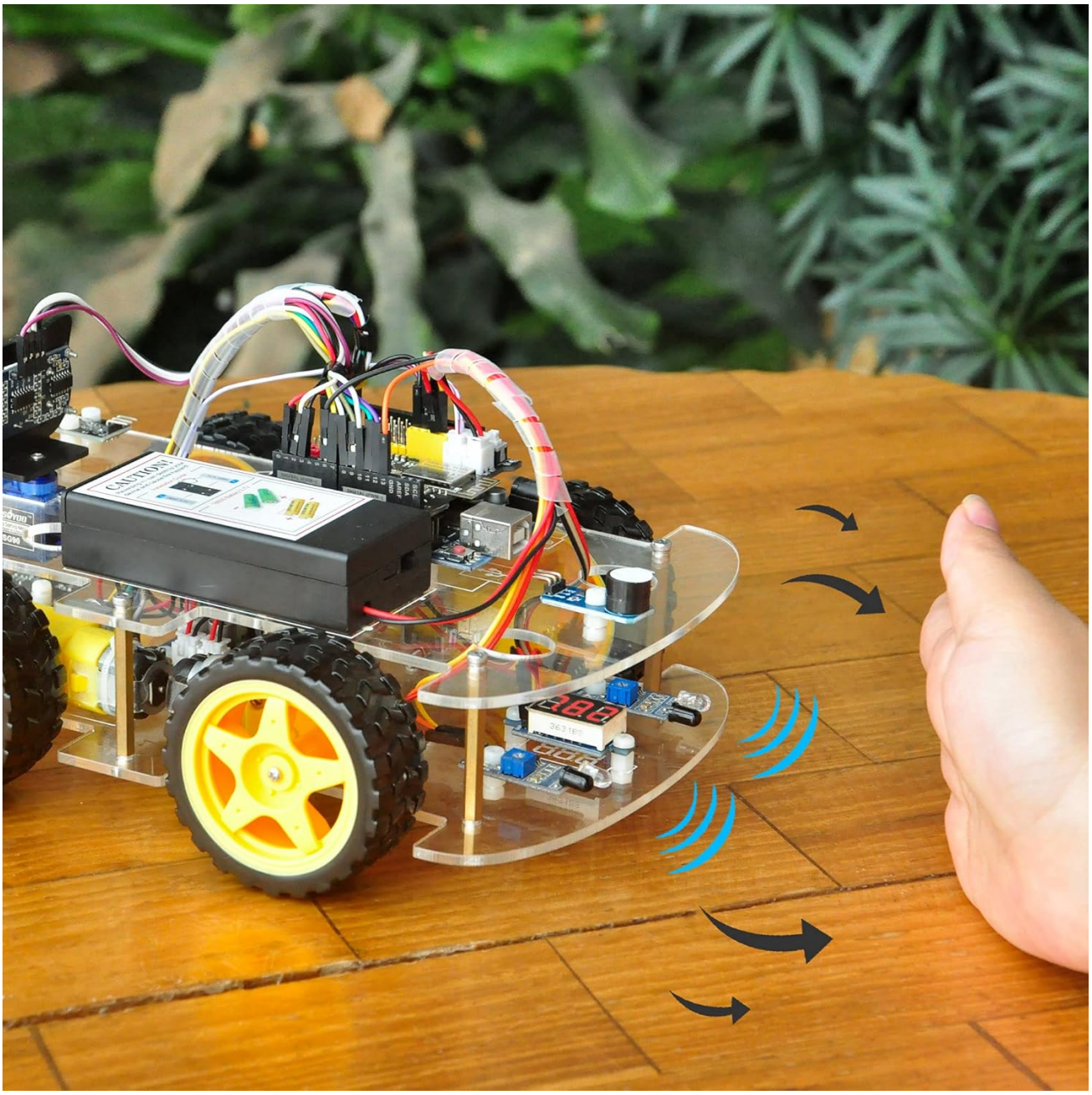

Figure 4: Robot car performing obstacle avoidance.

3. Programming and Customization

This kit is fully compatible with the UNO R3 ecosystem, allowing users to learn coding and customize the robot's behavior. Every sensor, actuator, and motor controller connects directly to Arduino’s pins, providing visual clarity and hands-on learning. Detailed tutorials, videos, and sample codes are available to guide you through programming your robot car.

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Video 1: An official OSOYOO video demonstrating the assembly, programming, and various operational modes of the robot car kit, including line tracking, obstacle avoidance, and remote control.

4. Interactive Play

For enhanced interaction, consider purchasing two kits to create "Battle Bots" for engaging play scenarios.

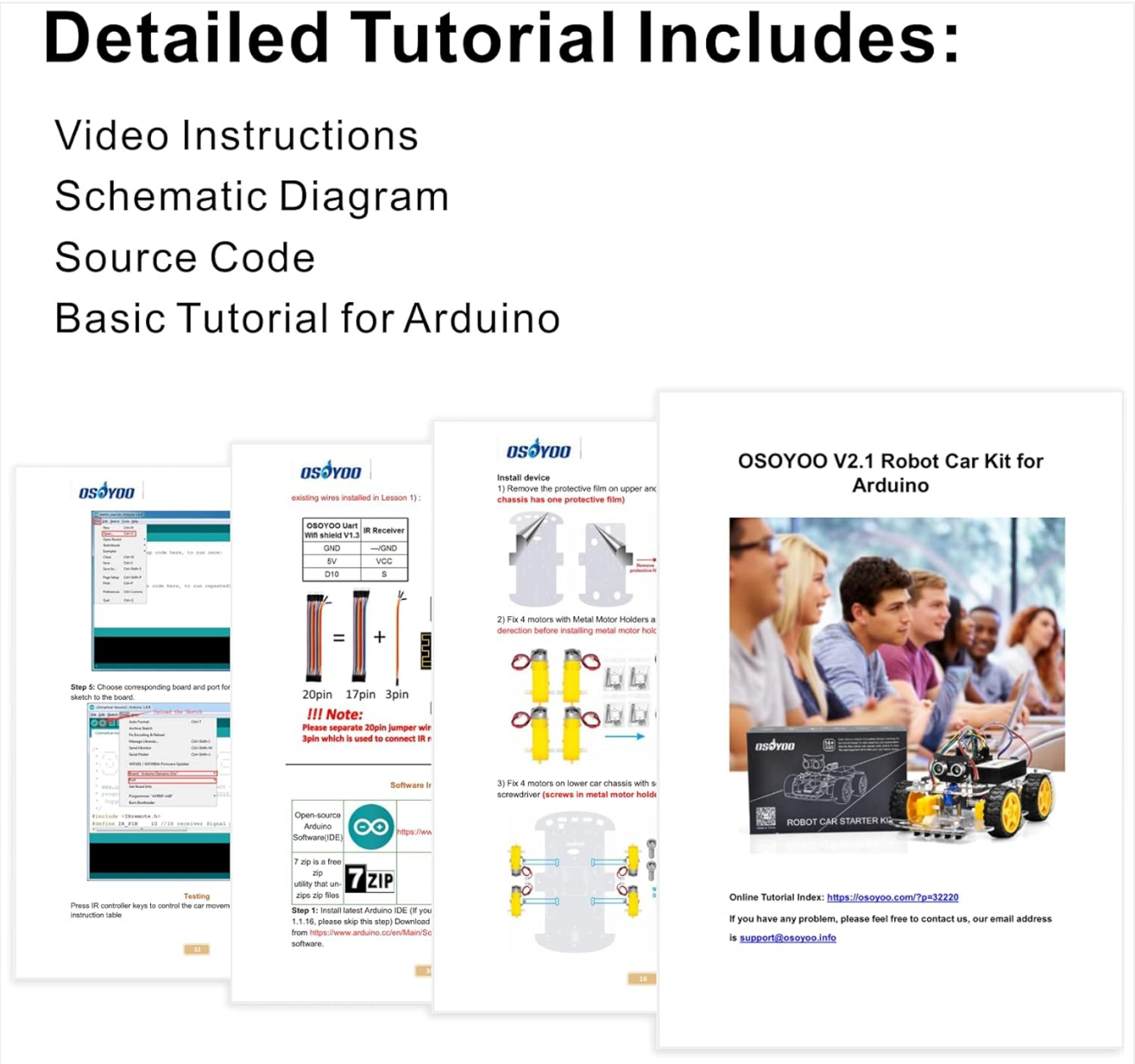

Figure 5: Two robot cars engaged in interactive play.

Maintenance

Regular maintenance ensures the longevity and optimal performance of your OSOYOO V2.1 IoT Smart Robot Car Kit.

1. Cleaning

Periodically clean the robot car to remove dust and debris from its sensors, wheels, and chassis. Use a soft, dry cloth. Avoid using liquids directly on electronic components.

2. Battery Care

- Always use the provided charger for the 3.7V Lithium Ion batteries.
- Do not overcharge or completely discharge the batteries.
- Store batteries in a cool, dry place when not in use.
- If the robot will not be used for an extended period, remove the batteries.

3. Component Checks

Regularly inspect all connections and wiring for looseness or damage. Ensure all screws are tightened appropriately. Check the wheels and motors for any obstructions or wear.

4. Software Updates

Check the official OSOYOO website for any available firmware or software updates for the Arduino board or control applications. Keeping your software updated can improve performance and add new features.

Troubleshooting

If you encounter issues with your robot car, refer to the following common problems and solutions:

- **Car does not move:**
  - Check battery charge and ensure they are correctly installed with proper polarity.
  - Verify all motor connections to the Model X motor drive board.
  - Ensure the control signal (IR, WiFi, Bluetooth) is being received.
- **Control issues (unresponsive, erratic movement):**
  - Confirm the control app or IR remote is correctly paired/connected.
  - Check for interference if using wireless control (WiFi/Bluetooth).
  - Review your uploaded Arduino code for logical errors.
- **Sensor malfunctions (e.g., obstacle avoidance not working):**
  - Ensure sensors (ultrasonic, IR obstacle, line tracking) are clean and unobstructed.
  - Verify sensor wiring to the Arduino board.
  - Check the sensor calibration and logic within your code.
- **Programming upload failures:**
  - Ensure the correct board and port are selected in the Arduino IDE.
  - Check the USB connection between your computer and the Arduino board.
  - Install necessary drivers for the Arduino board.

For more detailed troubleshooting guides and community support, please visit the OSOYOO website or refer to the online tutorials.

Specifications

Feature	Detail
Product Dimensions	10 x 7 x 5 inches
Item Weight	2.92 pounds
Item Model Number	2019012400
Manufacturer Recommended Age	14 - 15 years
Batteries	2 Lithium Ion batteries required (included)
Control Methods	WiFi, Bluetooth, IR Remote, Gravity-Sensing

Learning Platform	Arduino UNO R3 compatible
Manufacturer	Shenzhen Vership Co. LTD

Warranty Information

For detailed warranty information regarding your OSOYOO V2.1 IoT Smart Robot Car Kit, please refer to the official OSOYOO website or contact their customer support directly. Warranty terms and conditions may vary.

Support and Resources

OSOYOO provides extensive resources to assist you with your robot car kit:

- **Online Tutorials:** Access step-by-step guides and detailed instructions on the OSOYOO website.
- **Video Guides:** Comprehensive video tutorials are available to walk you through assembly and programming.
- **PDF Documentation:** Downloadable PDF manuals offer offline access to instructions.
- **Sample Codes:** Utilize provided sample codes to kickstart your programming journey.
- **Customer Support:** For any questions or issues, you can reach OSOYOO support via email at support@osoyoo.info.

OSOYOO is committed to providing responsive support and hassle-free warranties, ensuring a positive learning experience.