XIAOR GEEK

# MROS Lidar Car

Depth camer · Mecanum wheel robot car

# NEW

Intelligent UAV

7-inch HD touch panel

SLAM Mapping and navigation

Real time video transmission

WIFI Wireless remote control

Mecanum wheel Travel mode

Intelligence Visual line patrol

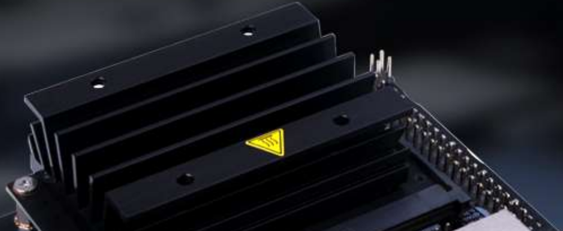
Moveit!
Mechanical arm

2.4G wireless
Handle remote control

HD Depth
camera

NVIDIA

# JETSON NANO



AI

Artificial intelligence

Powerful performance

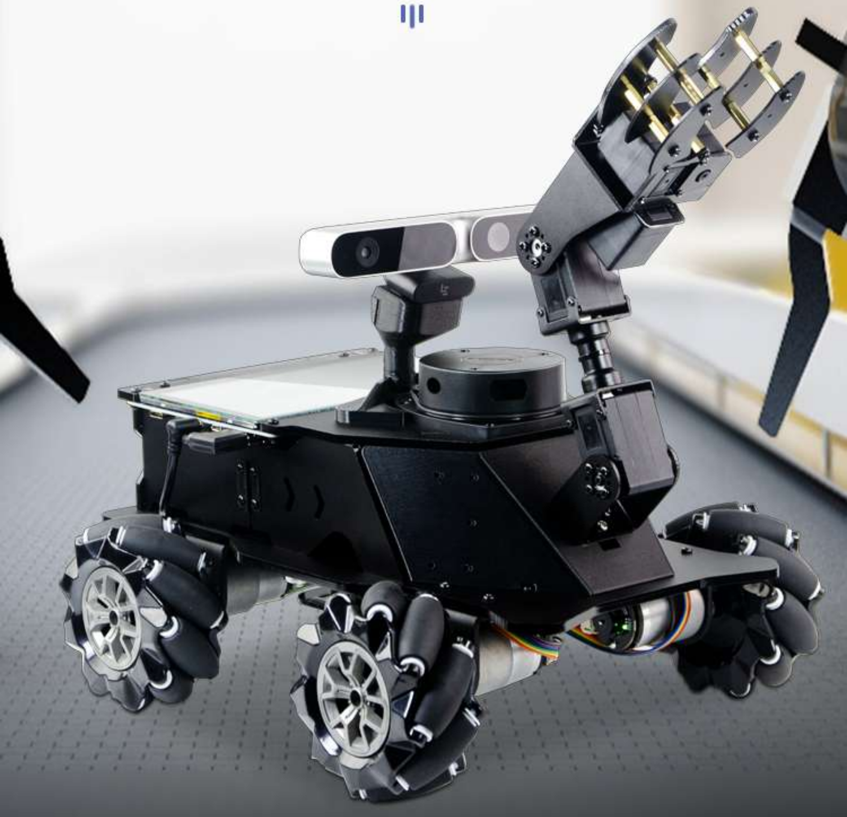
Stable and safe

Secondary development

Moveit!

# Moveit! Kinematics

Moveit! It is currently a professional software for the mobile operation and control of robotic arms. It integrates the latest achievements in motion planning, control, 3D perception, kinematics, control and navigation, and provides an easy-to-use platform for the development of advanced robot applications for industrial, commercial and R&D fields. The design and integrated evaluation system of new robot products. For now, Moveit! The widely used open source software is used on more than 231 robot platforms.



Motion

Manipulator

Inverse

planning

control

kinematics

End control

3D sensing

Conflict detection

XIAOR GEEK

# 360° lidar 12m radius wide range measurement

360° omnidirectional scanning and detection of the surrounding environment

With optical and magnetic fusion technology, it is more stable

① 12m radius measurement range

② 360° scan detection

③ 8000 times/s measurement range

④ OPTMAG optical and magnetic fusion

Dynamic interaction

# Dynamic interaction of robotic arm

Move_group communicates with the robot through ROS topics and actions to obtain the robot's status (position, nodes, etc.), to get point clouds or other sensor data, andthen pass it to the robot controller.

**① Joint status information**

Monitor/joint_states topic to determine state information

**② Transform information**

Monitor the exchange of information through the ROS TF library

**③ Scenario planning**

move_group uses the planning scene monitor to maintain the planning scene

**④ Scalability**

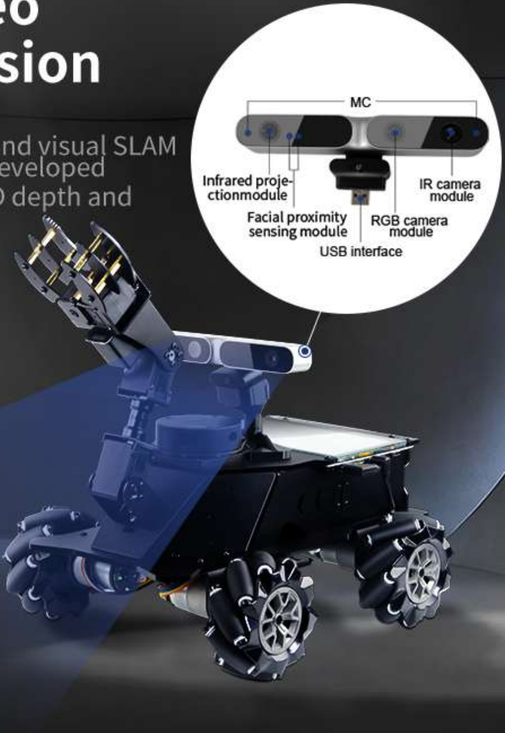
Kinematics, grabbing and other independent reports can be used as plug-ins for moveit! use

**⑤ Can be clicked into a robotic arm**

ROS Moveit! Inverse kinematics algorithm

# Depth camera real-time video transmission

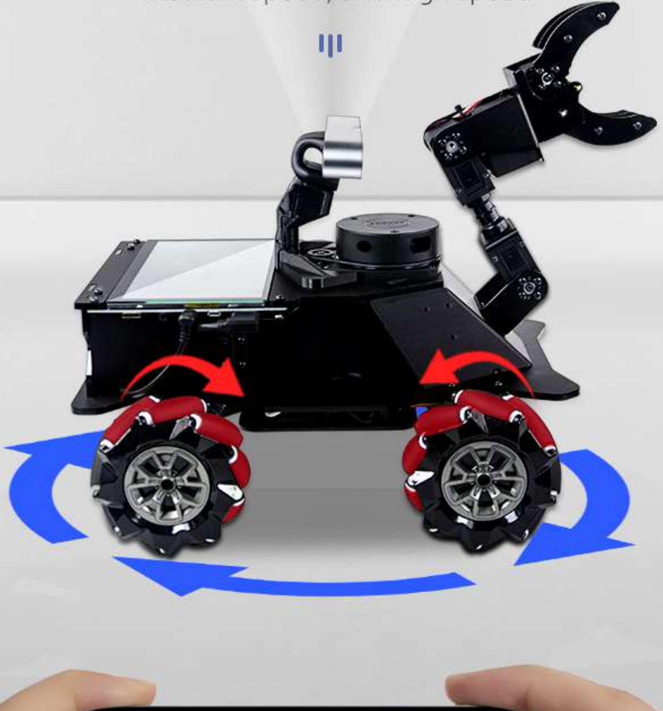
Visual recognition and visual SLAM can be secondary developed
The robot has RGBD depth and deep learning



## Mecanum wheel

# Mecanum wheel omnidirectional movement

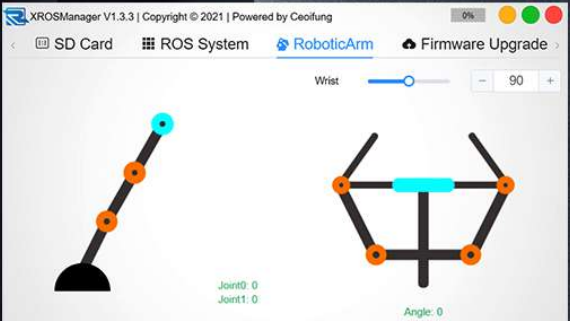
The mobile phone controls the ROS Mecanum radar car, which allows the car to move in all directions. Threecontrollable speed adjustments: low speed, medium speed, and high speed



Easy to use ROS robot user interaction system

# XR-ROS human-machine interaction system

The robot is equipped with the "XR-ROS human-machine interaction system independently developed by XiaoR Technology and the exclusive "ROSXRMaster" APP, which can realize interactive operations such as real-time mapping or navigation on the mobile phone. Even you don't have programming foundation, it also can be used easily."



Wrist 90

Joint0: 0
Joint1: 0

Angle: 0

Navigation interface
Mapping interface

Kinematic grasp

# ROS+ Robotic Arm Kinematics Visual Grabbing

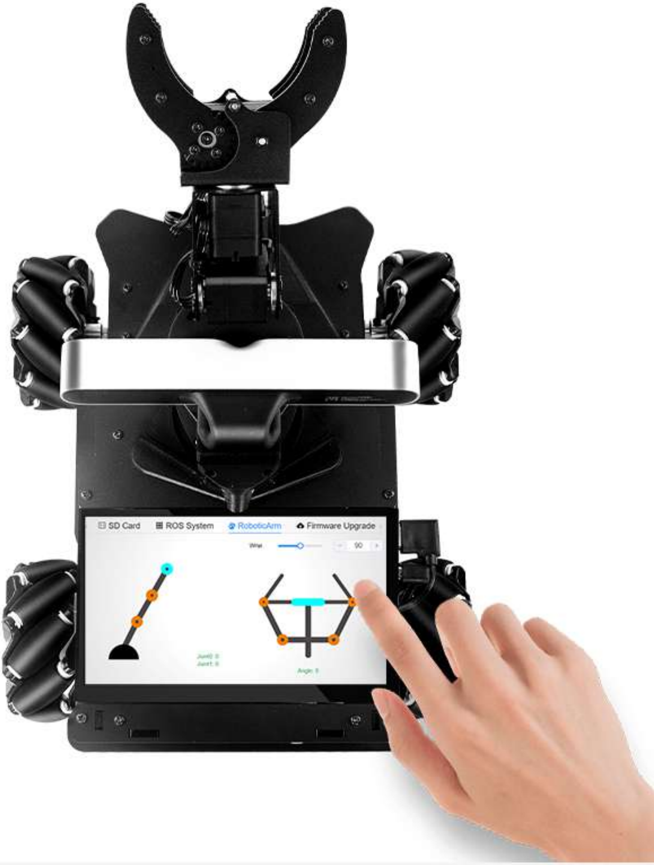
The robotic arm uses the Kinematics Plugin, or you can write your own inverse motion algorithm, and cooperatewith the camera to realize functions such as visual grasping of objects.

- **IKFast Plugin**
  Used to generate own kinematics solver plug-in
- **Collision Checking**
  In scenario planning, check whether there is a conflict
- **Collision Objects**
  Defines the shape of the component to check for conflicts
- **Allowed Collision Matrix （ACM）**
  In scenario planning, check whether there is a conflict

## Touch screen control

# 7-inch large touch screen real-time control

Easy to use ROS robot user interaction system



Path planning

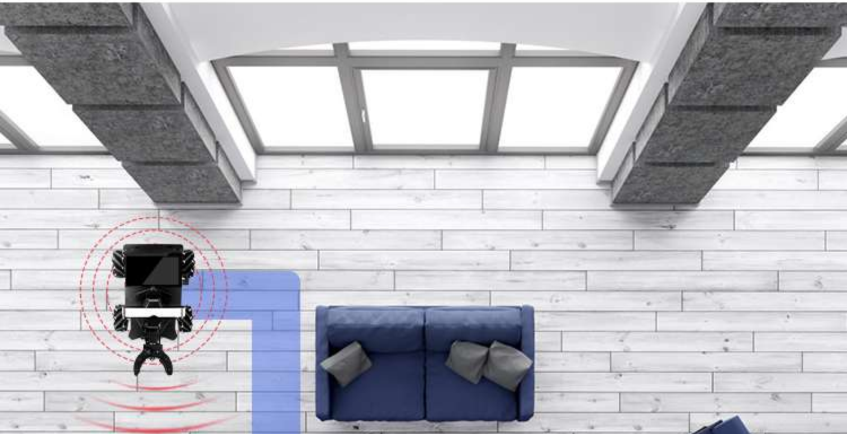
# Indoor autonomous path planning

Multi-point positioning function, autonomous path planning, avoid obstacles, reach the destination point in sequence

## Dynamic obstacle avoidance

# Indoor autonomous navigation and dynamic obstacle avoidance

According to the indoor map, the route is planned, and the second planning will be carried out when the road is blocked to realize dynamic obstacle avoidance



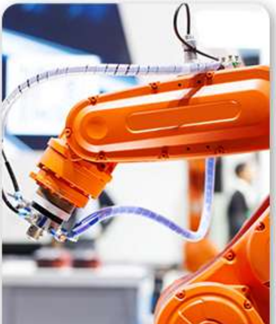
Application extension

## SLAM algorithm technology application

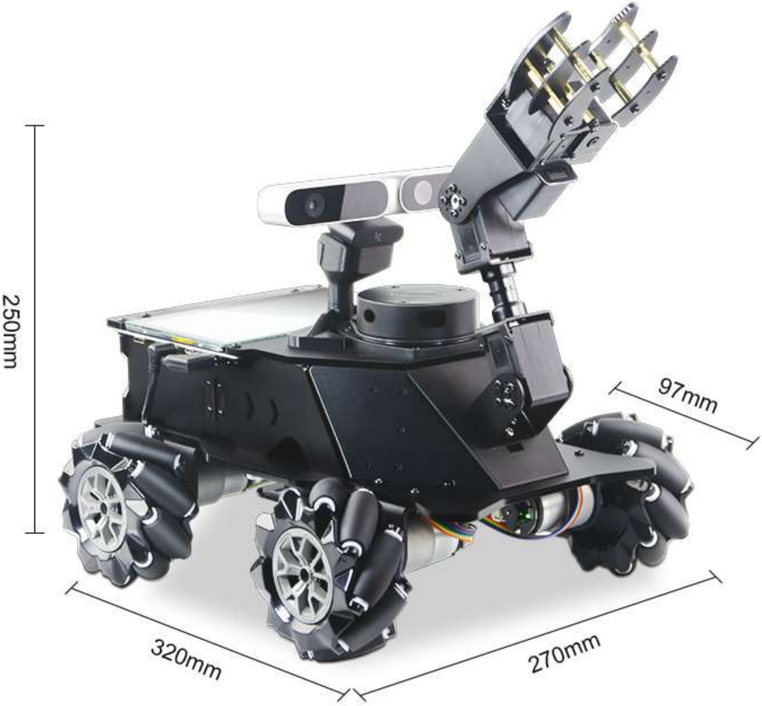
The SLAM algorithm can be applied to mainstream unmanned automatic delivery robots, household sweeping robots and other fields

# Robotic arm Moveit technology application

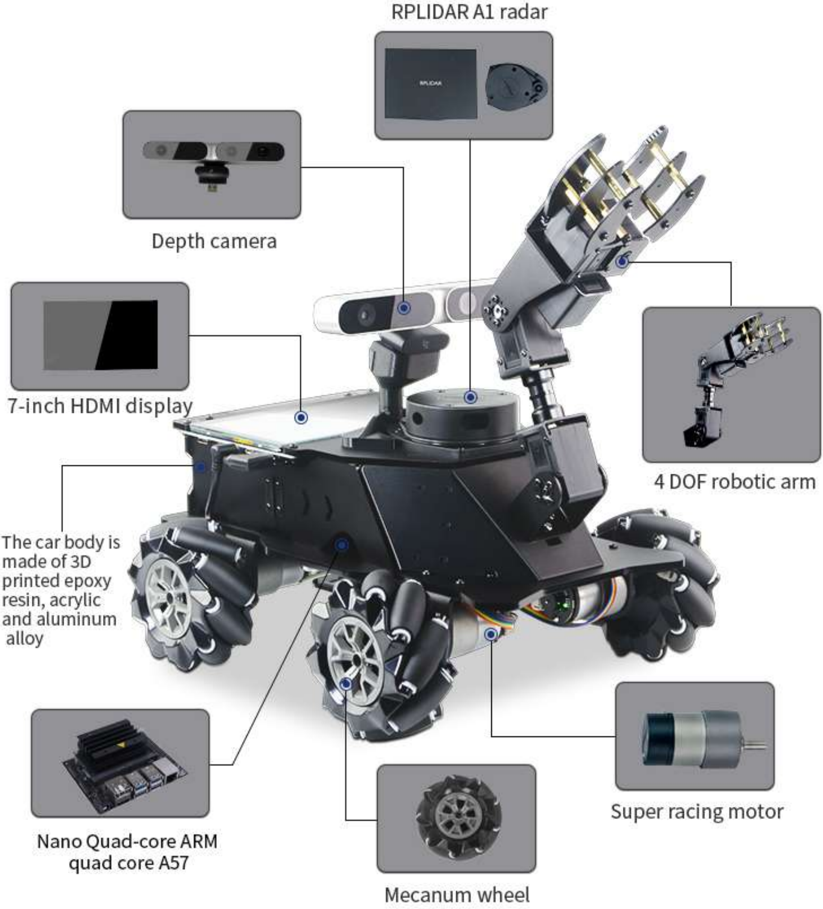
The Moveit technology can be applied to mainstream industrial robotic arm development, and more creative personal development and other fields



# Product parameter



# Module layout



RPLIDAR A1 radar

Depth camera

7-inch HDMI display

4 DOF robotic arm

The car body is made of 3D printed epoxy resin, acrylic and aluminum alloy

Super racing motor

Nano Quad-core ARM
quad core A57

Mecanum wheel

# PRODUCT

## parameter

Product Name: XiaoR/MROS Mecanum Wheel Radar Vehicle

Bottom driver board: PWR.4RPL.E Use time:2-5 hours

Core processor: JETSON NANO Quad-core ARM quad-core A57

Car body size(L*W*H): 320*270*250mm Car body weight: 3620g

Maximum clamping width: 100mm Control range: ≤30M

Degree of freedom of manipulator: 4 degrees of freedom

Maximum clamping weight of mechanical arm: 300g

Programming language: Python/C++ Camera: Depth camera

Length of manipulator: 280mm Network card: intel8625

Display: 1080P high-definition touch screen (capacitive screen)

Motor: DC brush motor (with 360-line AB code)

Battery specification: 12.6V10000mah Vehicle speed: 0.8m/s

Robot arm rotation range: 0-180° Radar: Rplidar A1