



BLACKROCK 1

Indoor and Outdoor Delivery Robot

Product Introduction



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developed delivery robot with indoor and outdoor coverage, especially for last-mile delivery, empowering courier operations, property management, and take-away industries.



Application Scenarios



Business Park



Community



Campus



Airport



Hospital

Delivery Process



Product Features



Unmanned 1-to-N
precision Delivery



Order via App



IOT Elevator
Autonomous Elevator Ride



Intelligent Opening and
Closing of the Hatch



Autonomous Charging



720° monitoring
Real-time Dynamic Tracking



Negative Obstacle Detection



Compact and Flexible



Minimum Operation and
Maintenance Costs

Product Value

Assistance in property management

- ① Reduce external personnel and facilitate management ;
- ② Improve service quality and owner satisfaction ;
- ③ Build a digital and smart community ;
- ④ Reduce labor and management operating costs.



Empowering Merchant Stores

- ① 1-to-N delivery to increase delivery orders;
- ② Compared with human delivery, robot delivery costs are lower;
- ③ The delivery process is safe and reliable, and can be supervised throughout the whole process ;
- ④ Home delivery, better user experience and improved reputation.

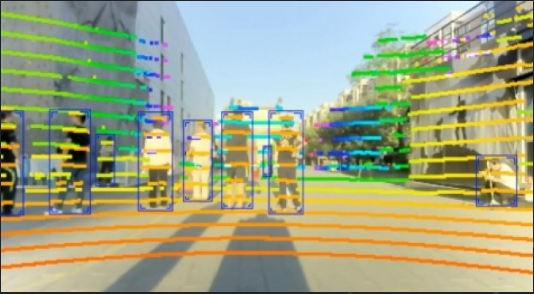
Convenience for Consumers

- ① Home delivery, no need to go downstairs to pick up the goods ;
- ② Save delivery fees ;
- ③ Mobile phone operation, simple and convenient ;
- ④ Avoid human errors during delivery process.

Core Technology

Unmanned Driving System——SOPHON PanGu

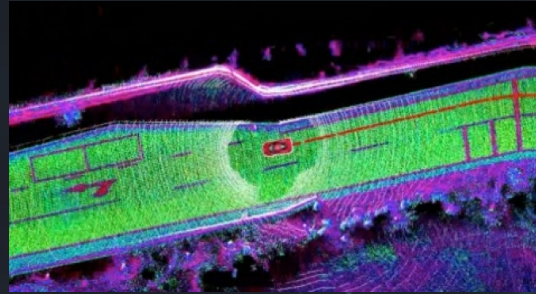
Field level L4 autonomous driving for both Indoor and outdoor coverage



AI

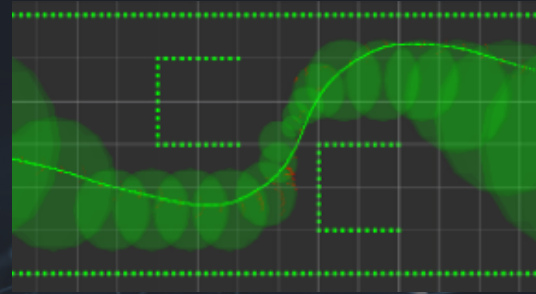
Sensor Fusion

Using multiple types of perception sensors, the system integrates heterogeneous information based on deep learning algorithm to achieve omni-directional perception coverage in indoor and outdoor scenes and achieve accurate perception of small targets with a minimum size of cms.



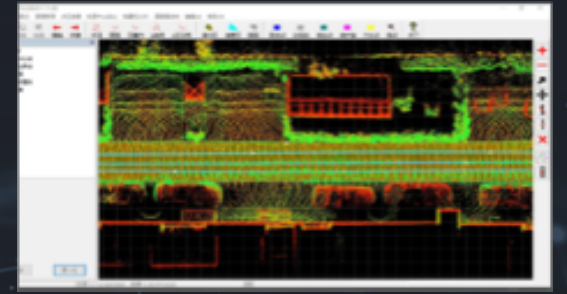
High precision location

Based on accurate scene reconstruction results and multi-sensor fusion technology, high precision positioning can be achieved in complex indoor and outdoor conditions with an average accuracy of 5~10cm.



Planning and Control

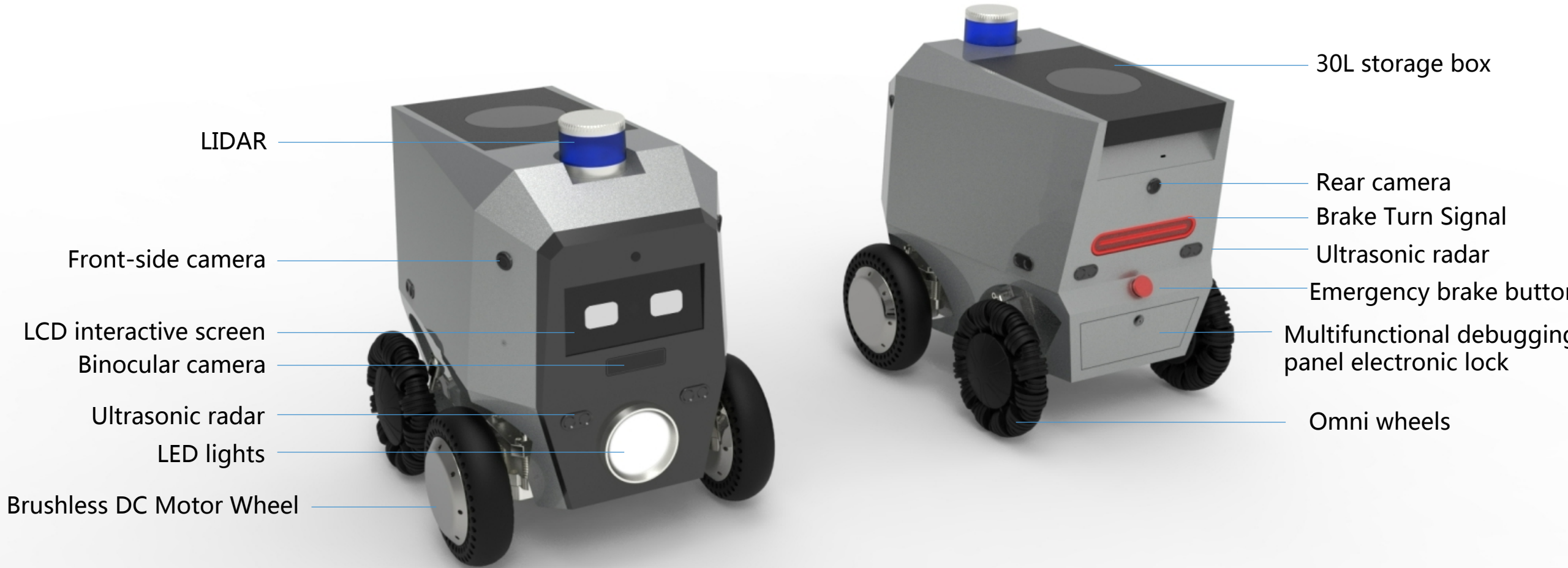
The system supports typical functions and typical chassis conditions for route planning, motion planning and control. Customized development is also available for special product applications.



3D high-precision mapping

The system supports the user to collect data to build a 3D map. The 3D model is reconstructed through the point-cloud, the reconstruction accuracy can reach 5~10cm, and the map building efficiency is about 2 hours to complete for a typical field scene.

BLACKROCK 1——Hardware Configuration



BLACKROCK 1—Exterior dimensions

Basic configuration	
LiDAR	Automotive Grade 16-LiDar
IMU	9-axis attitude sensor
Central Control System	ARM 8-core+DPU
Binocular camera (perception)	RGBD structured light
Surveillance camera	1080P(optional)
The farthest distance for detecting pedestrians during the day record	100m (300 ft)
SSD capacity	Continuous/pedestrian detection 128GB
Wireless communication	4G, Wi-Fi, Wi-Fi Ad Hock, Bluetooth
Audio	Support voice broadcast
Operating parameters	
Maximum cruising range	24km
Positioning accuracy	<10cm
Minimum detection distance of automatic obstacle avoidance system	<1cm
Automatic cruising speed	0-6km/h
Minimum cruising road width	0.9m
Minimum turning radius	0.8m
Chassis ground clearance	10cm
Climbing angle	15°
Protection grade	IP65
Equipment operating temperature	-20°C+45°C
Storage operating temperature	-40°C+70°C
Maximum operating noise	64dB (A)

Dynamic system	
Transmission System	Electronic differential drive
Wheel structure	front : Brushless DC motor rear : Mecanum wheel
Wheel size	front : 10 inches rear : 10 inches
Suspension system	front : independent suspension ear : Double wishbone independent suspension
Driving mode	Front wheel
Electric drive	48 Volts DC 500W
Braking system	Electromagnetic braking
Rechargeable battery	48VoltDC/110-250VAC, 20AH
Charging time	Quick-acting charging mode: 4 hours Standard charging mode: 6 hours
Estimated running time on full charge	10 hours (4.5km/h)
Remote control	4G/Wi-Fi
Appearance and load capacity	
Dimensions	670mm (length) x 555mm (width) x 700mm (height)
Weight (including battery)	75kg
Material	Iron plate, glass fiber
Color matching	Grey, black
Maximum load	50kg
Storage space	40L 420(Length) x 420 (Width) x 300(Height))
Cargo hold control mode	IOT Control

BLACKROCK 1—Exterior dimensions

All measurements are in millimeters. The size diagram is for reference only, and the appearance configuration is based on the actual sold product.

