

# ALLYBOT-C2

## Full-function Robot Cleaner



# 01 Introduction

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ALLYBOT-C2 combines floor washing, mopping and vacuuming(optional) into one, is a multifunctional commercial robot cleaner that could work 24 hours a day with equipped a docking pile. It has variety of functions, including smart cleaning, intelligent navigation and position to avoid obstacles, auto-recharging, self-cleaning etc. With innovated modular design, it's of simple use and maintenance. Enjoying a wide application, including hospitals, shopping malls, exhibition halls, office buildings, airport terminals, etc.

## Online evolution

The robot keeps upgrading in application to adapt to different scenarios



## Simple maintenance

Roller brush, water tank, sewage tank quick demolition design, simple cleaning and maintenance; Detachable and replaceable battery, extremely fast power recharging



## Smart cleaning

An integration of washing, vacuuming and mopping, well meet different cleaning needs; Self-cleaning, left no water residues.



## Multimode interaction

Remote control + APP + Web-end software, multi ends operation ; Rapid deployment and easy to use.



# 02 Function

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## Intelligent scenario planning

Independent mapping, iteration, automatic route planning, real-time coverage, flexible response to complex scenarios

## Autonomous navigation to avoid obstacle

UAV-level multi-sensor autonomous navigation; sensing and avoiding obstacles intelligently; multiple protection from the anti-collision and anti-drop system; safe and reliable

## Timer + combined cleaning

Set the cleaning time in advance; combine multiple areas; set up cleaning schedule intelligently to realize unmanned operation in the true sense

## Integration of vacuuming, mopping and washing

Support mopping and washing with roll brush; clean dry and wet garbage at once; separate solid substances and liquid; cleaning is no longer tiring

## Intelligent frequency conversion cleaning

Adjust the cleaning force automatically according to the toughness of stains; able to clean dust, particles and tough stains easily

## Cross-regional operation

Support customized autonomous elevator rides; able to realize multi-floor cross-regional continuous cleaning

## Real-time self-cleaning

Continuous injection of water, cleaning the brush roller, deep self-cleaning

## Automatic recharging and resume operation after suspension

to the charge stand for recharging automatically when the power is lower than the minimum limit; able to resume operation after suspension to ensure the continuity of cleaning operation.

## Touch screen, APP, multi-mode interaction

Real-time voice prompts, touch screen for quick task dispatch, full control of all functions through the mobile app

## Remote intelligent control

Cloud-end intelligent monitoring and warning; remote task scheduling; real-time data transmission; equipment configuration and online upgrading

# 03 Functions and Features

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- ▶ Floor scrubbing, dust mopping, and vacuuming(optional) all in one
- ▶ Multi-sensor fusion technology, intelligent navigation and positioning
- ▶ Mobile APP + remote scheduling, rapid deployment and flexible use
- ▶ Auto elevator rides, multi-floor and cross-regional cleaning(optional)
- ▶ Timer function, automatic cleaning, no manual needs
- ▶ Smart obstacle avoiding, anti-collision and anti-dropping
- ▶ Super-large laser mapping, well meet needs of large scenarios
- ▶ Lower power auto return for charging, operation resumed from suspension
- ▶ Rectangular-ambulatory shaped route design, non-repetitive and full coverage cleaning
- ▶ Detachable tanks, battery and cleaing modulars, simple using and maintenance
- ▶ User identification and management, secure the operation
- ▶ Intelligent product maintenance, malfunction and consumables replacement notification
- ▶ Touch control+Remote control+APP control+Voice reminding, user friendly
- ▶ One-click emergency stopping, higher the security
- ▶ Light belt real time showing working status, red for malfunction, blue for remote control, and white for normal.

# 04 Operation Principle

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## Circle-type cleaning route

Automatic cleaning with full coverage; able to affectively clean corners and marginal areas to provide standard cleaning operation under accurate control



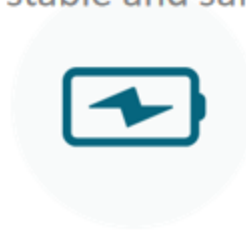
## Intelligent Movement Control

Motion control based on deep reinforcement learning that could ensure flexible and smooth operation of the robot in some areas and generally-unimpeded movement



## Automatic Obstacle Avoiding System

3D multi-line laser + 2D single-line laser + camera + ultrasonic + anti-drop sensor; multiple obstacle avoiding, anti-collision, anti-drop design to identify surrounding environment accurately and realize stable and safe operation



## Automatic Recharging

Able to return to the charge stand automatically when the battery is low, and could resume operation after being fully charged without manual intervention and repeated work, so as to ensure the efficiency and continuity of operation



## Indoor and Outdoor Navigation and Positioning

Multi-sensor fusion navigation and positioning algorithm based on 3D multi-line laser + vision + IMU + milometer; unmanned- driving-level operation that is safe and reliable



## Digital Monitoring Helping Make Decisions

Deployment of Mobile APP + remote scheduling dual system; digital monitoring of the entire cleaning process; intelligent statistical analysis of the operation data that could help optimize the cleaning plan

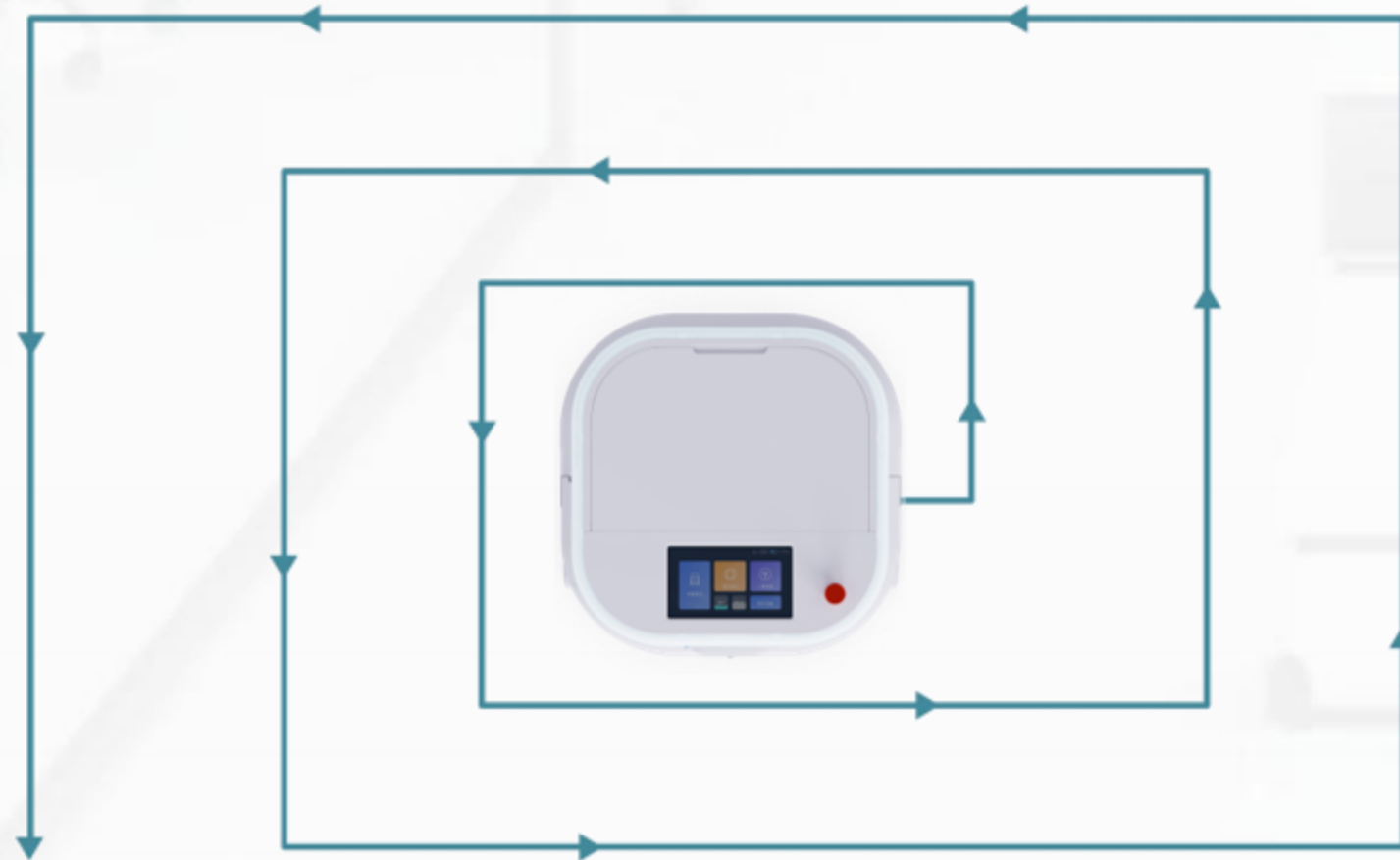


# 05 Cleaning Principles

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## Rectangular-ambulatory shaped cleaning route

(Cleaning width: 440mm, cleaning speed: 0.1-1m/s multiples gears)



ALLYBOT-C2 integrates floor washing, dust mopping and vacuuming(optional) into one, enable to intelligently adjust water and suction strength based on the detection of floor stains, garbage easily taken away. With filter bag, the liquids can be separated with solids, simple waste processing.

Automatic cleaning with full coverage enable to affectively clean corners and marginal areas to provide standard cleaning operation under accurate control .

440mm-wide roller brush adopts special polymer absorbent material, automatically adjust downward pressure. Stains and garbage intelligent identify to realize real-time cleaning. Running water cleaning system provides clean water for real-time cleaning without damaging the floor, quick mopping and immediate drying the floor.

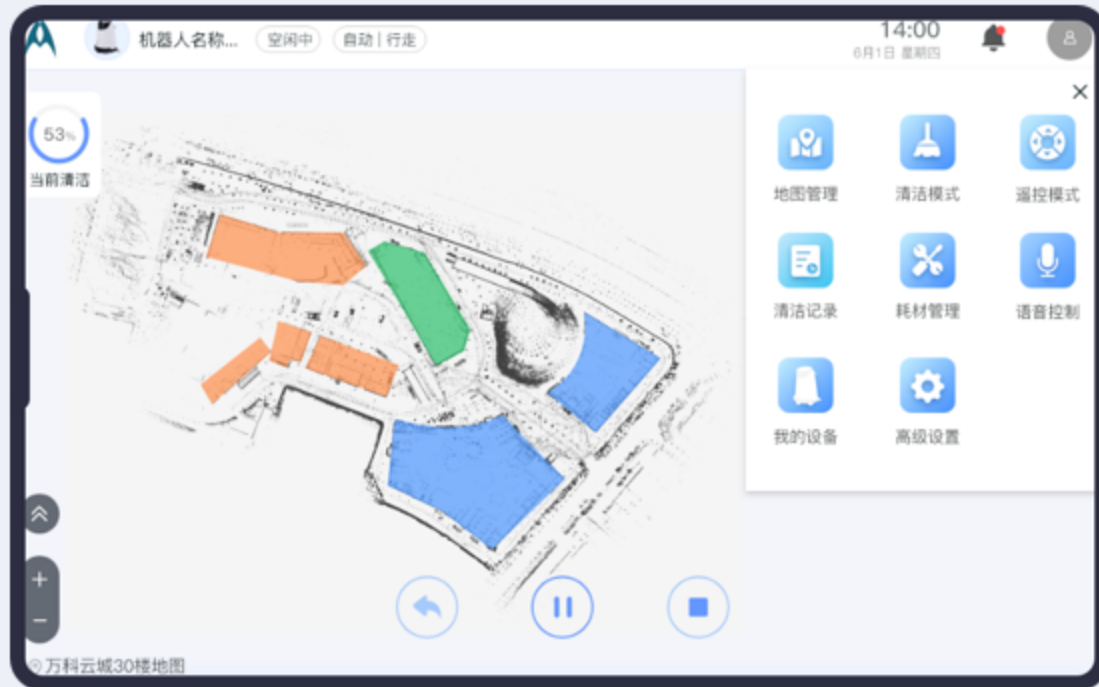
Robot backstage display the position, battery level, volume of clean water and sewage as well as the coverage of the cleaning operation in real time, and conduct statistical analysis of the cleaning speed, changes in water volume, cleaning efficiency, consumable status etc., to help ensure the efficiency of the cleaning operation.

# 06 Dual System Deployment, Multi-mode Interaction

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Mobile App + remote scheduling dual system deployment, flexible using. Real-time voice notification, and touch control quick task assignment and real-time robot status display. Mobile APP that help control all the functions. Multiple robot cloud accessing, data real time synchronization and sharing, realize intelligent monitoring and alarming, remote task scheduling, remote equipment configuration and on-line upgrading. Support operation of multiple robots and synchronized operation to save time cost and operation and maintenance response time.



# 07 Multi-sensor Positioning and Navigation; Perceptual Obstacle Avoidance System

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Accurate navigation & positioning + Intelligent route planning + Auto obstacle avoiding + Anti-collision & Anti-dropping



## Mapping-level high precision

Able to realize a repeated positioning accuracy of  $\pm 1\text{cm}$  under typical application scenarios; a positioning frequency of 1~200Hz available for configuration to meet the positioning needs under different speeds.



## All-terrain adaptation

3D navigation based on 3D lidar supporting Z-direction positioning capability to meet application demands under difference terrains.



## Indoor and Outdoor integration

A multi-sensor integration of lidar, IMU, camera, ultrasonic and milometer; navigation positioning and perceptual obstacle avoidance for both indoor and outdoor application scenarios.



## All-weather capability

Multi-sensor data pre-fusion algorithm that could shield affected sensors to adapt to such weather light rain and dense fog and thereby meet the requirements for all-weather operation.



# 08 Maintenance

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## Rapid Disassembly Design

- ▶ Forward-pulling clean water tank to ensure rapid refilling of clean water
- ▶ Lifting up the top cover to easily take the sewage tank out, simple garbage disposal and cleaning
- ▶ Clip-type battery design to ensure rapid replacement of battery
- ▶ Pull-out cleaning modular design to make it easier to maintain and clean



# 09 Convenient Maintenance Method

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## Remote monitoring, operation and maintenance



Real-time monitoring of the operation data of all the robots at the cloud end to provide early warnings and abnormality report and thereby ensure in-time response to and rapid settlement of problems.

## Intelligent Cleaning Design



Special polymer material rolling brush to avoid damages to the floor; running water cleaning system to realize the function of self-cleaning while vacuuming, mopping or washing; intelligent dirt and stain sensing and one-click automatic cleaning without disassembling the device to eliminate odor and maintain cleanness.

## Real-time Data Synchronization



Support multi-robot cloud map sharing, real-time synchronized data updating as well as swift and fast matching, deployment, scheduling and maintenance to meet the demands of various complex scenarios.



## Human-device Interaction Notification

Triple notification from screen display, voice and APP; automatic notification of sewage tank, cleaning of clean modules, replenishment of clean water, replacement of consumables and charging



# 10 Specification

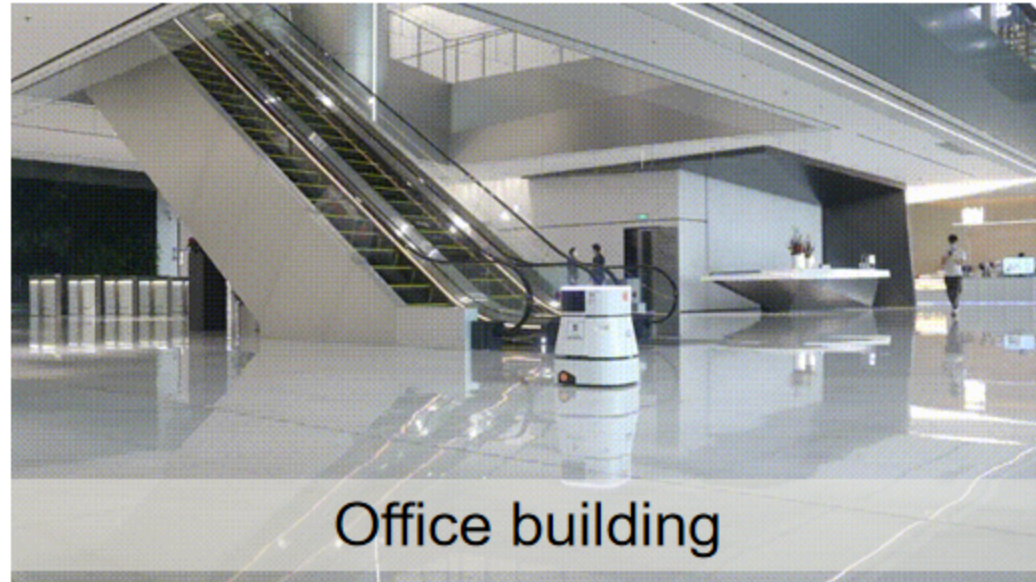
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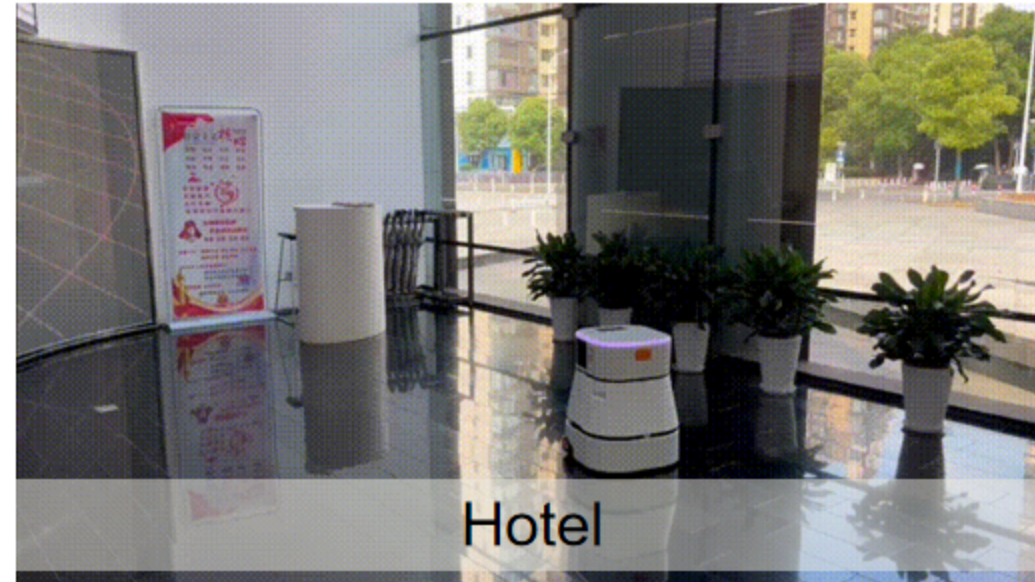
<b>Product dimension</b>	503*503*629 mm
<b>Carton dimension</b>	660*660*930mm
<b>Net weight</b>	42KG
<b>Gross weight</b>	71KG
<b>Sensor Configuration</b>	2D LIDAR(3D optional), 2D obstacle avoiding radar, ultrasonic, anti-drop/HD camera
<b>Navigation System</b>	2D multi-line laser + vision + IMU + milometer Multi-sensor fusion navigation
<b>Obstacle-avoiding System</b>	2D multi-line laser + 2D single-line laser + color camera + TOF camera + ultrasonic + anti-drop sensor
<b>Speed</b>	0.1~0.8m/s adjustable
<b>Tank capacity</b>	water/sewage tank 10L/10L
<b>Cleaning width</b>	440mm
<b>Cleaning intensity</b>	Standard and strong for choice(just for washing mode and vacumming mode)
<b>Working mode</b>	Washing, mopping, vacuuming(optional)
<b>Operation</b>	Touch control & Remote control & APP control
<b>Cleaning efficiency</b>	800m <sup>2</sup> / h
<b>Battery</b>	Lithium iron phosphate, 1KW.h (replaceable magazine type)
<b>Display screen size</b>	7 inches
<b>Network communication</b>	4G/5G/WiFi
<b>Controlling software</b>	Voice control/mobile APP/Cloud software

# 11 Applications

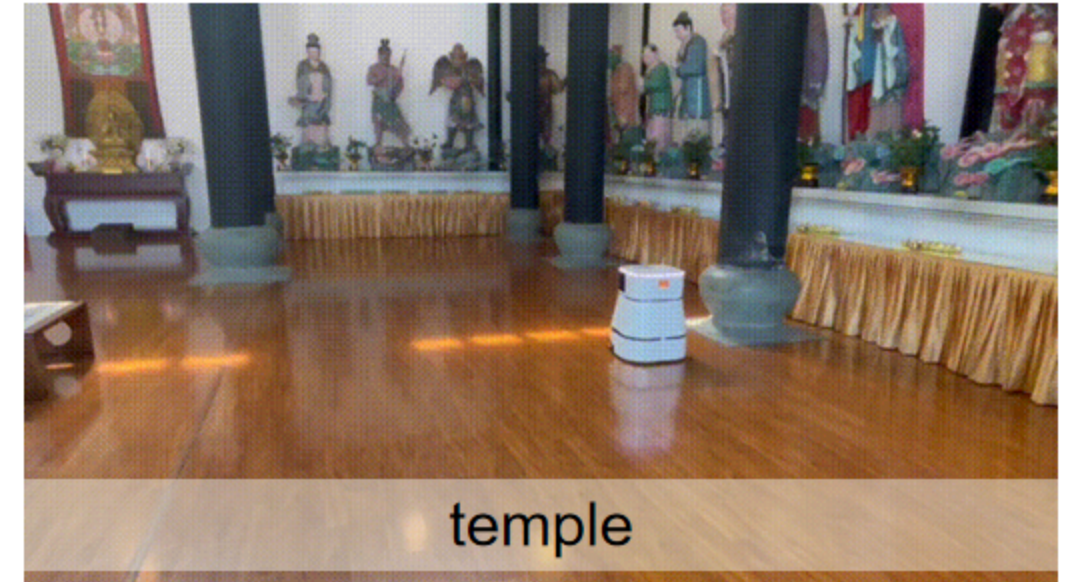
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Office building



Hotel



temple



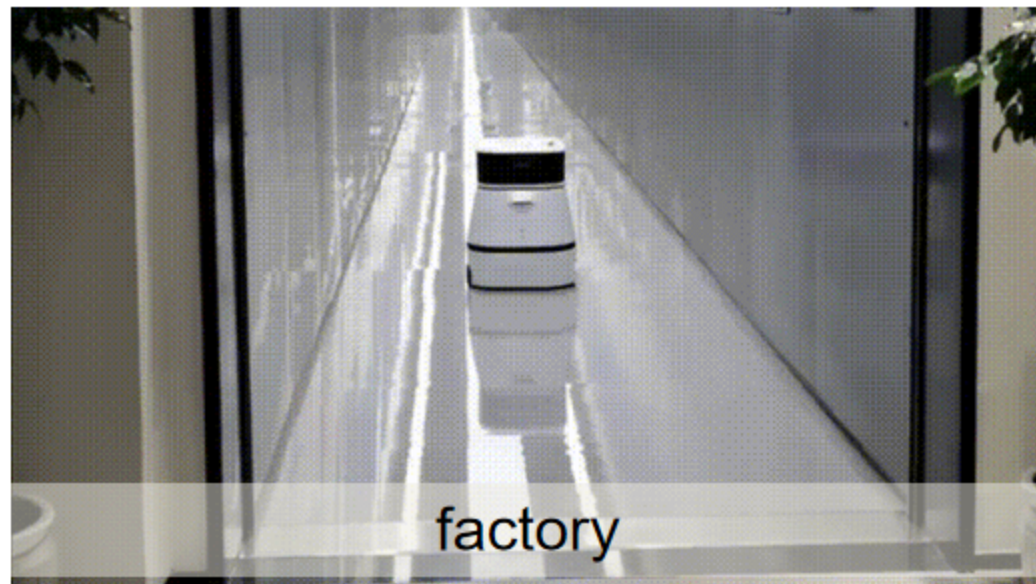
exhibition hall



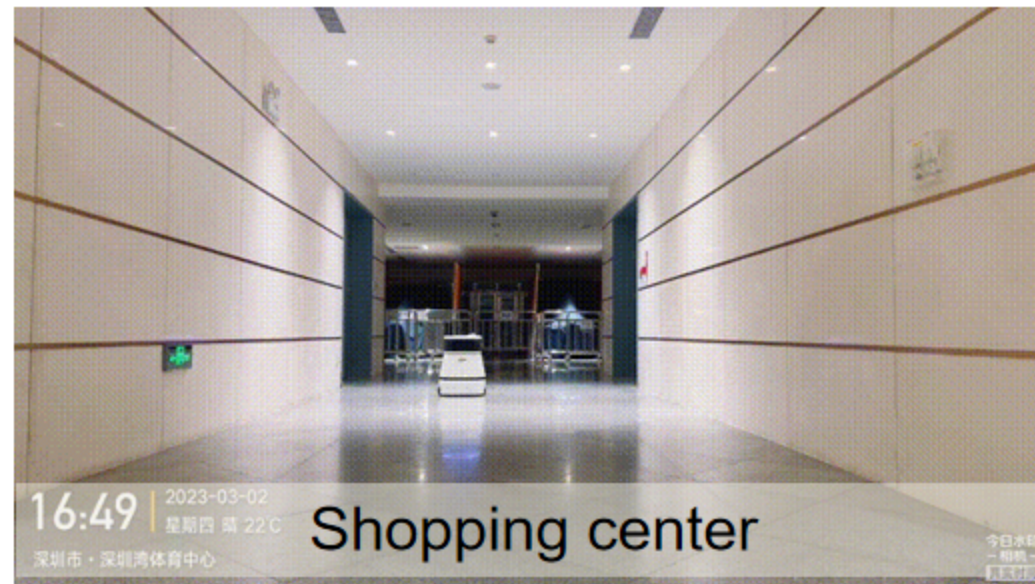
children's hospital



Real estate property



factory



Shopping center



Office building