PUDU

PUDU CC1 Pro

AI-powered Autonomous Cleaning Robot

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The PUDU CC1 cleaning robot builds upon the robust design of the PUDU CC1, integrating advanced **AI perception and control** systems to deliver a fully automated, **closed-loop cleaning process**.

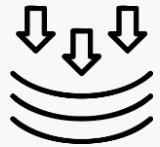
CC1 Pro autonomously manages the entire cleaning cycle—from dirty debris detection and adaptive cleaning intensity adjustment to real-time cleanliness assessment and self-monitoring of cleaning components—**addressing the persistent challenge of standardizing the final stages of commercial cleaning**.

With features like automatic water refilling and drainage, self-charging capabilities, breakpoint resume functionality, and multi-floor operation, CC1 Pro streamlines the cleaning workflow, significantly **reducing manual intervention and ensuring consistent cleaning outcomes.**

Key Features

AI Spot Scrubbing

AI Real-Time
Cleaning Performance Detection



AI Cleaning Intensity Control

AI Components
Self-Monitoring

4-in-1 Versatile Cleaning

VSLAM+ Positioning

AI-driven Perception

IEC 63327 Certification

Product Introduction

Product Specifications

Operating Voltage	DC 23V~29.2V
Battery Type	Lithium Iron Phosphate ($LiFePO_4$) Battery
Battery Capacity	50 Ah
Charging Time	About 3 h
Run-time	Scrubbing: 5h; Sweeping & Vacuuming: 5h; Carpet Vacuuming: 4h; Silent Mopping: 9h
Cleaning Capabilities	Sweeping, (Carpet) Vacuuming, Dust Mopping, Scrubbing
Weight	75 kg (165.35 lbs)
Dimensions	629 x 552 x 695 mm (24.76 x 21.73 x 27.36 in)
Display	10.1-inch LCD Screen
Navigation	LiDAR + Visual Fusion Positioning
Cruising Speed	0.2 m/s ~ 1.2 m/s (0.66 ft/s ~ 3.94 ft/s) (Adjustable)
Noise Level	<70 dB
Min. Path Clearance	70 cm (27.56 in)
Threshold Overcoming Height	20 mm (0.79 in) (Non-Cleaning Mode), 8 mm (0.31 in) (Cleaning Mode)
Max. Climbing Angle	8° (Non-Cleaning Mode), 3° (Cleaning Mode)
Groove Crossing Width	35 mm (1.38 in) (Non-Cleaning Mode), 20 mm (0.79 in) (Cleaning Mode)
Cleaning Width (with side brush)	500 mm (19.69 in)
Cleaning Efficiency	700-1000 ㎡/h (837.19-1195.99 yr^2/h) (All-covered Cleaning) 1500-3000 ㎡/h (1,793.99–3,587.97 yd^2/h) (Spot Cleaning)
Dustbin Capacity	2.5 L (0.66 gal) / 6 L (1.59 gal) (Dust bag)
Water Tank Capacity	Clean Water Tank: 15 L (3.96 gal), Dirty Water Tank: 15 L (3.96 gal)
Communication	Supports 4G, Wi-Fi, Bluetooth, E-gate & Elevator Control (Optional)
Auto Charging & Water Refill/Drain	Supported (Requires Optional Docking Station)
Ingress Protection (IP) Rating	IPX4

PUDU VSLAM+

Unlimited by Space, Unmatched in Cleanliness

- Featuring a fusion of PUDU VSLAM and LiDAR SLAM technologies, the system delivers accurate mapping and stable navigation—**no markers required**. It **excels in low-feature and complex environments**, ensuring reliable performance in locations like subway stations, airports, and warehouses where traditional deployment methods are limited.
- Paired with an AI spot scrubbing mode, the CC1 Pro combines environmental awareness with real-time decision-making to clean areas of **5,000–8,000 m² in a single run**. Designed **for complex, high-intensity environments** such as commercial complexes, transport hubs, hospitals, and industrial sites, it brings smarter, more efficient cleaning to every scenario.

AI Spot Scrubbing

Targeted Cleaning for Precision & Efficiency

- Powered by vision-based **AI recognition**, the system detects common wet stains such as coffee spills, sauces, and puddles during its patrol, instantly creating optimal cleaning routes and enhancing the overall intelligence and responsiveness of the operation.
- With AI-powered scheduling and dynamic path planning, **scrubbing efficiency is boosted by up to 3×**, achieving a cleaning rate of **1500–3,000 m²/h**, comparable to large-scale floor cleaning machines.

AI Cleaning Intensity Control

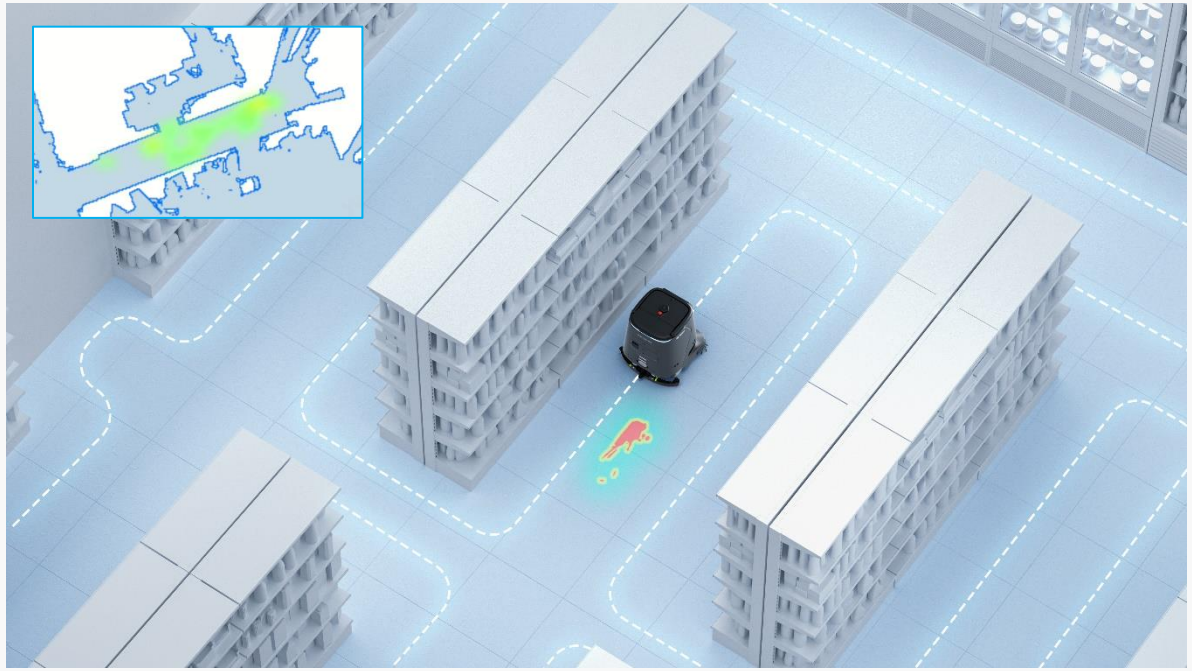
Adaptive Strategy for Optimal Cleaning

- **For stubborn stains,** it **automatically boosts cleaning power** for deeper cleaning.
- It also **monitors floor cleanliness, adjusting the cleaning mode** to conserve battery in clean areas and switch to deep cleaning mode in dirty areas for optimal performance.
- The system automatically **detects floor types**. On hard surfaces, it uses a sweep-and-suction mode for efficient dust and debris removal, while switching to suction-only mode on carpets to prevent tangling and protect the fabric.

AI Real-Time Cleaning Performance Detection

Rear AI Vision System for Real-time Cleaning Performance Monitoring

- CC1 Pro features the world's first rear AI camera, which monitors and evaluates cleaning performance in real-time. It detects leftover stains, triggers spot re-cleaning, and generates heatmaps after each task for clear insight into cleaning results.



AI Components Self-Monitoring

Real-time Monitoring Eliminates Cleaning Inefficiencies

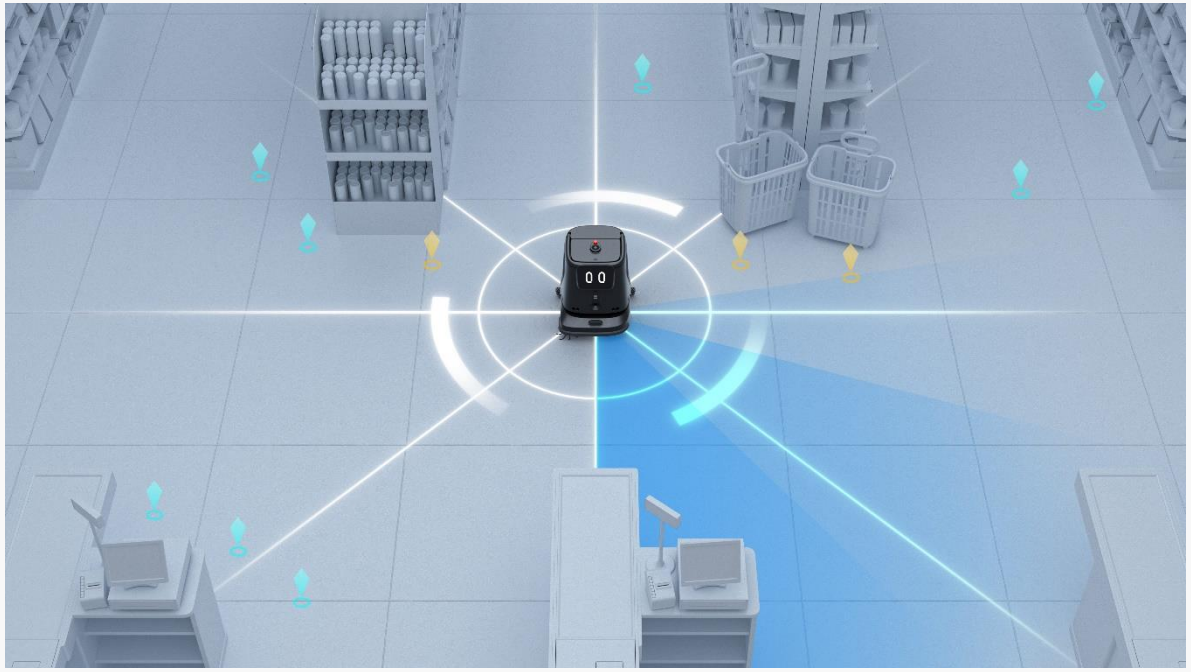
- The CC1 Pro's rear AI vision system ensures effective floor cleaning and **monitors the cleaning components in real time**. With high-precision image recognition, it **detects issues** like dirt buildup on brushes or squeegees, **which can leave floor marks or water residue**.
- When an issue is detected, the system responds instantly by **marking the map, sending notifications, initiating touch-up cleaning, or triggering a self-cleaning cycle*.** This **prevents secondary contamination** and ensures consistent cleaning quality.

*This process will be available in a later release.

AI-driven Perception

All-Around Safety Coverage

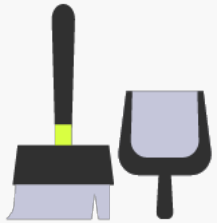
- The CC1 Pro comes with an AI-driven **perception system** (multi-sensor fusion) that accurately **detects both static and dynamic obstacles**, greatly enhancing adaptability and safety during cleaning.
- It features **dynamic obstacle avoidance** to ensure wide cleaning coverage even in complex environments. **The recognition model continuously evolves**, expanding its ability to detect more obstacles and **adapting to diverse scenarios**, enhancing the system's overall intelligence and efficiency.



Versatile Cleaning

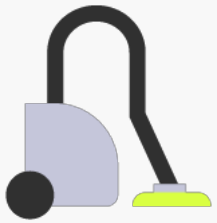
All-in-One Cleaning Solution

- Combines sweeping, scrubbing, vacuuming, and dust-mopping into one multifunctional system.
- Four cleaning modes:
  - Standard Sweeping Mode
  - Scrubbing Mode
  - Carpet Vacuuming Mode
  - Silent Mopping Mode
  - AI Spot Cleaning Mode

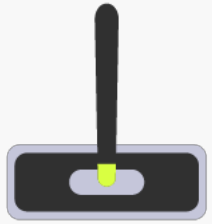


Sweeping

Scrubbing

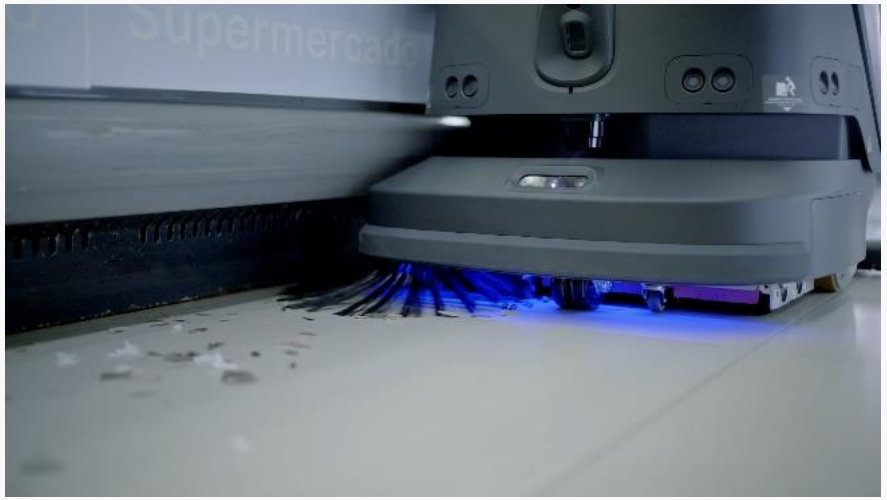


Vacuuming



Dust Mopping

Versatile Cleaning



Edge-to-edge Cleaning

- With advanced smart navigation, the CC1 Pro's side brush **precisely tracks along walls and edges**, effectively removing dust and dirt from even the tightest spaces.

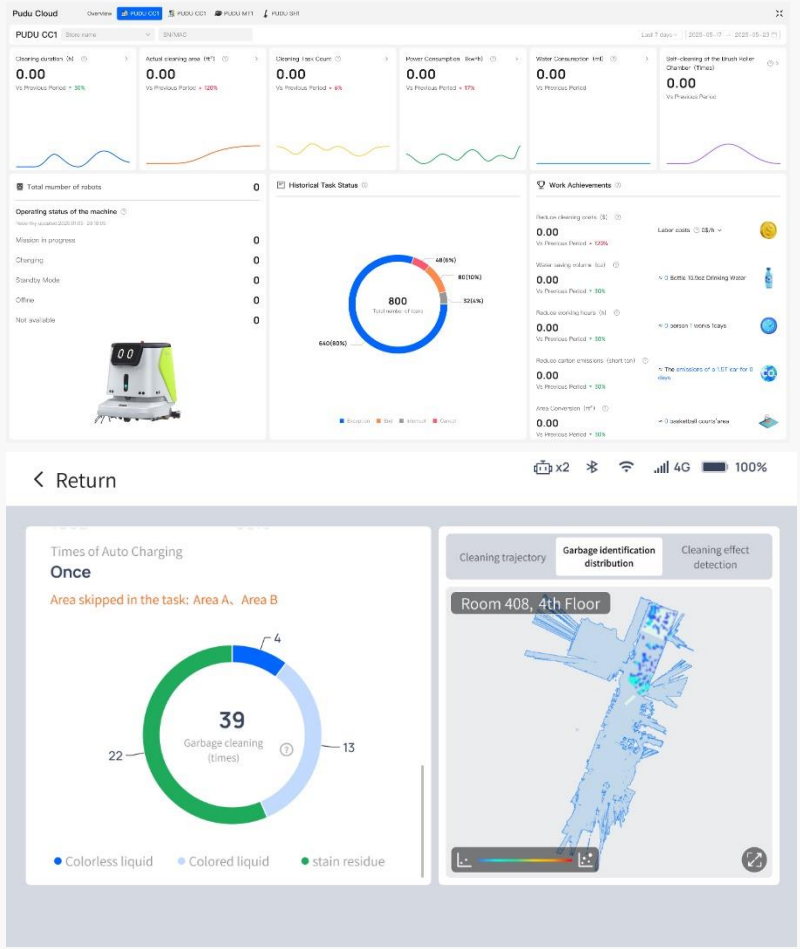
Suitable for Various Floor Types

- **Suitable for various indoor floor materials and hardness.** Whether it's hard floors or soft carpets, the CC1 Pro adapts with ease.

Measurable Cleaning

Transforming Data into Actionable Insights

- Waste Hotspot map: Highlights areas with the heaviest waste accumulation, enabling precise scheduling of cleaning operations.
- Cleaning Performance Heatmap: Marks stubborn stains that remain after multiple cleaning cycles, helping with manual inspection and further cleaning.
- Operation Dashboard: Visualizes key metrics — task execution and completion rates, maintenance frequency — and issues real-time alerts for any equipment anomalies.



Cleaning System Upgrade

Inner Cleaning Structure Optimization

- Compliant with IEC 63327 Standards
- Enhanced Durability and Maintenance: Self-cleaning brushes, contour-following brush compartments, and large metal filters significantly improve usability.
- Improved Cleaning Power: Increased water flow, enhanced fan suction, and faster brush rotation

Docking Station

■ **Automatic Water Refill and Drainage**:

Equipped with an integrated water and power system, it automatically refills and drains, offering a convenient and efficient docking station cleaning experience.

■ **Automatic Recharging**:

After completing a task, the CC1 Pro automatically returns to the docking station to charge, ensuring extended run-time.

Mobile Water Tank

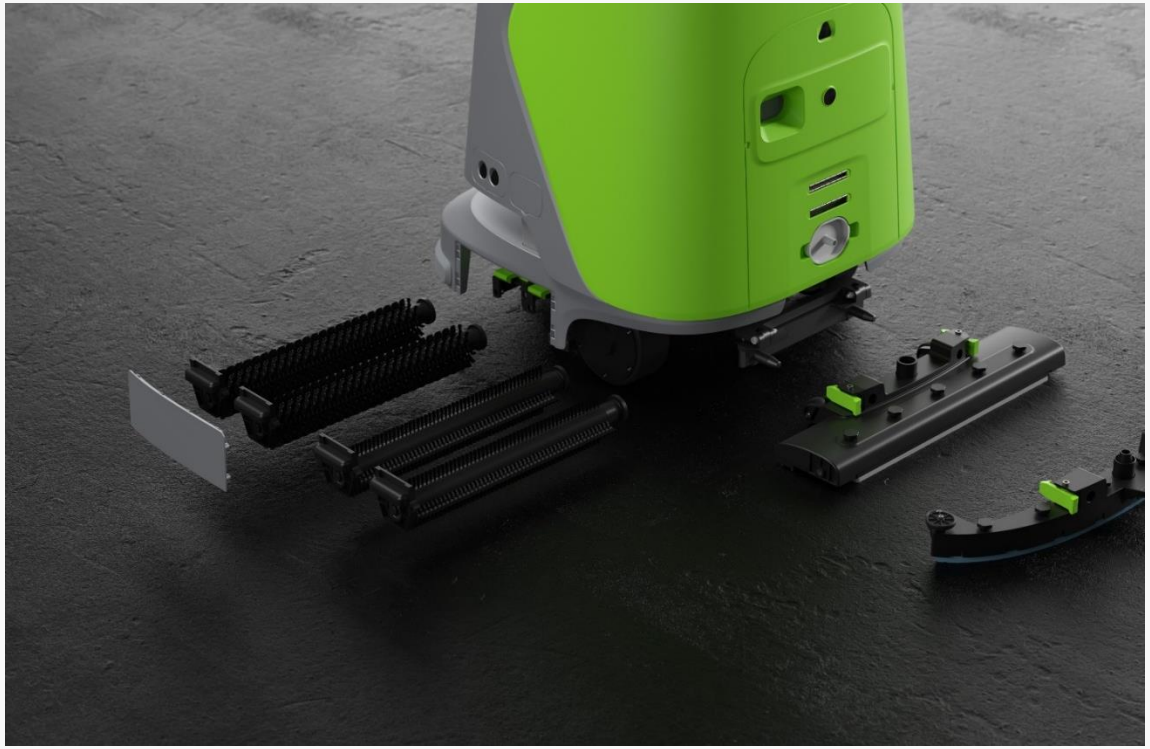
No Plumbing Modification

- Fixed docking stations, combined with this mobile water tank, eliminate the need for water pipeline modifications—just plug in and use.
- The mobile water tank has a sufficient internal capacity, featuring a 30L clean water tank and a 30L wastewater tank, providing enough water for two complete cycles of the CC1 Pro.
- When the clean water runs out or the wastewater tank is full, intelligent prompts on the mobile app and the robot's homepage will alert users to manually refill the mobile water tank.

Modular Design

Rapid Deployment & Easy Maintenance

- The modular design allows for quick assembly and disassembly of cleaning components in just one minute, enabling seamless function switches and simplifying the cleaning process.



Product Value

Smarter Efficiency, Focused Human Effort

Powered by AI-driven adaptive cleaning strategies, the robot autonomously handles high-frequency, repetitive tasks. It frees up staff to focus on more detailed, judgment-based work—boosting overall operational efficiency.

Built-in Safety, Worry-Free Operation

With 360° perception and multi-sensor fusion, the system accurately detects and avoids obstacles, ensuring smooth operation in dynamic environments. It minimizes the risk of collisions and errors, supporting safe and reliable daily cleaning.

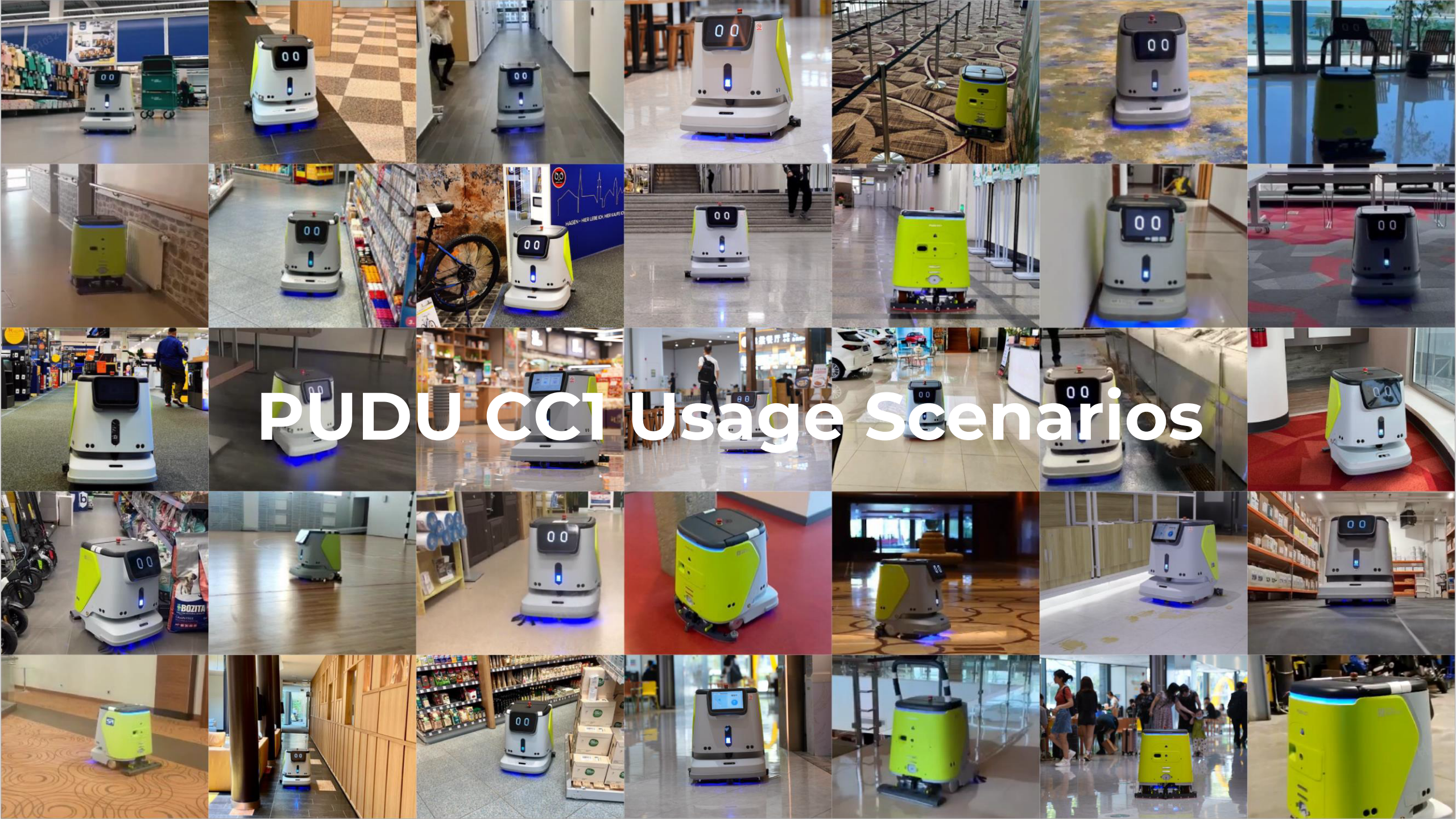
Product Value

Eco-Conscious Design, Smarter Resource Use

With intelligent power management and smart resource allocation, the robot adjusts intensity only where needed, reducing energy and water consumption while maintaining cleaning performance for sustainable operations.

Insight-Driven, Smarter Cleaning Management

Real-time dashboards visualize key metrics—like task completion, error alerts, and cleaning heatmaps—giving teams actionable insights to optimize performance, troubleshoot quickly, and move from reactive to proactive cleaning management.


PUDU CC1 Usage Scenarios

Revolutionizing Ten Major Industries with Smart Robotic Solutions

Food & Beverage

Hospitality

Retail

Industrial Facility

Health Care

Residential and Office Buildings

Education

Entertainment & Sport

Transportation and Related Service

Public Service