



Introduction to Industrial Product Solutions





LEJOIN INTELLIGENCE (SHENZHEN) CO.,LTD



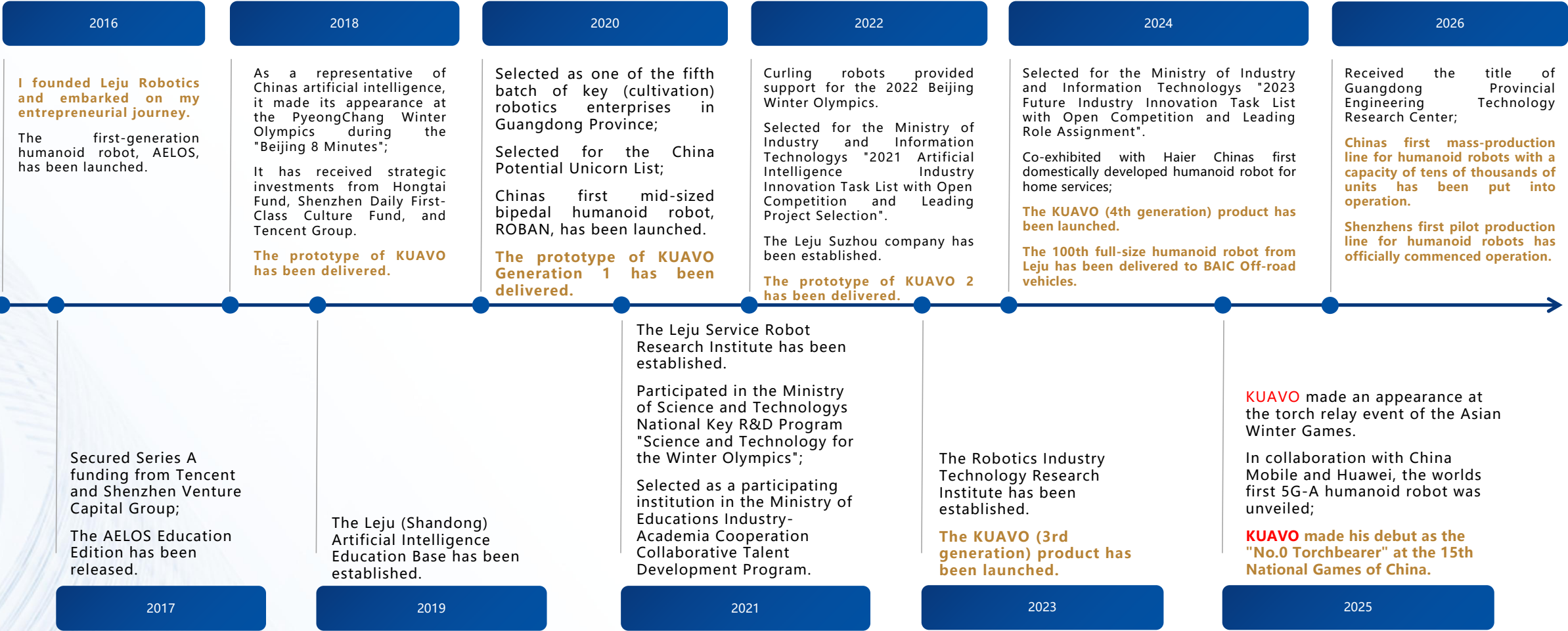
The first company in China whose primary business focuses on humanoid robots has been recognized as a national-level "Little Giant" enterprise specializing in niche technologies and innovation.

- The number of full-size humanoid robots delivered ranks among the highest globally.
- **Operating across 10 national humanoid robot training facilities, with an annual production capacity exceeding 25 million real-machine data entries.**
- The first industrial solution for 5G-A humanoid robots in various application scenarios
- holds 175 authorized patents
- National-level specialized, refined, unique, and innovative "Little Giant" enterprises
- Vice President Unit of the Robotics Branch of the Chinese Institute of Electronics
- Deputy Chairman Unit of the National Intelligent Sensor Innovation Alliance for the Special Robotics Industry Chain
- Participants in the National Standardization Pilot Project for 2025
- Project units under the "2023 Future Industry Innovation Tasks Announcement and Selection Program" initiated by the Ministry of Industry and Information Technology
- Participating units of the Key Special Project "Intelligent Robots" under the National Key Research and Development Program of the Ministry of Science and Technology
- The "2025 Pilot Project for Collaborative Research and Application of Intelligent Elderly Care Robots in Various Scenarios" jointly initiated by the Ministry of Industry and Information Technology and the Ministry of Civil Affairs
- The compiling unit of the Ministry of Science and Technology's "White Paper on the Development of Humanoid Robotics Technology Industry (2023–2030)"
- Participating institutions in the National Natural Science Foundation of China's Regional Innovation Development Joint Fund project
- The implementing unit for a sub-project under the National Major Science and Technology Project on Next-Generation Artificial Intelligence, undertaken by the Ministry of Science and Technology
- Lead Unit for the 2025 Key Application Scenario Project of the Beijing Municipal Science and Technology Commission
- Lead unit for the Guangdong Provincial Key Areas Research and Development Program under the Department of Science and Technology of Guangdong Province
- **Guangdong Provincial High-Dynamic Bipedal Robot Engineering Technology Research Center**
- **First Prize in the Application Innovation Category of the Guangdong Provincial Outstanding Artificial Intelligence and Robotics Award (XAIR Award)**





Development History





Recent Achievements



The nations largest hands-on training facility for humanoid robots, featured in the special program marking the conclusion of the 14th Five-Year Plan period.
It made its debut at the 15th National Games and received extensive coverage from CCTV.



China Media Group
Special Program "The Advancing China – Our 14th Five-Year Plan"



CCTVs "News Broadcast"



CCTV-1 "Evening News"



CCTV-2s "Economic 30 Minutes"



CCTV-4 "China News"



CCTV-13 "News Live Studio"



China Media Group
Special Program "The Advancing China – Our 14th Five-Year Plan"



CCTV-5 "Sports News"



CCTVs "News Broadcast"



CCTV-1 "News 30 Minutes"

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Mass Production at Scale



The country's first fully automated production line for full-size humanoid robots, with an annual capacity of tens of thousands of units, has been established.

- ✓ large scale
- ✓ High Consistency
- ✓ Delivery Assurance Capability

01

Storage and Material Supply Area

IQC (Inspection Quality Control) for incoming materials
CTU Library + Intelligent Storage Cabinet

02

Pre-assembly Area

Electric components + pre-installed structural elements
Pre-installed semi-finished product

03

Final Assembly Line Area

Linear Production Line
Complete Set Delivery

04

Post-processing and Final Product Area

Test Run Area
Finished Product Warehouse



CCTV-1 "News Broadcast"



CCTV-1 "Evening News"



CCTV-2 "Economic Information Broadcast"



CCTV-4 "Today's World"



CCTV-4 "China News"



CCTV-13 "News Live Broadcast"

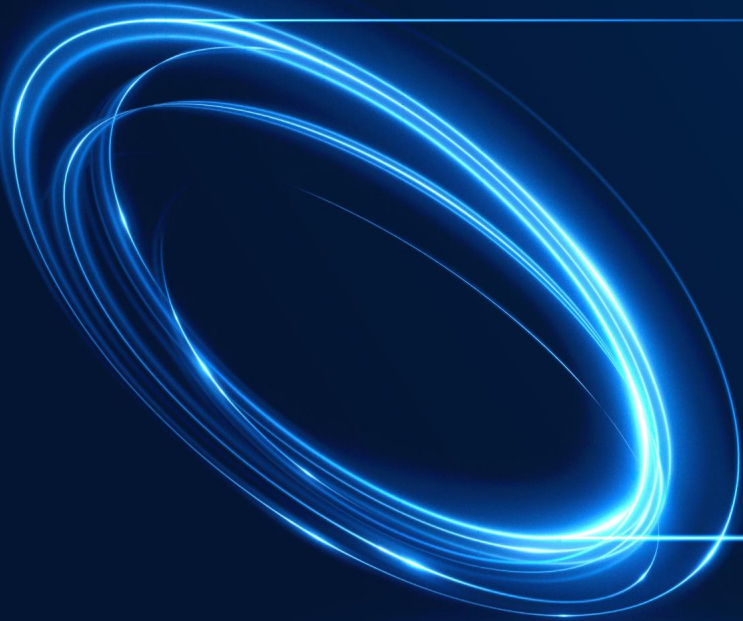


东方精工



Mass production: 10,000-unit production line





01

Scenario Requirements Analysis

LEJU ROBOT



Challenges faced by full-process automation in industrial settings



Many aspects of industrial processes still cannot be addressed using industrial robots.
Still requires manual intervention

Material Transportation



Smart Forklift

Warehousing



AGV

punching press



punch

pressure casting



die casting machine

weld



welding robot

spray paint



Spray Painting Robot

Component Transfer



Overhead Crane

Material Sorting



manual sorting

Packaging and Assembly



Manual Assembly

Quality Inspection Test



Manual Quality Inspection

Product Packaging



Manual Packaging

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Current situation of labor supply on production lines

As society develops, factories struggle to recruit and retain workers.

Cant find anyone

Production work is heavy, monotonous, and repetitive; young people would rather work for ride-hailing apps like Didi or deliver food than stay in factories. Numerous factories constantly post job advertisements year-round.

High turnover rate with significant staff loss

At the end of each year, workers leave in large numbers and return to their hometowns.

High labor costs

The combination of high employee turnover rates and recruitment challenges has led to continuously rising labor costs for companies year after year.



Typical requirement: Automobile factory



There is a significant amount of unstructured tasks that require the use of humanoid robots to replace human labor.

① Stamping



punch

Transmission robotic arm

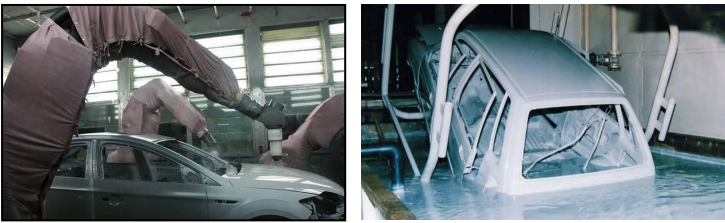
② Welding



welding robot

Automated Welding Line

③ Painting



Spraying Robot

Electrophoresis Production Line

④ final assembly

The total workforce of an automobile factory consists of 1,800 employees, with 1,200 working in the final assembly workshop, accounting for over 67% of the total workforce.



Material Storage Workstation
There is a wide variety of packaging options available.



Return to the empty box workstation
The packaging is not standard.



SPS station
It is difficult to identify and grasp flexible, transparent objects.



Interior Installation Workstation
The robotic arms cannot reach the required operating space



Wiring harness installation station
Robotic arms cannot install flexible wiring harnesses.



Automobile Quality Inspection Station
Over 100 testing devices are unable to complete the process

The Four Major Manufacturing Processes in the Automotive Industry



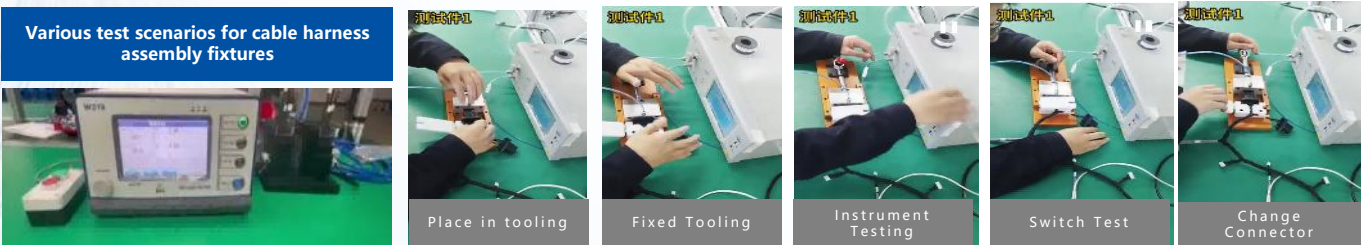
Typical requirement: 3C factory

Automation cannot be achieved using industrial robots; a 1:1 human replacement is required.

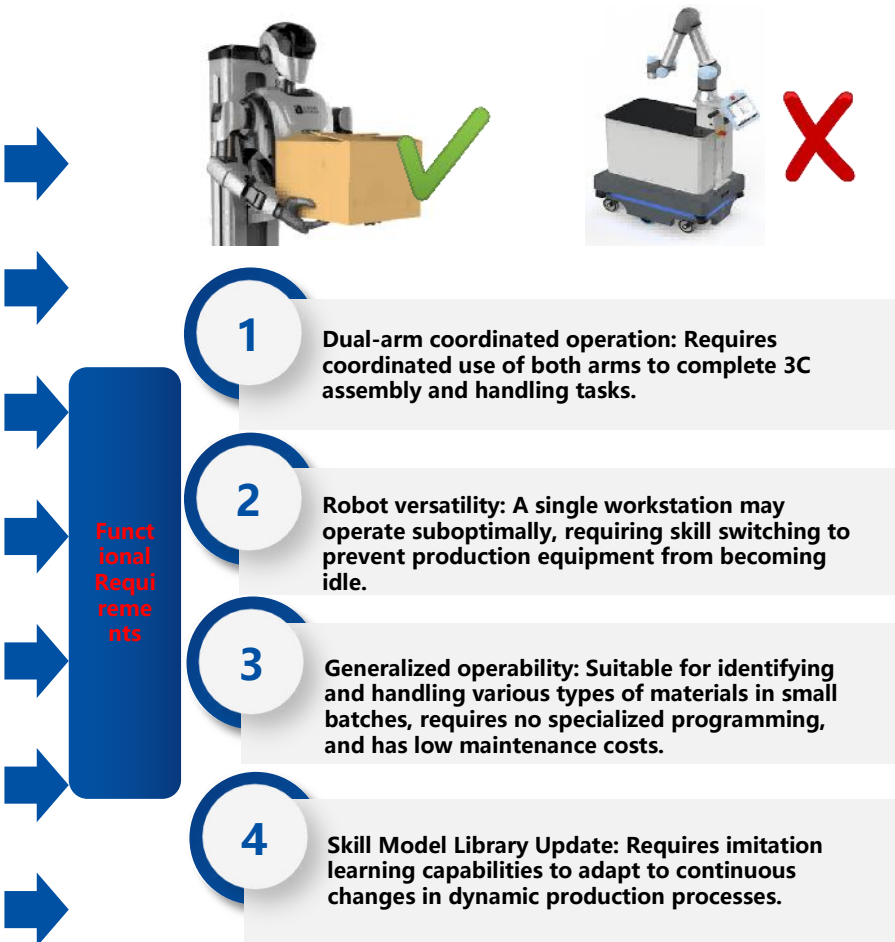
- High workstation switching frequency, diverse types of weighed materials, and insufficient workstation utilization.



- The diameter, length, weight, and number of bundles in the wiring harness are inconsistent and cannot be fixed during programming.



Typical production process in the cable workshop



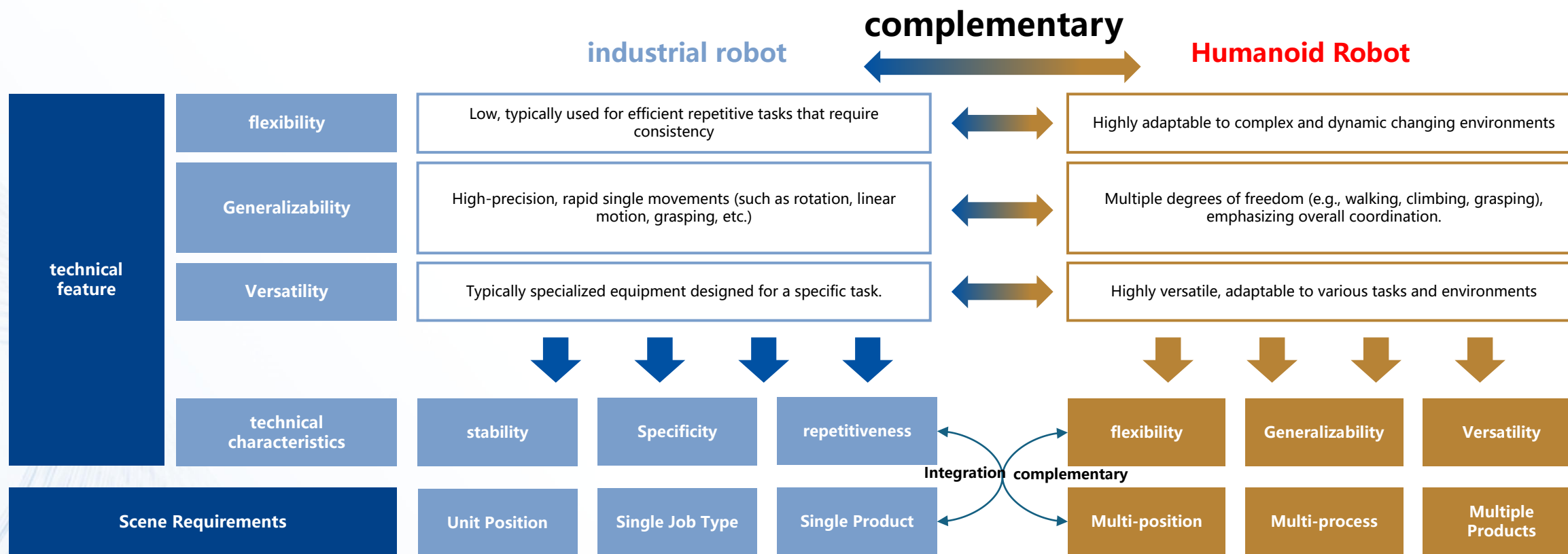


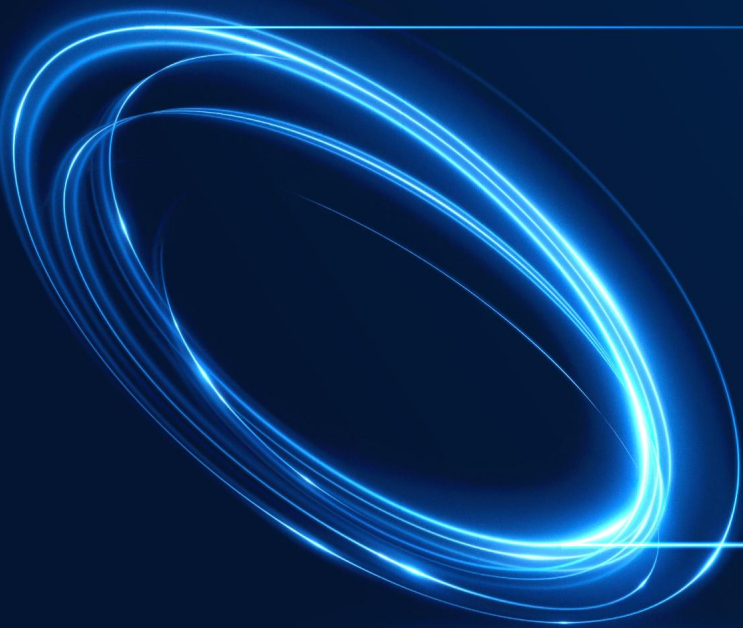
Overcoming the final challenges in implementing industrial intelligence solutions.



Industrial robots + humanoid robots

It is a comprehensive solution for achieving full-process automation in industrial operations.





02

**Industrial Embodied
Solutions**

LEJU ROBOT



Industrial Embodied Solution: 1 + 1 + N



1 Industrial-grade robots

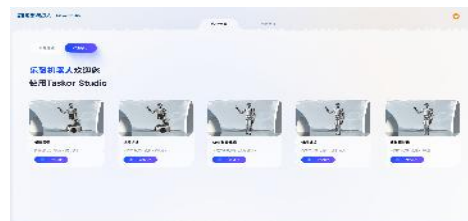
Autonomous Navigation / Autonomous Obstacle Avoidance / Dual-Arm Operation



- All-directional mobility with a wheeled chassis for high operational efficiency, ideal for confined industrial environments
- Both arms work together to perform various tasks
- Compatible with various application scenarios including 3C products and automotive assembly

1 Taskor Industrial Embodied Software

Graphical Skill Composition / Task Execution / Data Return



- Standard Skills: One-click deployment across multiple devices
- Digital Visualization Platform
- Integration with the factory's MES system

N Standard Skill Library

Designed for continuous iteration and reuse across multiple scenarios.



Plastic Box Depalletizing



Carton Depalletizing



Small Item Loading
(Zhaofeng Project is under development.)

More skills are continuously being improved

Different skills require different end effectors.

Application Closed Loop: Task Assignment → Skill Invocation → Robot Execution



Carton Depalletizing Solution

Target Scenarios: Automotive manufacturing, warehousing and logistics

Scenario Positioning

For high-frequency handling tasks between pallets and conveyor lines, robots perform cardboard box identification, grasping, transportation, and placement, significantly reducing repetitive manual labor.

Key Metrics

Carton weight: ≤ 5 kg

Carton dimensions (2 options):
435*360*180/200 mm

Cycle time: approximately 28 s/unit

ROI: 1.68 years

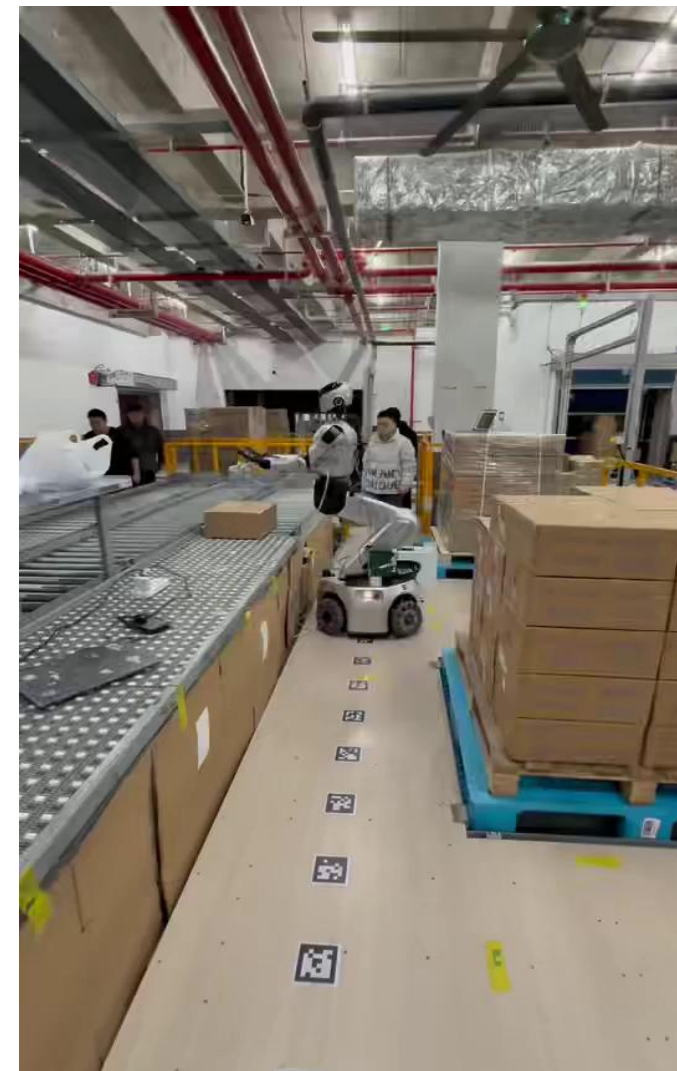
Deliverability

- The cardboard box is not wrapped with plastic film; the robot cannot remove the film.
- Precision requirement for grasping/placement points: ≥ 2 cm.

Deployment Value

- Replace high-intensity lifting operations to reduce personnel workload.
- Maintain continuous feeding of the production line to reduce waiting time.
- Suitable for standard cartons, fixed rhythm operations, and regular palletizing scenarios.

ROI calculation logic: Machine cost estimated at ¥400,000; labor cost estimated at ¥120,000 per year; calculated based on the number of replaceable personnel.





Plastic Box Depalletizing Solution

Target Scenarios: Automotive manufacturing, warehousing and logistics, 3C products

Scenario Positioning

Designed for complex tasks such as pallet unloading, scanning, and handling, the robot can flexibly move between locations including pallets, shelves, flow racks, and conveyor lines.

Key Metrics

Plastic box weight: ≤ 5 kg

3 box sizes:
Length x Width x Height: 400*600*330/220/110 mm

Cycle time: 50 s/unit

ROI: 1.56 years

Deliverability

- The dimensions, color, type, and stacking stability of the material boxes must be confirmed.
- Confirm storage locations: pallets, shelves, flow racks, conveyor lines, and conveyor belts.
- The entire material stack must adhere to a uniform, standardized stacking format.

Deployment Value

- Reduce the workload associated with manual handling and barcode scanning tasks.
- Suitable for standard container handling, warehousing, and distribution scenarios.





Small Parts Feeding Solution

Target Scenarios: Manufacturing

Scenario Positioning

Targeting the parts feeding process, the system realizes automatic feeding of components.

Key Metrics

Component Weight: ≤ 3 kg

Inner Diameter: 80–120 mm

Cycle time: 45 s/unit

ROI: 2.22 years

Deliverability

- Verify the dimensions and weight of components.
- Components shall be placed in order with no flipping required.

Deployment Value

- Eliminate repetitive manual picking motions.
- Build an automated parts feeding scenario.
- Identify different types of components to support feeding of multiple component varieties.





Industrial Embodied Software Platform Taskor



Dispatch Management Platform



Global Monitoring

Data Summary

Integrate with MES/WMS systems

Multi-machine Scheduling

Task Assignment

Task Library Management

Robot Management

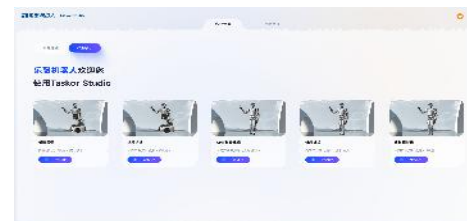
OTA

Platform Management

★ core advantage

- ✓ The homepage large display provides a comprehensive overview of the robots status, location, and MES order details at the factory.
- ✓ Deeply compatible with factory MES systems, enabling intelligent task assignment and order processing.
- ✓ Implement multi-machine scheduling
- ✓ Robot Management: View robot status and faults in real time, with log export support
- ✓ One-click batch upgrade for multiple devices

Studio Editing Platform



Task Management

Task Editing

On-site Robot Debugging

Multi-machine Deployment

★ core advantage

- ✓ Graphical Skill Composition
- ✓ Zero-code Easy Deployment
- ✓ One-click multi-device deployment

Push Task Skills





The Taskor system is integrated with the factory's existing systems.



Customer System: MES (Manufacturing Execution System)

- ✔ Control "How to produce": Work orders, processes, process routes, material input, quality records
- ✔ Typical scenario: Deliver Material A from Workstation 1 to the feeding port at Workstation 3.

Customer System: WMS (Warehouse Management System)

- ✔ Manage "Material Location": Inbound, Outbound, Inventory Level, Storage Location Association, Picking Strategy
- ✔ Typical scenario: Retrieve Material A from Storage Location A-02 and deliver it to Production Line 1.

The robot can operate automatically only after integration with the MES/WMS system.



★ Key Features

- ✔ **Seamless integration**: Directly compatible with existing MES/WMS systems, featuring a short deployment cycle and low costs.
- ✔ **Change-free process**: Customers need not modify existing production or logistics workflows—the robot directly retrieves tasks from MES/WMS without requiring manual intervention.
- ✔ **Data closed loop**: All execution data is automatically transmitted back, enabling end-to-end digital management from task assignment to completion.



Industrial Embodied Software Platform





Program Features



Taskor: Industrial Embodied Software

- ✓ Visual Dashboard: Robot Cockpit + Visual Representation of Factory MES System
- ✓ Deep Integration: Supports intelligent order acceptance/distribution and enables deep integration with factory MES systems
- ✓ Multi-machine Scheduling: Professional robots perform specialized tasks with greater flexibility.
- ✓ State retrieval: Real-time and accurate state acquisition, supporting one-click batch upgrades
- ✓ Zero-code deployment: A graphical tool for deploying skill libraries without writing any code

Standard Skill Library

- ✓ Continuous iteration: The skill library is constantly updated, evolving from single-skilled employees to versatile professionals.
- ✓ Intelligent Recognition: Supports identification of various box types and stacking configurations, including plastic boxes and cardboard boxes
- ✓ Mixed stacking support: Carton depalletizing now supports mixed stacking configurations for complex scenarios
- ✓ High-precision grasping: Supports full-bin grasping and accurately identifies 10+ part types

Industrial-grade Robot Body

- ✓ Omnidirectional movement: Omnidirectional chassis, enhanced flexibility in confined spaces
- ✓ High degrees of freedom: Over 24 degrees of freedom across the entire body, suitable for various workstations

Standardized Robot Body + rapid iteration skill library + Taskor industrial internet platform = fully flexible robotic workstation



Core Competencies of a Robot



Core Competence



Self-Positioning and Navigation

Laser SLAM Navigation



360° omnidirectional movement

Omnidirectional Wheels
360° omnidirectional movement



Folding arm + waist flexibility

Foldable Arm +
Waist rotation ±180°



Power Management

Automatic Charging
Support hot-swappable battery replacement

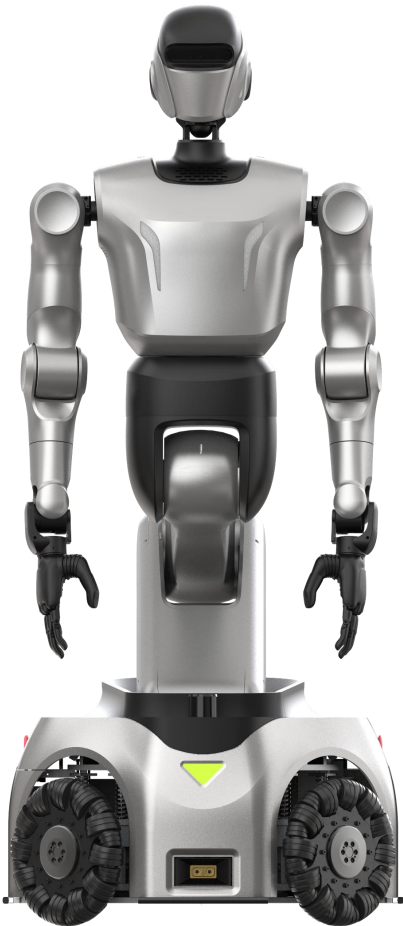


Humanoid Arm

7-degree-of-freedom arm with
dual-arm support for carrying loads up to 5 kg

Core Parameters

model	KUAVO 5-W MAX A		KUAVO 5-W MAX B	
Size	Height × Width × Depth (fully extended): 2200 × 710 × 710 mm			
Weight	245kg			
Total Degrees Of Freedom	24 + degrees of freedom for the end effector		36 (Dexterous Hand, 6 degrees of freedom)	
End Effector	Clamps, two-finger grippers, suction cups		Dexterous Hand	
Maximum Load On A Single Arm	3kg			
Elevation Rise	665mm			
Arm Reach	0.79m			
Minimum Turning Radius	0 mm (turn in place)			
Minimum Passing Width	900mm			
Power Supply Mode	Built-in lithium iron phosphate battery			
Computing Power	16-core, 16-thread, 64GB high-performance CPU with 275 TOPS of ultra-high computing power (including AI algorithms and technical support).			
Sense Sensor	Head-mounted depth camera + visual camera + 2D LiDAR (on the chassis)		Head-mounted depth camera + visual camera + 2D LiDAR (on the chassis)	
Duration Of Flight	≥6 hours (automatic charging, manual charging, manual battery replacement; supports battery replacement to ensure continuous operation)		≥6 hours (automatic charging, manual charging, manual battery replacement; supports battery replacement to ensure continuous operation)	
Quality Assurance	1 year		1 year	



KUAVO 5-W



Product Features



Omnidirectional Wheel Chassis

- The 360° omnidirectional wheel chassis enables full-range movement and stationary rotation capabilities.
- The chassis diameter is 710 mm, offering excellent passage capability through narrow channels with a minimum width of 900 mm.
- Maximum 8° climbing capability, 10 mm obstacle clearance, 30 mm gap-crossing ability, and exceptional chassis mobility.



Multi-degree-of-freedom

- The folding waist-arm design automatically adjusts the working height, enabling the entire machine to operate across a full range of 0–2.4 meters.
- The waist supports rotation, enabling more flexible robotic operation.

让全社会共享机器人便利

THANKS