

Greater China Industrials

Robotics company visit takeaways: world action model, data and dexterous hand

Industry Overview

More diversified application of embodied AI in 2026

We visited six embodied AI companies in July, including humanoid & service robot OEMs (Galaxea AI, OneRobotics, Yunji,) and component makers (Linkerbot, Orbbec, PaXini). We now see more diversified applications of embodied AI, expanding from mostly education, R&D and data collection in 2025 to industrial, logistics, retail, services and household scenario in 2026. Most robotics companies now see industrial and logistics becoming the major application scenario of embodied AI in the coming few years, while some companies are also actively expanding in household and services market, in order to capture a potentially larger market in the long run.

World action model on the rise

In 2026, many embodied AI companies are shifting towards world action model (WAM), which combines the VLA model with a world model (such as OneRobotics' OneModel 1.7 and Galaxea AI's Fast-WAM). Compared to a pure VLA model, WAM can better learn the physical laws of the real world, with higher generalization capability and performs well in long-period tasks. With the aid of WAM, robotics companies are now able to perform more complex tasks lasting several minutes, such as washing and folding clothes, preparing meals and washing dishes.

Data to become the new battlefield in 2026

On the data front, most companies now use a combination of simulated data and real-world data, with an increasing emphasis on real-world data given its importance in training high-quality embodied AI models. While the cost of obtaining real-world data remains high compared to simulated data, robotics companies are able to lower the data collection costs with UMI and Egocentric data (c.90% cheaper than teleoperation). Moreover, the higher costs in obtaining real-world data could be offset by the efficiency gain in model training process, given the higher data quality. Leading robotics & component companies now target to collect >1mn hours of real-world data spanning across industrial, logistics, service and household scenarios. Apart from data volume, data quality and diversity are also key consideration of embodied AI developers.

Dexterity hand: falling cost and improved dexterity

The ASP of dexterous hands has declined rapidly in the past two years, thanks to scale effect, improved production process, and modularized design. Dexterous hand makers are also launching high-end models with high dexterity (>20 DoF), multimodal sensory, long durability and lightweight design. Tactile sensors have become a must-have for dexterous hands, which provides high-quality data for VTLA models. Leading dexterity hand companies have also engaged in the development of VTLA models and data collection solutions (data factory/data gloves), given the crucial role of dexterous hand in data collection and manipulation activities.

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Refer to important disclosures on page 11 to 12.

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HR: humanoid robot

AI: artificial intelligence

VLA: vision-language-action

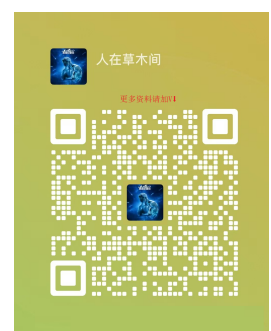
VTLA: vision-tactile-language-action

DoF: degree of freedom

UMI: universal manipulation interface

OEM: original equipment
manufacturer

[Greater China Industrials \(H\): Who Makes the Humanoid Robot \(in 2026\)? Locomotion first, manipulation follows](#)



Key takeaways – Robot OEMs

Galaxea AI (private)

Galaxea is an embodied AI company focused on developing foundation models and intelligent robot hardware. Its core products include wheeled robots (R1/R1 Pro), dual-arm mobile robots (R1 Lite), and robotic arms (A1), supported by self-developed AI algorithms, data platforms, and world models. It mainly sells its robots to developers and industrial & commercial customers.

Galaxea has launched and open-sourced its new-generation VLA base model, G0.5, with strong zero-shot generalization capability. It has also launched its world action model, Fast-WAM, based on a world model coupled with a dual-system VLA model for full-body control. On the data front, Galaxea primarily uses real-world data (a combination of teleoperation, UMI and Egocentric data) for model training. According to Galaxea, the cost of UMI and Egocentric data is around one-tenth that of teleoperation data, which could help lower the overall cost of data collection. Galaxea has also announced that it has formed a JV with Beijing Economic-Technological Development Area, focusing on data collection in logistics, restaurants, hotels and retail scenarios. It targets to collect >1mn hours of real-world data in 2026.

Exhibit 1: Galaxea R1 wheeled robot

Galaxea AI's products include wheeled robots, mobile robots & robotic arms



Source: Galaxea AI

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Exhibit 2: Galaxea R1 Lite dual-arm mobile robot

R1 Lite focuses on data collection



Source: Galaxea AI

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OneRobotics (6600 HK)

OneRobotics is a leading provider of home service robots in China. It has built a diversified product portfolio around its “One Brain, Multiple Embodiments” embodied AI platform, covering three major product lines, including: (1) Home service robots (Onero), designed to automate everyday household tasks such as cleaning, home management, and elderly care; (2) Tennis robots (Acemate), focusing on interactive training and fitness applications, including AI-powered sports coaching; and (3) Companion robots (SwitchBot), which enhances emotional engagement through natural interaction, entertainment, and personalized companionship.

The company expects its revenue to reach RMB1.4-1.5bn in 2026 (+>50% YoY) and deliver a 2026-28 revenue CAGR of no less than 50%, supported by its established SwitchBot portfolio and new embodied AI products (including Acemate, Onero and its new companion robots). It recently launched OneModel 1.7, featuring a single world action model that integrates world model with the VLA architecture. On the data front, the company is building a data collection center in the Greater Bay Area and targets to collect 1mn hours of robotics data in 2026 through teleoperation, UMI and Egocentric data collection. Its data collection mainly focuses on household scenarios, including washing and folding clothes, preparing meals and washing dishes. Its embodied AI model can now achieve c.70% accuracy rate in these scenarios.

Exhibit 3: OneRobotics' Acemate

Acemate enables AI-powered sports coaching



Source: OneRobotics

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Exhibit 4: OneRobotics' Onero

Onero is a home service robot for every household tasks



Source: OneRobotics

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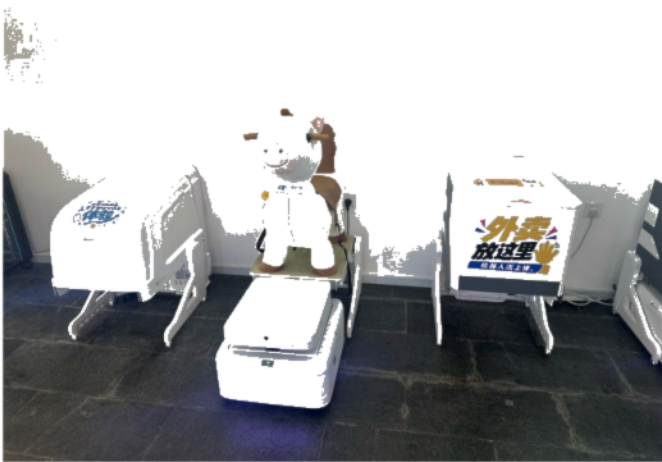
Yunji (2670 HK)

Yunji is a leading company for robotic intelligent agents in China. Yunji leverages intelligent agents to deliver adaptive, scalable, consumer-centric products and services. Its end markets include hotels, commercial buildings, healthcare facilities, etc. Yunji is the largest company in the hospitality robotics-based AI agent for hotel scenario in China. Currently, it has delivered over 60k units of robotics to over 40k hotels in China.

Management targets for >50% p.a. YoY revenue growth in 2026/27E. Looking ahead, the company believes future revenue growth drivers include 1) penetration into more hotels; 2) penetration into other markets (i.e., service apartments, high-end communities etc.); 3) more diversified types of services; and 4) replacement and upgrade demand (replacement cycle of five years). Meanwhile, management targets to lift the percentage of revenue from AI-agent which has higher margin in the longer term (vs. hardware).

Exhibit 5: Yunji's service robots

Yunji is the largest company in the hospitality robotics-based AI agent for hotel scenario in China

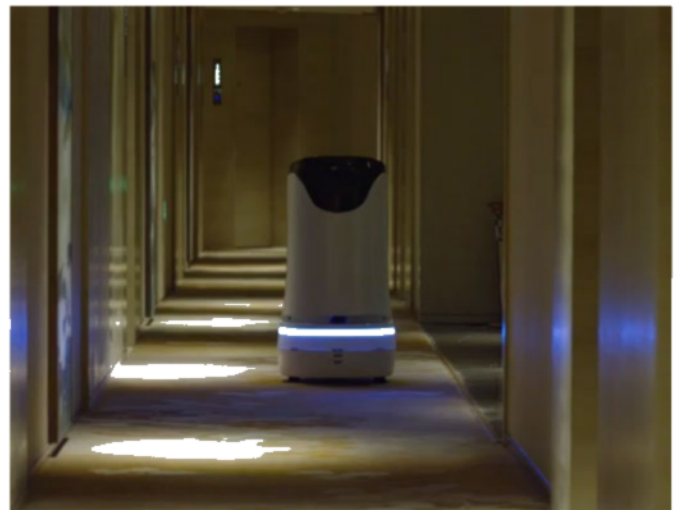


Source: BofA Global Research, Yunji

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Exhibit 6: Yunji's intelligent delivery robot - RUN

RUN can autonomously deliver items to hotel customers



Source: Yunji

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Key takeaways – key component suppliers

Linkerbot (private)

Linkerbot is a leading Chinese robotics company focused on developing high-DoF dexterous hands and embodied AI systems, leveraging advanced actuation, force control, and perception technologies to enable human-like manipulation, precise grasping, and complex task execution in real-world environments. It has 80% global market share in high-DoF (>20 DoF) dexterous hands.

Linkerbot dexterous hands cover all three major technology routes including tendon drive, direct drive and bar linkage. Currently, the ASP of its dexterous hand (O6 Lite) can reach as low as RMB3999 (USD590), much lower than its peers, due to (1) scale effect (>10k unit shipment in 2025); (2) improved production process (it can produce dexterous hand with its own robotic arms); and (3) modularized design. It has internal design of major components including coreless motor, mini screw and reducers. It has also established multiple data collection centers to collect manipulation-related data. Management sees dexterous hand companies are well-positioned in manipulation-related data collection, as the majority of humanoid robot manipulation activities are related to dexterous hand.

Exhibit 7: Linkerbot's Linker Hand L20

Linkerbot has 80% global market share in high-DoF dexterous hands

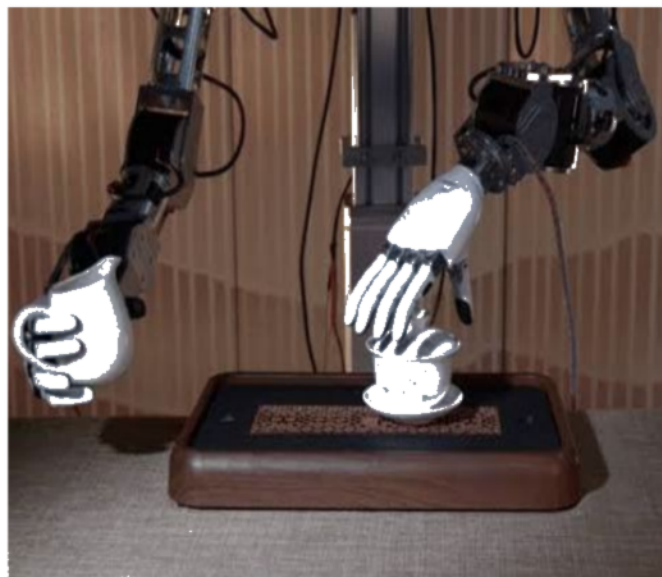


Source: Linkerbot

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Exhibit 8: Linkerbot's dexterous hand performing pick-and-place

Linkerbot's dexterous hand has achieved fast cost reduction over years



Source: Linkerbot

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Orbbec (688322 CH)

Orbbec is one of the leading companies of robot vision system in China. It has developed full-stack technology capability in robot vision system, including sensory chips, visual sensors (structural light camera, indirect time-of-flight (iToF), stereo camera, light detection and ranging (LiDAR)), vision analysis algorithms and software packages. The company has a solid market position in robotic vision systems in China, especially for structural light camera and iToF. Notably, it has >70% market share in the 3D vision system of service robots in China.

Management expects Orbbec's robotics-related business to become a core growth driver, with humanoid and service robots-related business currently contributing c.30% of its total revenue and potentially exceeding 50% of total revenue within two years. A typical humanoid robot uses 1-2 red, green, blue + dept (RGBD) cameras, with some configurations adopting up to 4, representing content value of roughly RMB2,000-3,000 per robot (assuming 2 cameras per robot). Management expects the cost of robotic cameras to decline 50% in the coming decade, thanks to improved product design and scale effect. Meanwhile, the company is also expanding its data-collection ecosystem through RGBD camera, stereo-vision and wearable solutions for teleoperation and Egocentric data collection.

Exhibit 9: Orbbec's binocular structured light camera

Orbbec is one of the leading players of robot vision system in China



Source: Orbbec

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Exhibit 10: Orbbec's Egocentric data collection module

Orbbec has launched wearable solutions for teleoperation and Egocentric data collection



Source: Orbbec

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PaXini (private)

PaXini is a leading Chinese company specializing in multidimensional tactile sensing technology, with products including tactile sensor, torque sensor, 6D force and torque sensor, dexterous hand (DexH13/DexH5), wheeled humanoid robot (TORA) and dataset/data collection solutions. PaXini adopts a proprietary 6D Hall-effect tactile sensing technology that provides high-precision multidimensional force and tactile perception, with precision of up to 0.01N and 0.1mm, enabling robots to accurately detect contact, pressure, torque, and slip during manipulation. The company has achieved significant cost reduction of tactile sensors from RMB100k/unit to RMB200/unit in 5-6 years, due to continuous improvement in product design and scale effect.

PaXini has announced to establish five data collection factories in Tianjin, Suqian, Wuhan, Zigong and Ganzhou, which can generate >10bn pieces of data per year upon completion, with daily data output equivalent to the volume of data generated during a human's whole life. The five data collection factories cover different scenarios, including logistics, industrial manufacturing and retail. PaXini's data collection is mainly based on UMI and Egocentric methods, which can achieve 3-6x higher efficiency relative to teleoperation, and can provide high-quality data to VTLA models. The company can achieve external sales of its multimodal embodied AI data via its online data platform, OmniSharingDB.

Exhibit 11: PaXini's TORA robot demonstrating item sorting

PaXini specializes in multidimensional tactile sensing

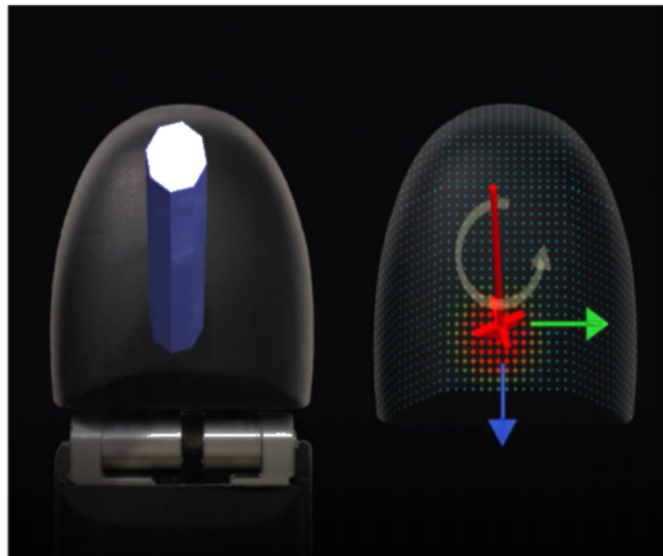


Source: BofA Global Research, PaXini

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Exhibit 12: PaXini's tactile sensor

PaXini's tactile sensor can collect multidimensional data with multimodal perception



Source: PaXini

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Appendix

Exhibit 13: The global humanoid robot supply chain (2026)

Greater China companies play a pivotal role in the humanoid robot supply chain

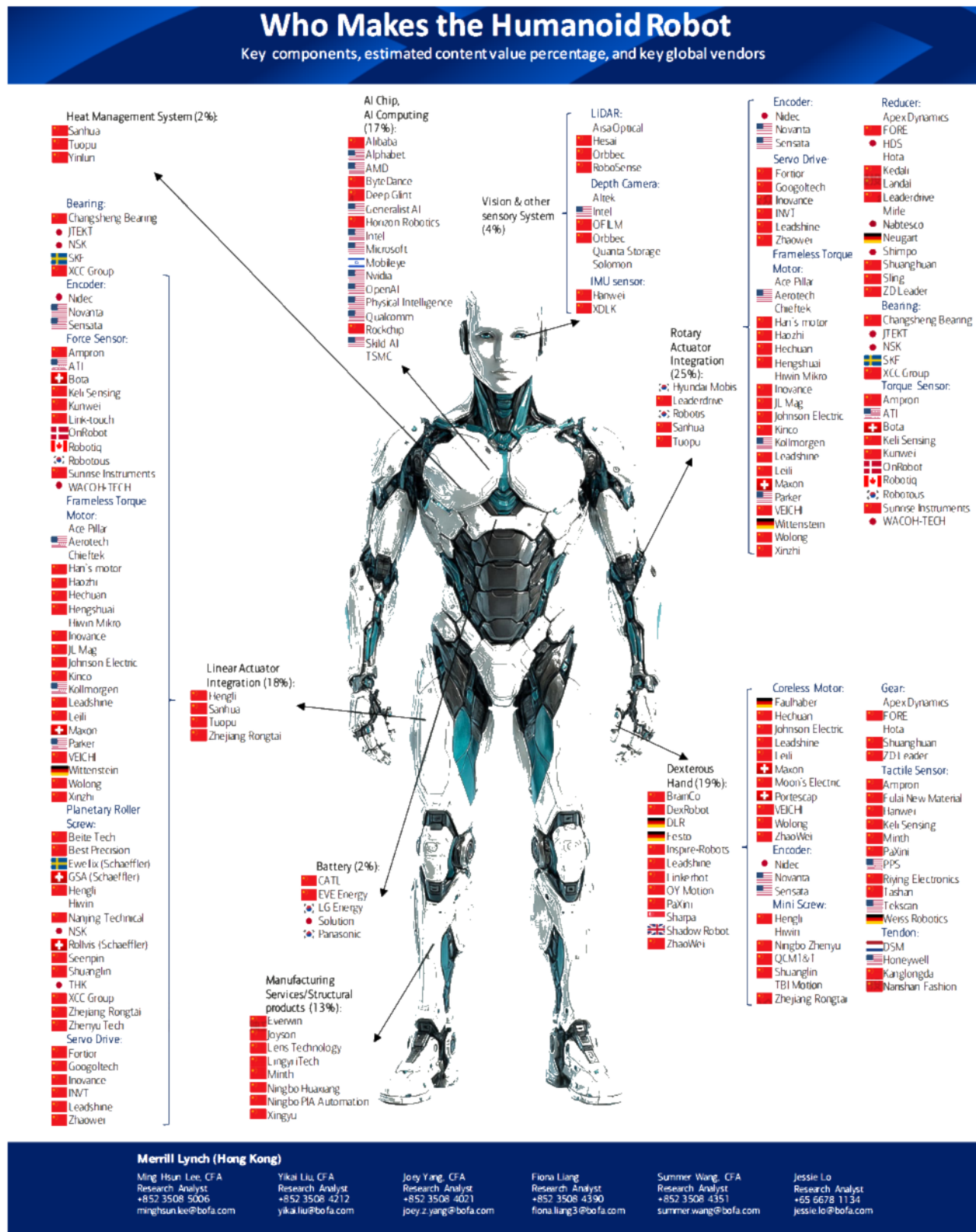


Exhibit 14: Greater China humanoid robot supply chain companies

Greater China humanoid robot component manufacturers play a pivotal role

Company	Ticker	Market cap (\$mn)	6-month ADTV (\$mn)	Major product
Humanoid/service robot				
XPeng	9868 HK	11,175	129	Humanoid robot
Shangwei New Material	688585 CH	9,984	109	Composite materials, humanoid robot
UBTECH	9880 HK	5,801	108	Humanoid robot
Estun	002747 CH	4,900	288	Industrial robot, humanoid robot
OneRobotics	6600 HK	1,788	7	Service robot, humanoid robot
Dobot	2432 HK	1,296	14	Collaborative robot, humanoid robot
Yunji	2670 HK	1,295	1	Service robot
Galaxia AI	NA	NA	NA	Humanoid robot, wheeled robot
Actuator integration				
Sanhua	002050 CH/2050 HK	23,565	56	Rotary actuator, linear actuator, heat management
Hengli Hydraulic	601100 CH	21,308	162	Linear actuator, ball screw, planetary roller screw, dexterous hand actuator
Tuopu	601689 CH	13,118	328	Rotary actuator, linear actuator, heat management
Servo motor				
Inovance	300124 CH	25,671	376	Servo motor, servo controller
Wolong Electric	600580 CH	8,485	279	Coreless motor, robot actuator
Haozhi Industrial	300503 CH	3,442	251	Brushless DC motor, harmonic reducer, encoder
Leadshine	002979 CH	2,848	109	Brushless DC motor, coreless motor, micro servo system
Jiangsu Leili	300660 CH	2,374	48	Brushless DC motor, coreless motor, linear motor
Johnson Electric	179 HK	2,358	24	Micro servo motor
VEICH Electric	688698 CH	1,592	57	Brushless DC motor, coreless motor
Kinco Automation	688160 CH	1,547	49	Brushless DC motor
Jiecang Linear Motion	603583 CH	1,445	22	Coreless motor, linear motor
Hiwin Mikrosystem	4576 TT	811	21	Servo motor, servo controller
Hechuan	688320 CH	730	25	Brushless DC motor, coreless motor
Chieftek	1597 TT	409	12	Linear motor
Ace Pillar	8374 TT	286	4	Servo motor, servo controller
Dexterous hand				
Hengli Hydraulic	601100 CH	21,308	162	Linear actuator, ball screw, planetary roller screw, dexterous hand actuator
Moon's Electric	603728 CH	3,284	75	Dexterous hand, brushless DC motor, coreless motor
ZhaoWei	003021 CH	3,053	74	Dexterous hand, micro-drive system
Nanshan Fashion	300918 CH	803	18	Tendon
Kanglongda	603665 CH	532	14	Tendon
Linkerbot	NA	NA	NA	Dexterous hand
Reducer				
Leaderdrive	688017 CH	9,918	525	Harmonic reducer
Kedali	002850 CH	8,226	167	Harmonic reducer
Shuanghuan	002472 CH	4,926	177	Planetary reducer, harmonic reducer
Sling	301550 CH	4,345	134	Harmonic reducer, bearing
ZD Leader	002896 CH	2,418	128	Planetary reducer, harmonic reducer, robot actuator
Mirle Automation	2464 TT	1,258	60	Harmonic reducer
Apex Dynamics	4583 TT	1,242	4	Planetary reducer
FORE	301368 CH	778	21	Planetary reducer, harmonic reducer
Hota Industrial	1536 TT	442	4	Planetary reducer
Bearing				
Zhejiang XCC Group	603667 CH	3,215	282	Bearing, bearing ring, rolling element, planetary roller screw components
Zhejiang Changsheng Bearing	300718 CH	3,040	92	Bearing, ball screw
Ball screw/planetary roller screw				
Hengli Hydraulic	601100 CH	21,308	162	Linear actuator, ball screw, planetary roller screw, dexterous hand actuator
Hiwin	2049 TT	4,032	62	Ball screw, harmonic reducer
Zhejiang Rongtai	603119 CH	3,957	173	Planetary roller screw
Zhenyu Technology	300953 CH	3,815	174	Planetary roller screw, motor core, robot actuator structural parts
Beite Technology	603009 CH	2,259	68	Planetary roller screw
Shuanglin	300100 CH	2,006	53	Ball screws
Qinchuan Machine Tool	000837 CH	1,650	43	Reducer/ball screw grinding machine
Best Precision	300580 CH	1,635	49	Planetary roller screw
TBI Motion	4540 TT	208	12	Ball screw
Vision system				
Orbbec	688322 CH	6,999	228	3D vision, Time-of-flight (ToF) camera, LiDAR
OFILM	002456 CH	3,762	141	Optical machine modules
Hesai	HSAL US	3,033	38	LiDAR
RoboSense	2498 HK	1,386	22	3D vision, LiDAR
Aisa Optical	3019 TT	1,193	30	Lens, camera module

Exhibit 14: Greater China humanoid robot supply chain companies

Greater China humanoid robot component manufacturers play a pivotal role

Company	Ticker	Market cap (\$mn)	6-month ADTV (\$mn)	Major product
Solomon Technology	2359 TT	746	18	3D vision
Quanta Storage	6188 TT	619	5	3D vision, collaborative robot
Altek	3059 TT	385	8	3D vision, vision AI chip
Sensor				
XDLK	688582 CH	2,503	57	IMU sensor
Keli Sensing Tech	603662 CH	2,239	76	Torque sensor, 6-axis force sensor
Hanwei Electronics	300007 CH	1,705	88	Temperature sensor, pressure sensor, inertial measurement unit (IMU)
Shenzhen Ampron	301413 CH	1,322	66	Torque sensor, 6-axis force sensor
PaXini	NA	NA	NA	Tactile sensor, torque sensor, dexterous hand, wheeled robot, dataset
AI Chip, AI Computing				
TSMC	2330 TT	1,923,564	2,928	Semiconductor manufacturing
Rockchip	603893 CH	13,381	370	Processor chips
Horizon Robotics	9660 HK	10,307	127	Processor chips
SenseTime	20 HK	7,694	118	AI algorithm and solutions
Cloudwalk	688327 CH	1,685	61	AI algorithm application, human-machine collaborative operating system
Deep Glint	688207 CH	752	36	AI algorithm and solutions
Servo Drive				
Fortior	688279 CH/1304 HK	2,637	56	Servo drive controller chip
Googoltech	301510 CH	1,603	52	Servo drives
INVT	002334 CH	829	45	Servo drives
Battery				
CATL	3750 HK	273,220	308	Battery module
EVE Energy	300014 CH	18,054	644	Battery module
Azure	002245 CH	4,490	287	Battery module
Heat Management System				
Sanhua	002050 CH/2050 HK	23,565	56	Rotary actuator, linear actuator, heat management
Yinlun	002126 CH	5,235	180	Heat management products
Manufacturing Services/Structural products				
Lens Technology	300433 CH/6613 HK	26,333	57	Manufacturing services, 3C components
Lingyi iTech	002600 CH	15,905	397	Manufacturing services
Everwin	300115 CH	5,686	246	Structural products, 3C components
Joyson	699 HK	4,663	6	Head module
Minth	425 HK	4,210	25	Face mask
Ningbo Huaxiang	002048 CH	2,346	80	Manufacturing services, PEEK material
Ningbo PIA Automation	688306 CH	1,671	19	Manufacturing services

Source: BofA Global Research, Bloomberg

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