China Robot Sector

APAC Focus: Humanoids on the horizon, but AI-enabled traditional robotics to advance first

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A year after our Q-Series flagged humanoid robots' shift from proof of concept to early commercialisation, demand has exceeded our expectations, albeit with a different mix: research, entertainment and data collection have outperformed, while industrial deployment has lagged. We raise our 2026-30 global demand forecast by over 70% a year on faster adoption in preparatory and simple-use-case applications, but still see no humanoid "EV moment" before 2030E. Meanwhile, AI is unlocking an opportunity in traditional robotics. We still prefer upstream components (serving different types of robot OEMs) – particularly sensors, reducers and roller screws – with OPT, Kedali and Hengli Hydraulic as our respective top picks in China. We have Neutral ratings on OEMs Unitree and Estun, and Sell-rated on Leader Drive, as its valuation seems to be running ahead of fundamentals.

AI expands the robotics opportunity beyond humanoids

We believe AI is becoming a demand creator across robotics by making traditional robots smarter and easier to deploy, while advancing the industry toward generalisation for humanoids. We forecast China demand CAGRs for quadruped/collaborative/service/mobile/industrial robots of 60%/25%/20%/15%/10% over 2025-30, with AI contributing 3-35ppt a year across the segments. Of these, quadrupeds should see the largest AI-driven uplift in unit demand, while industrial robots should capture the largest increase in market value. Meanwhile, humanoid demand is exceeding our expectations in research, data collection and other lower-barrier applications, although we still do not expect the sector's "EV moment" to occur before 2030.

How to position for the acceleration of embodied AI robotics?

We see the clearest three- to five-year beneficiaries as broadly applicable component suppliers with higher entry barriers serving leading robot OEMs and delivering higher margins. We initiate forecasts for the robotics component TAM and we favour sensors, reducers and roller screws, which account for 14%/20%/4% of our estimated Rmb125bn market in 2030, respectively, based on market size and technical barriers. Their non-robotics businesses also warrant consideration. It is too early to identify long-term OEM beneficiaries, given the integrated capabilities required across hardware, software, R&D, and applications. Over the next 12 months, investors should focus on advances in robots' "brain" capabilities and evidence of genuine commercial orders.

Figure 1: Key robotics names in our investment thesis

Company Name	Ticker	Category	Rating	Market Cap	PT (LCY)		Share Price	P/S (x)		PE (x)		Humanoid exposure	Traditional robotics* exposure	Non-robotics business outlook
				(US$ bn)	Old	New	(LCY)	2026E	2027E	2026E	2027E	(% of '26E revenue)	(% of '26E revenue)	
Unitree	688836.SS	OEM	Neutral (CBE)	29.9	608.0	608.0	494.85	73.0x	43.3x	331x	225x	55%	45%	n.a.
Estun Automation-A	002747.SZ	OEM	Neutral	4.1	22.4	22.4	29.78	4.9x	4.3x	103x	97x	<5%	>90%	Stable
Inovance	300124.SZ	OEM/component	Buy	21.4	86.0	86.0	52.84	2.7x	2.3x	25x	20x	<1%	3%	Stable
OPT	688686.SS	sensor	Buy	2.6	176.0	176.0	140.70	10.8x	8.2x	68x	46x	<1%	<5%	Robust
Hengli Hydraulic	601100.SS	screw	Buy	18.7	128.0	128.0	93.48	9.3x	7.8x	36x	28x	<5%	0%	Robust
Leader Drive	688017.SS	reducer	Sell	7.9	52.9	216.0	288.88	59.7x	39.0x	318x	217x	37%	38%	Stable
Kedali	002850.SZ	reducer	Buy	7.5	268.0	268.0	175.20	2.4x	1.8x	20x	14x	<5%	0%	Robust
Shuanghuan	002472.SZ	reducer	Buy	4.8	50.0	50.0	37.90	3.2x	2.5x	23x	19x	<5%	7-8%	Stable
Sanhua-A	002050.SZ	actuator	Buy	21.7	58.0	58.0	36.18	4.2x	3.6x	33x	28x	<5%	0%	Stable

*Traditional robotics include quadruped, collaborative, service, mobile and industrial robots.

Source: Reuters, UBS-S estimates. Note: data as of 21 September 2026.

This report has been prepared by UBS Securities Asia Limited. **ANALYST CERTIFICATION AND REQUIRED DISCLOSURES, INCLUDING INFORMATION ON THE QUANTITATIVE RESEARCH REVIEW PUBLISHED BY UBS, BEGIN ON PAGE 27.**

UBS Research THESIS MAP	MOST FAVORED	LEAST FAVORED
	Kedali, Hengli Hydraulic, OPT	Leader Drive

PIVOTAL QUESTIONS

Q: Will we see AI accelerate robot adoption over the next few years?

Yes. We believe AI will accelerate the adoption of established robot categories by improving flexibility and ease of deployment. For humanoid robots, differentiation will likely shift from mobility to task generalisation, although constraints in AI models, data and reliability mean broad commercialisation remains some way off, in our view. We raise our 2026-30 global humanoid robot demand by over 70% a year to reflect faster commercial sector adoption, mainly from "preparing for the future" demand and simple use cases. We now estimate global humanoid demand and China's traditional robot demand market to grow at CAGRs of 76% and 10-60% , respectively, over 2026-30.

Q: How to position for the acceleration of embodied AI robotics?

We see clearer three- to five-year beneficiaries among general key component suppliers as well as suppliers to leading OEMs with higher margin profiles, both benefiting from accelerating embodied AI adoption. For OEMs, we think it is still too early to identify long-term beneficiaries, as success is likely to hinge on all-round capabilities across hardware, software, R&D, channels and use cases.

UBSVIEW

We raise our 2026-30 global humanoid robot demand forecast by more than 70% per year on faster adoption in preparatory and simple-use-case applications, but still see no humanoid "EV moment" before 2030E. Meanwhile, AI is unlocking an opportunity in traditional robotics. We still prefer upstream components (serving different types of robot OEMs) – particularly sensors, reducers and roller screws – with OPT, Kedali and Hengli Hydraulic as our respective top picks in China. For OEMs, we have Neutral ratings on Estun and Unitree.

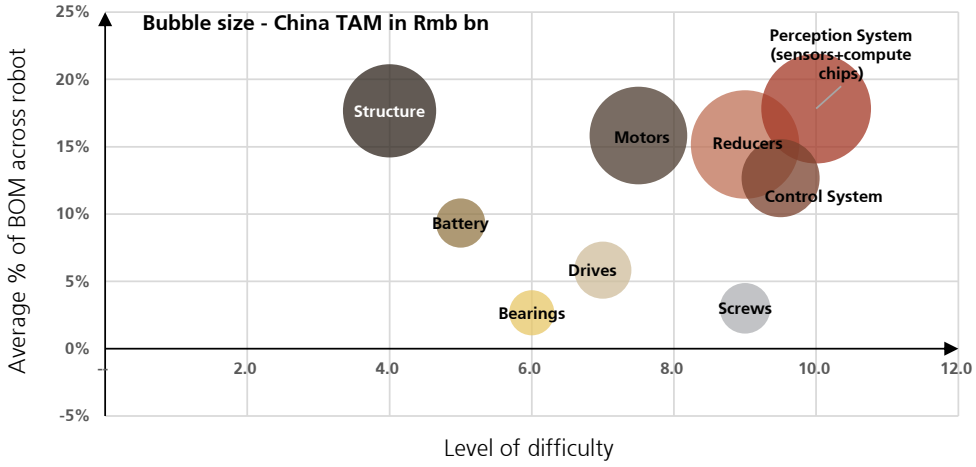
EVIDENCE

1) Global humanoid robot sales reached 18,315 units in 2025, sharply up from 2,200 units in 2024. 2) According to Interact Analysis, there are 64 data collection centres in use and 26 under construction across 23 provinces in China.

WHAT'S PRICED IN?

Both the robotics and humanoid robotics indices have underperformed the broader machinery sector YTD, reflecting industrial commercialisation that has fallen short of market expectations, in our view. Tesla's Optimus production timeline may slip to late 2026, with further delays remaining a possibility, while we think investors continue to prefer earnings visibility over thematic exposure. Further potential upside for the robotics sector is likely contingent on clearer milestones in Optimus's mass production and AI model generalisation, while companies with resilient core businesses and established customer relationships look relatively better positioned, in our view.

Figure 2: Key robotics component TAM in China could reach Rmb125bn in 2030E



Source: Dobot, Haikang Robot, OFweek, UBS-S estimates. Note: A higher score indicates a higher level of difficulty; Perception System includes Sensors and Compute Chips (we estimate sensors account for approximately two-thirds of the value), Control System includes Controllers and Control chips.

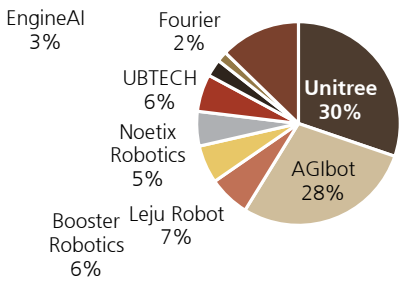
Will we see AI accelerate robot adoption over the next few years?

Short term: Early-stage humanoid application exploration exceeds our expectations

Based on International Data Corporation (IDC), Omdia and company data, we estimate global humanoid robot shipments at 18,315 units in 2025, up sharply from around 2,200 units in 2024. This marks a milestone in humanoid mass production, especially for leading companies such as Unitree and AGIbot, which accounted for approximately 30%/28% of global shipments in 2025. Meanwhile, we estimate that 52% of sales were for commercial applications, which typically have low requirements for robotic generalisation, and 27%/18% were for research institutes and data collection centres, which aim to accumulate training data and advance the realisation of humanoid generalisation. We believe research institute demand for humanoid robots signals accelerating development in academia, and such demand will likely grow as humanoid R&D penetrates more regions and universities. That said, data collection centres for humanoids are now concentrated in China and are supported by government policies. According to Interact Analysis, there are 64 data collection centres in use and 26 under construction across 23 provinces in China. These data collection centres implement humanoid robots in pre-set application scenarios and collect task fulfilment data to improve humanoid AI models.

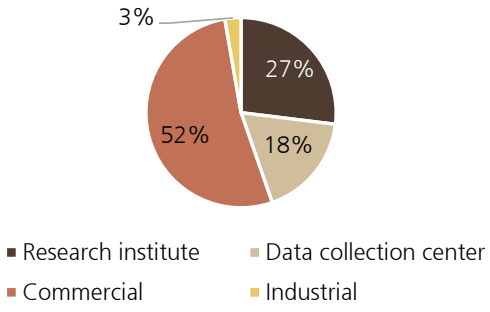
We think this shows that humanoid robot applications are still at an early stage of development. Industrial applications (about 3% of total applications in 2025) have progressed slowly for two reasons: 1) generalisation – robotic AI capabilities are not yet mature enough for unstructured tasks; and 2) humanoids simultaneously require coordinated locomotion and manipulation control, implying complexity far exceeding traditional robots. However, what is worth noting is that even at this early stage of development, humanoid robot demand is already meaningfully more diverse than the early stages of prior robotics categories. Humanoid robots already have early buyers spanning distinct segments, covering business, governmental and consumer spaces. This diverse demand is an early indication of future demand, in our view.

Figure 3: Global humanoid robot sales volume market share (2025)



Source: Company data, Omdia, IDC, UBS-S estimates

Figure 4: Global humanoid robot sales by downstream applications (2025)



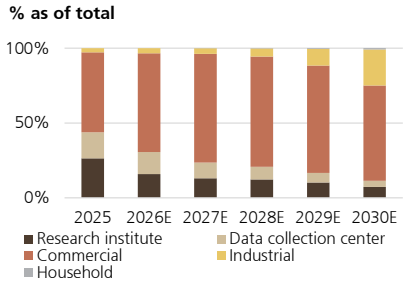
Source: IDC, UBS-S

Doubling short-term humanoid demand forecasts

We raise our global humanoid robot demand forecasts by 73-123% in 2026-30. This is based on better-than-expected early-stage humanoid applications, including: 1) research institutes and data collection centres supporting humanoid development; 2) commercial applications, where diverse use cases and demand volumes have exceeded our expectations. We lower our expectation for industrial and household applications in the short term, due to longer testing periods and insufficient generalisation capabilities, but these are fully offset by other downstream segments. While maintaining our forecast for humanoid robot ASPs to decline at a 10% CAGR over 2025-30, we expect faster volume growth and forecast the global humanoid robot TAM to reach Rmb90bn in 2030.

Figure 5: Global humanoid robot demand forecasts (unit, 2026-30E)

By downstream	2024	2025	2026E	2027E	2028E	2029E	2030E
Research institute		4,836	8,220	12,331	16,030	19,236	22,121
Data collection center		3,181	7,635	9,926	10,918	12,010	12,610
Commercial		9,798	34,294	68,588	96,023	134,432	194,926
Industrial		500	1,750	3,500	7,000	21,000	73,500
Household		--	--	100	300	900	2,700
Global humanoid robot demand	**2,200**	**18,315**	**51,899**	**94,444**	**130,271**	**187,577**	**305,858**
change from previous			*+73%*	*+123%*	*+108%*	*+98%*	*+96%*
YoY							
Research institute			*70%*	*50%*	*30%*	*20%*	*15%*
Data collection center			*140%*	*30%*	*10%*	*10%*	*5%*
Commercial			*250%*	*100%*	*40%*	*40%*	*45%*
Industrial			*250%*	*100%*	*100%*	*200%*	*250%*
Household					*200%*	*200%*	*200%*
Total			***183%***	***82%***	***38%***	***44%***	***63%***



Source: IDC, UBS-S estimates

Long term: AI is the key to unlock mass deployment of humanoids

In our Q-Series published in June 2025, we highlighted technology (software – robot brain and motion control for the cerebrum; hardware – dexterous hands and batteries), costs, ethics and implementation are key hurdles to humanoid robots' development. Among these factors, we identified humanoid robot brain technology (mainly AI model and dataset collection) as the key bottleneck for humanoid commercialisation. However, in the past year, we have observed that humanoid AI technology has been advancing rapidly, with iterations of humanoid AI models and accelerating data collection.

Humanoid AI model development accelerated

Model evolution in humanoid robot AI has progressed from early task-specific robot transformers such as RT-1, to VLA models such as RT-2, which incorporate web-scale semantic knowledge into robot control. Future development directions include: 1) cross-embodiment: Open X-Embodiment has improved generalisation across robot forms; and 2) generalisation: world models represent a potential direction for supporting long-horizon tasks and understanding of real-world physics. During the Galaxea World Developer Conference (WDC) 2026, several experts mentioned that the combination of VLA and world models for humanoid robots is an emerging robotics AI model structure in China this year (versus purely VLA last year). This is viewed as a core pathway towards general-purpose humanoid robots, bridging the gap between LLM-style intelligence and embodied physical action. We believe these models may continue to evolve and that the constant evolution of humanoid AI models could accelerate application exploration. Meanwhile, it will likely still take time for the industry to reach a consensus on the ultimate AI model structure and data mix for model training.

Figure 6: Humanoid AI model advancement

Year	Model	Core Breakthrough
2022	**RT-1** Google DeepMind	· One of the earliest large-scale robot foundation model. · Transformer maps vision + language instructions to actions. · Trained on 130K trajectories
2023	**RT-2** Google DeepMind	· A landmark VLA model · Fine-tuned 55B-parameter VLM to output robot actions; jointly trained on web image-text data and robot trajectories. · Zero-shot novel object success 62% (vs. RT-1's 32%)
2023	**Open X Embodiment** Google and 22 institutions	· Large cross-embodiment dataset spanning 22 robot types · Cross-embodiment joint training significantly improves generalization.
2024	**π0** Physical Intelligence	· Diffusion policy integrated into a VLA-style model for smoother, continuous action sequences. · Multi-task training across folding clothes, assembling boxes, and other manipulation tasks. · Demonstrated that a single model can span diverse manipulation tasks
2025 Q1	**GR00T N1** NVIDIA	· Open-source humanoid foundation model purpose-built for humanoid robots. · Dual-system architecture: VLM module (System 2) handles vision + language reasoning; a policy model (System 1) generates motor actions. · Trained on real trajectories + human video + synthetic data
2025 Q4	**DreamGen** NVIDIA	· Requires only single-task teleoperation data; generates "neural trajectories" via video world model for synthetic policy training. · Zero-shot transfer to 22 new behaviors and unseen environments.
2026 Q1	**DreamDojo** NVIDIA	· Open-source robot world model pretrained on 44,711 hours of egocentric human video. · Uses latent actions instead of ground-truth labels, reducing annotation burden.
2026 Q2	**π0.7** Physical Intelligence	· Steerable VLA: prompts carry strategy metadata and generated subgoal images · Recombines learned skills for untrained tasks; zero-shot success 60%-80% vs >90% in-distribution
2026 Q2	**GRT00T N1.7** NVIDIA	· Open VLA on a Cosmos Reason 2 backbone; Apache 2.0 commercial license. · Adds 20,000 hours of EgoScale human video to pretraining, improving generaliztion.

Source: Google, Physical Intelligence, Nvidia

Key bottlenecks remain to be resolved

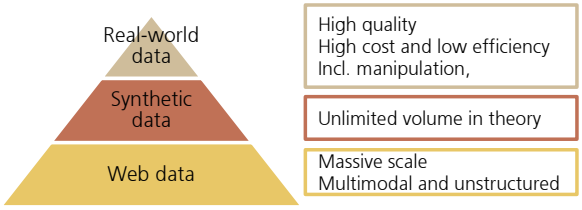
The generalisation constraints facing robotics involve two distinct aspects: AI models and data collection. These are prerequisites for humanoid intelligence and generalisation, and therefore for unlocking mass adoption, in our view. **On the data side**, the world's largest robotics datasets reach only the million-trajectory scale, far below the trillion-text token scale available to LLMs. Humanoid companies are accelerating data collection, including simulation, egocentric and manipulation data, while there is still no clear standard for data mix, volume and quality measurement. In addition, real-world robotic manipulation data comes with high collection costs and sim-to-real gap with simulation data remains material. **Algorithm-wise,** robotics require an understanding of the physical world and real-time alignment across vision, language, force and perception, making robotics significantly more complex than LLMs and structured autonomous driving scenarios. **On the task side**, robots face stricter requirements for real-time responses and execution accuracy; improved generalisation may introduce latency, while physical errors are often irreversible and can accumulate across sequential industrial workflows, becoming a key constraint on scaled deployment.

Figure 7: Limited humanoid data scale

Modality	Largest dataset size
Text	36 trillion
Image	6 billion image-text pairs
Video	2.6 billion audio/visual features
Robot	1 million trajectory

Source: Company data, Gao Gong Industry Institute (GGII)

Figure 8: Humanoid data pyramid



Source: Nvidia, UBS-S

Figure 9: Current humanoid AI bottlenecks

Item	Constraint	Robotics Difficulty Level	vs. LLMs	vs. Autonomous Driving
Data	Training data scarcity	Manipulation data is still largely collected through human teleoperation, which is a time-consuming process	Not a bottleneck	Large vehicle fleet generate data continuously, creating a well-established data flywheel
	Sim-to-real gap	The sim-to-real gap remains material, and models trained solely in simulation may face challenges when adapting to real environments	NA	Vehicle dynamics simulation is mature; Waymo has run large-scale simulation; sim-to-real gap has narrowed substantially
Algorithum	Physical world interaction	The requirement to understand physical laws and achieve generalisation is fundamentally more challenging than in purely digital environments	NA (token-pattern learning is largely sufficient for generalisation)	Road environments are relatively structured, making perception and decision-making tasks more predictable
	Multi-modal alignment	Vision, language, force and perception need to be synchronised	Vision-language alignment is more technically mature	Vision, LiDAR and GPS synchronisation is highly standardised
Task complication	Real-time response	Improved generalisation may come at the cost of higher latency, potentially compromising the real-time responsiveness required for complex tasks	Latency is primarily a user-experience issue rather than a capability constraint, as users can generally tolerate response delays	Perception-planning boundaries are clear; dedicated chips (NVIDIA Orin) already support real-time inference
	Error accumulation	Physical errors are often irreversible and can accumulated across sequential tasks, potentially becoming a critical constraint in industrial workflows	Language errors are often correctable downstream, with no physical consequences or irreversibility.	Driving relies on continuous per-frame correction rather than strict sequencing; a single error can disrupt downstream operations

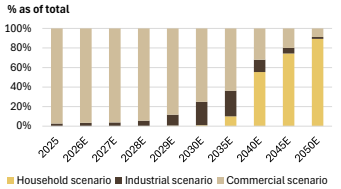
Source: UBS-S

Long-term humanoid demand forecasts

For long-term global humanoid robot demand, we **raise our 2050 forecast by 5% to 90m** units, mainly due to higher penetration in commercial scenarios. **Our forecasts for 2035-45 are 22-35% higher than our previous estimates**, based on: 1) commercial humanoid robots driving a higher base in 2030E and faster ramp-up in 2035-45E; and 2) industrial and household applications catching up as humanoid generalisation improves. We now estimate the **global humanoid market size to reach US$1,765bn in 2050 (versus our previous forecast of US$1,668bn, including rental and after sales services).**

Figure 10: Global humanoid robot demand and market size forecasts (unit, 2025-50E)

Global humanoid robot demand										
('000 units)	2025	2026E	2027E	2028E	2029E	2030E	2035E	2040E	2045E	2050E
Household scenario	-		0	0	1	3	138	3,469	16,664	80,534
Industrial scenario	0.5	2	4	7	21	74	355	793	1,277	1,818
Commercial scenario	17.8	50	91	123	166	230	868	2,005	4,465	7,823
Global humanoid robot demand	**18.3**	**52**	**94**	**130**	**188**	**306**	**1,361**	**6,267**	**22,406**	**90,175**
Revisions		73%	123%	107%	95%	96%	35%	22%	23%	5%
5-year CAGR										
Household scenario							*120%*	*91%*	*37%*	*37%*
Industrial scenario						*171%*	*37%*	*17%*	*10%*	*7%*
Commercial scenario						*67%*	*30%*	*18%*	*17%*	*12%*
Total						***76%***	***35%***	***36%***	***29%***	***32%***



Source: IDC, UBS-S, UBS-S estimates

Figure 11: Our updated forecasts by downstream segment

Updated forecasts	Short term 2026-2030E	Long term 2031-2050E
Household scenario	↓ Humanoid generalization capability still needs time	→
Industrial scenario	↓ Longer testing period before mass adoption	↑ More diversified applications in the long run
Commercial scenario	↑↑ Broad use case and early stage demand, esp. for simple robotic tasks	↑↑ Faster demand ramp up and higher penetration potential
Global humanoid robot demand	↑↑ Raise forecast by 73-123%	↑ Slightly raise 2050E forecast by 5%

Source: UBS-S estimates

AI-driven advancements across robotics categories

As humanoids move to generalisation, we note broader AI-driven improvements across diverse robotics categories.

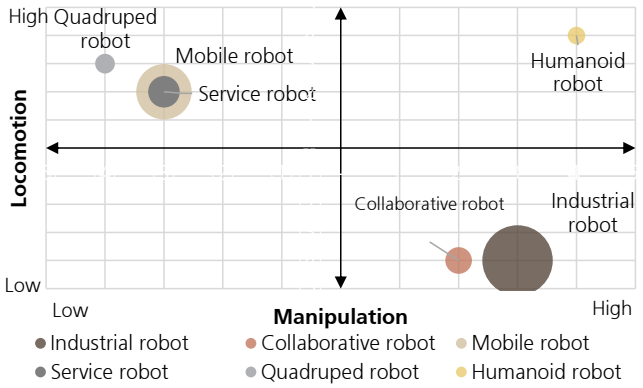
Mapping robotics types

Artificial intelligence technology is enabling robotics development beyond manipulation and locomotion to generalisation. We find that existing robotics categories excel along one of two axes: locomotion or manipulation, but rarely both. This is the structural reason the humanoid robot commands outsized attention from capital and industry today, and it is the foundation of our long-term investment thesis.



- **Industrial robots and collaborative robots (cobots)** are highly capable in manipulation but are typically fixed in place, with limited locomotion requirements.
- **Mobile robots (AGVs and AMRs)** are the opposite. They are designed for locomotion and trajectory planning, but their manipulation capabilities are generally limited to simple material movement.
- **Service robots** are similar to mobile robots in that they focus more on locomotion than manipulation. However, they are specialised for commercial scenarios such as hotels and restaurants and typically incorporate more interactive functions.
- **Quadruped robots** show stronger locomotion adaptability, enabling autonomous movement across complex surfaces such as factory floors, mining sites and high-risk areas; yet their manipulation capability remains low.
- **Humanoid robots** are the first category to: 1) embed generalisation ability as a core objective; 2) combine high requirements for manipulation and locomotion; and 3) adopt a body form natively suited to human-built environments, implying a higher ceiling for generalisation. Here, we discuss humanoid robot industry data on a global basis due to data availability. However, this still shows a smaller scale than other robot sales in China due to the humanoid industry's early-stage development.

Figure 12: Humanoid robots target both locomotion and manipulation capabilities



Source: UBS-S, GGII, MIR, Omdia, IDC. Note: Bubble size refers to 2025 shipment volumes in China, except for humanoid robots, where global shipment data are used due to data availability.

Figure 13: Humanoid robot design supports generalisation potential

Type	Locomotion	Manipulation	Generalization	Core functions	Downstream exposure
Industrial Robot	Low	High	Limited	High-efficiency execution of high-volume fixed tasks	Industrial
Collaborative Robot (Cobot)	Low	Medium	Limited	Lower deployment threshold; reach scenes industrial robots cannot access	Expanding from industrial to commercial
Mobile robot (AGV / AMR)	Medium	Low	Limited	Object spatial displacement; replace manual handling	Industrial
Service robot	Medium	Low	Limited	Object carrying, commercial cleaning in hotels, restaurants, etc.	Commercial
Quadruped robot	High	Low	Limited	Combination of mobility and sensing, for inspection, object handling, etc.	Industrial and commercial; potential in households
Humanoid Robot	High	High	High (target)	A robot type developed with generalization and autonomy as the core objectives	Industrial and commercial; potential in households

Source: UBS-S

AI as a demand accelerator across robotics end markets

We believe AI advances the technological development of humanoid robots while also driving further advances in other robotic technologies to unlock higher demand potential and increase penetration. The essence of this evolution is a shift from "rule-based automation" to "intelligent systems that can see, hear and make autonomous decisions". AI is driving three major breakthroughs, in our view. **Perception evolution**: from "triggering switches by touch" to "understanding the world visually" (computer vision and speech recognition). **Decision-making evolution**: from "fixed programs" to "real-time autonomous planning" (dynamic obstacle avoidance and path optimisation). **Interaction evolution**: from "button-based operation" to "natural language commands" (you say it, it does it).

- **For industrial robots,** AI functions improve efficiency through easier programming, vision-guided adaptive grasping and predictive maintenance.
- **For cobots,** AI may allow natural-language task instruction and cross-scene transfer, increasing flexibility in both deployment and capability.
- **For mobile robots,** AI's value lies in higher scheduling density and adaptation to dynamic environments.
- **For service robots**, AI enables them to perceive their environment, make

autonomous real-time decisions and interact naturally with humans, transforming them from rule-based machines into intelligent, socially aware service agents.

- **For quadruped robots,** AI enablement at the perception and decision layers is already meaningful, and multimodal sensing could improve inspection precision and anomaly recognition.

Figure 14: AI empowerment across robotics types

Type	Current Problems	AI Empowerment	Impact
Industrial Robot	High programming cost; limited flexibility to handle non-standard parts	Vision-guided adaptive grasping; easier programming; AI inspection; predictive maintenance	Higher deployment efficiency, higher cross-scene flexibility
Collaborative Robot (Cobot)	Post-deployment task is fixed; poor cross-task transfer;	Natural language task instruction; cross-scene transfer;	Higher cross-scene flexibility
Mobile robot (AGV / AMR)	Poor dynamic environment adaptation; multi-robot scheduling bottleneck; anomaly requires human intervention	Dynamic obstacle avoidance; large-scale multi-robot coordination; autonomous anomaly handling	Continuous improvement in scheduling density and scene coverage
Service robot	Limited interaction; weak task transfer; high maintenance cost	LLM-based HMI; better navigation; adaptive task planning	Improved user experience and broader commercial deployment

Source: UBS-S estimates

Demand forecast across robot types

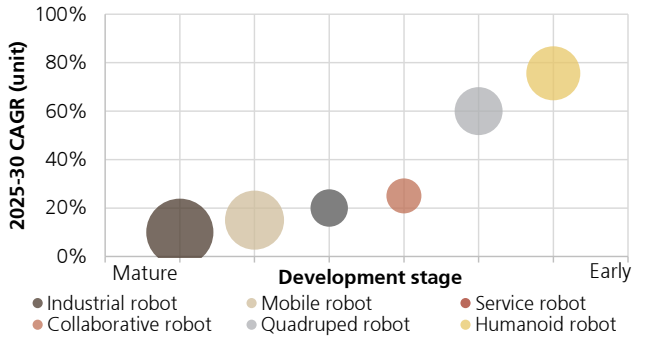
Within the embodied AI market, we believe humanoid robot technology remains immature and is still at an early stage, offering the greatest potential for market growth. We expect the **global market size to increase from Rmb9.2bn in 2025 to Rmb90bn in 2030**, with China accounting for two-thirds of the total market. Over the next three to five years, we expect China to become the world's largest producer and consumer of humanoid robots. Accordingly, by 2030, China's humanoid robot market should be close to the size of its traditional industrial robot market (Rmb69bn), in our view.

Beyond humanoid robots, we believe AI will increasingly drive demand growth across other robotics segments by enhancing autonomy, perception and ease of deployment. We forecast **2025-30 demand CAGRs of 10%, 25%, 15%, 20% and 60% for industrial robots, collaborative robots, mobile robots, service robots and quadruped robots,** respectively.

We also quantify AI-driven demand uplift across robot categories (see figure 19). Among these segments, we believe **quadruped robots are the largest beneficiaries, with AI contributing about 35ppt of incremental demand CAGR** by enabling broader adoption in inspection, security and other unstructured environments. We think **collaborative and service robots should see a roughly 10ppt CAGR AI uplift**, driven by lower deployment barriers, improved human-machine interaction and enhanced autonomy, **while the impact on industrial and mobile robots is more modest at about 3ppt**, as demand remains largely tied to automation upgrades, labour substitution and logistics efficiency, with AI serving primarily as a productivity enhancer rather than a demand creator.

We also introduce our estimates for China's TAM for non-humanoid robots and expect **industrial robots (Rmb69bn)** to remain the largest segment by 2030E, followed by **mobile robots (Rmb35bn)**, **collaborative robots (Rmb7bn)**, **quadruped robots (Rmb5.3bn)** and **service robots (Rmb3.7bn)**. Despite the long-term horizon for humanoids, we believe near- to medium-term robotics revenue will continue to be dominated by traditional robots.

Figure 15: Demand forecast across robotics types (unit)



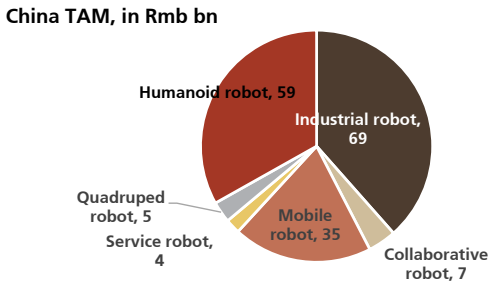
Source: UBS-S estimates. Note: Bubble size represents market size in units in 2030E.

Figure 16: Demand forecast across robotics types (unit)

	Industrial robot China	Collaborative robot China	Mobile robot China	Service robot China	Quadruped robot China	Humanoid robot Global
Market size (unit)						
2025	293,942	42,120	182,000	59,000	23,000	18,315
2030	473,397	128,540	366,067	146,811	241,172	305,858
2025-30 CAGR (unit)	*10%*	*25%*	*15%*	*20%*	*60%*	*76%*
ASP (Rmb '000)						
2025	187	83	143	42	37	500
2030	145	55	95	25	22	295
2025-30 CAGR	*-5%*	*-8%*	*-8%*	*-10%*	*-10%*	*-10%*
Market size (Rmb bn)						
2025	55	3.5	26	2.5	0.9	9.2
2030E	69	7.0	35	3.7	5.3	90
2025-30 CAGR	*5%*	*15%*	*6%*	*8%*	*44%*	*58%*

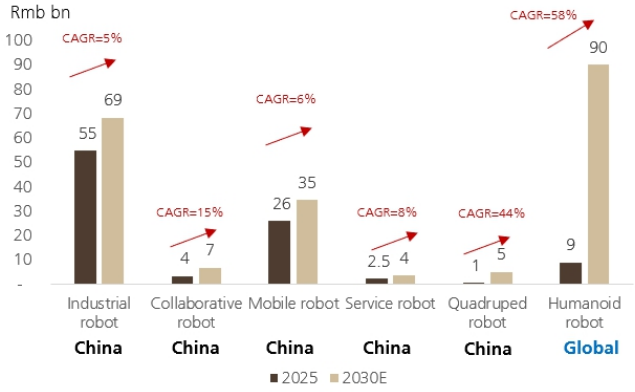
Source: Omdia, IDC, MIR, China Mobile Robot Industry Association, SAG, UBS-S estimates

Figure 17: China's TAM by robot type in 2030E (in Rmb bn)



Source: UBS-S estimates

Figure 18: Robot TAM by type, 2025 versus 2030E



Source: Omdia, IDC, MIR, China Mobile Robot Industry Association, SAG, UBS-S estimates

Figure 19: Quantifying AI enhancement across different robot types

		Humanoid robot	Quadruped robot	Collaborative robot	Service robot	Industrial robot	Mobile robot
Degree of AI Enhancement		★★★★★	★★★★☆	★★★☆☆	★★★☆☆	★★☆☆☆	★☆☆☆☆
2022-25 CAGR (market size in units)		>600%	32%	30%	n.a.	4%	25%
2025-30E CAGR (market size in units)	Without AI progress	10%	25%	15%	10%	6%	12%
	AI incremental upift	*66%*	*35%*	*10%*	*10%*	*4%*	*3%*
	With AI progress	76%	60%	25%	20%	10%	15%
Development stage		early stage	high growth	stable	stable	mature	mature

Source: Omdia, IDC, MIR, China Mobile Robot Industry Association, SAG, UBS-S estimates

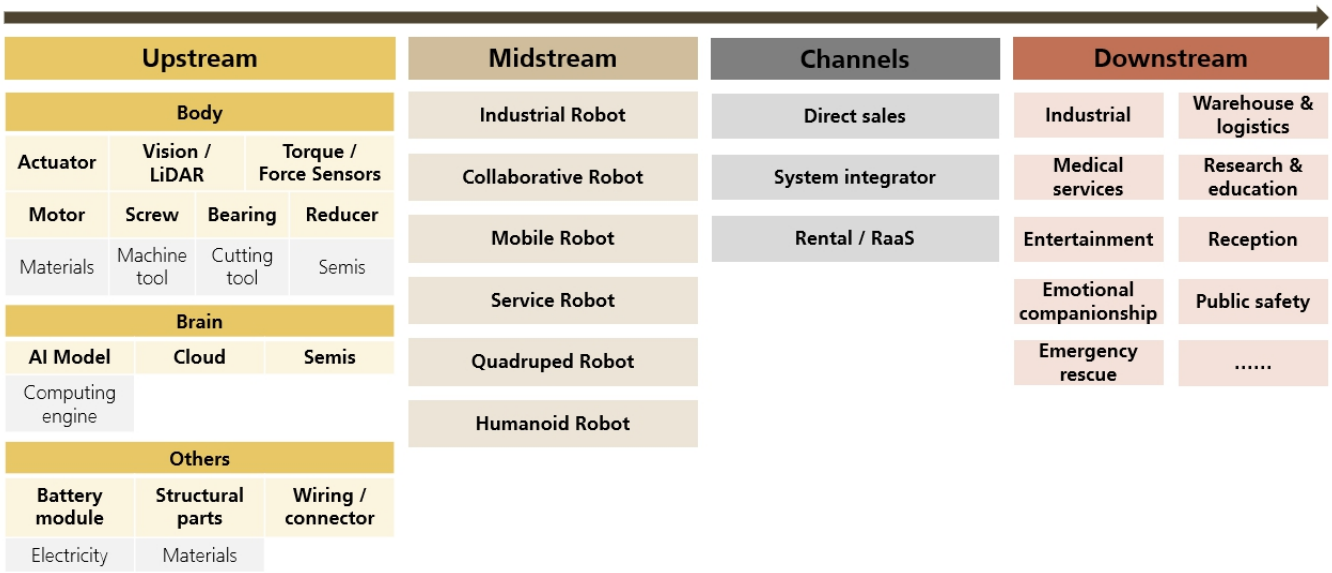
How to position for the acceleration of embodied AI robots?

Upstream components

We favour components over midstream OEMs

In the short to medium term, we favour upstream components over OEMs. At this initial stage of mass production, we believe these subsectors will be the first to benefit and generate revenue. As component companies serve different OEMs, we believe they may scale up and reach breakeven at a faster pace.

Figure 20: Robot ecosystem



Source: UBS-S

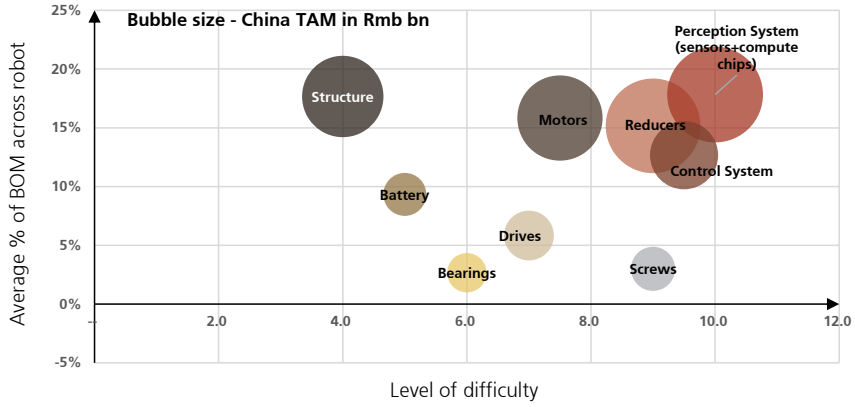
Figure 21: Some robot types share similar component supply chains

Robot Type	Function focus	Motor System		Transmission System			Perception System/Sensors				Structure	Power System	Control System		Notes
		Motors	Drives	Reducers	Bearings	Screws	Vision / LiDAR	Torque / Force Sensors	Encoders	Compute Chips	Structure	Battery	Control Chips	Controller	
Industrial Robot	Manipulation	✓	✓	✓	✓	Optional	Optional	Optional	✓	–	✓	–	✓	✓	Fixed multi-axis robotic arm; screws are optional for heavy-duty SCARA / Z-axis linear motion scenarios. Vision/force sensors depend on application.
Collaborative Robot	Manipulation	✓	✓	✓	✓	–	Optional	✓	✓	Optional	✓	Optional	✓	✓	Emphasizes human-robot collaboration safety; joint torque / six-axis force sensors are usually core components.
Mobile Robot	Perception	✓	✓	Optional	Optional	–	✓	Optional	✓	✓	✓	✓	✓	✓	Core systems are chassis, navigation perception, battery, and motion control; robotic arm / lifting modules depend on application.
Service Robot	Perception	✓	✓	Optional	Optional	–	✓	Optional	Optional	✓	✓	✓	✓	✓	More focused on interaction, communication, appearance, and application modules; arm/gripper depends on service scenario.
Quadruped Robot	Locomotion + perception	✓	✓	✓	✓	–	✓	✓	✓	✓	✓	✓	✓	✓	Core systems are leg joint actuators, posture/ground-contact sensing, and motion control; usually no hand module.
Humanoid Robot	Manipulation + locomotion + perception	✓	✓	✓	✓	Optional	✓	✓	✓	✓	✓	✓	✓	✓	Core configuration covers perception, control, power, end effectors, joints, transmission, motors, sensing, and structure; screws depend on joint design.
Difficulty of components		Medium-High	Medium	High	Medium	High	Medium-High	High	Medium-High	High	Low	Medium	Medium-High	High	

Source: UBS-S

We also initiate market size estimates across key robotics component categories. We expect **perception system (Rmb26bn)** and **reducers (Rmb25bn)** to represent the two largest component markets by 2030E, supported by their broad applicability across industrial, collaborative, mobile, service, quadruped and humanoid robots, as well as relatively high technical barriers. Within the Perception System, **we estimate that sensors account for approximately two-thirds of the perception system value (Rmb17bn, 14% of total BOM).** In contrast, while screws rank among the most technically demanding components, their adoption outside humanoid robots remains limited, with bill-of-materials (BOM) contributions typically below 5% across most non-humanoid robot categories. We estimate the **screw TAM at Rmb5bn in 2030,** with the majority of demand driven by humanoid robots. We view screws as one of the components most leveraged to increases in humanoid robot penetration, with sector growth likely to be disproportionately supported by the rapid expansion of the humanoid market. Chips (include compute chips and other chips) are also among the most technically demanding components. At present, however, the addressable chip market created by robotics remains relatively small and is likely to provide only limited earnings upside for incumbent chipmakers, in our view. That said, as overall robot costs decline and higher-tier processors are increasingly adopted, chip content is expected to account for a larger share of BOM, which we estimate could reach around 12% by 2030 (TAM: Rmb15bn in 2030E).

Figure 22: Key robotics component TAM could reach Rmb125bn in 2030E



Source: Dobot, Haikang Robot, OFweek, UBS-S estimates. Note: A higher score indicates a higher level of difficulty; Perception System includes Sensors and Compute Chips (we estimate sensors account for approximately two-thirds of the value), Control System includes Controllers and Control chips.

Figure 23: An overview of market participants in each sector

Brain						Others	
AI foundation Model		**Cloud**		**Semiconductor**		**Battery**	
Open AI	NA	Microsoft	MSFT.O	**SoC Processor**		Toyota	7203.T
Physical Intelligence	NA	Oracle	ORCL.N	NVIDIA	NVDA.O	BYD	002594.SZ
Google	GOOG.O	Google	GOOG.O	Huawei	NA	Eve energy	300014.SZ
Microsoft	MSFT.O	Amazon	AMZN.O	Horizon Robotics	9660.HK		
Meta	META.O	Alibaba	9988.HK	**Connectivity**		**Body structure**	
Baidu	9888.HK	Huawei	NA	Qualcomm	QCOM.O	Lingyi iTech	002600.SZ
Huawei	NA	Tencent	0700.HK	Mediatek	2454.TW	Xusheng	603305.SH
Alibaba	9988.HK	Baidu	9888.HK	Broadcom	AVGO.O	**Wiring/connector**	
Tencent	0700.HK			**Storage**		Amphenol	APH.N
				Samsung	005930.KS	TE Connectivity	TEL.N
				SK Hynix	000660.KS	Sinbon Electronics	3023.TW
				Micron	MU.O	Biz Link	3665.TW

Body									
Actuator		**Sensor**							
Sanhua	002050.SZ	**Encoder**		**Torque sensors**		**Camera**			
Tuopu	601689.SH	Tamagawa	NA	ATI	NA	Sony	SONY.N		
Inovance	300124.SZ	Heidenhain	NA	Honeywell	HON.O	Omnivision (Will Semi)	603501.SH		
Jiecang	603583.SH	Renishaw	RSW.L	Keli	603662.SH				
Hyundai Mobis	012330.KS	Inovance	300124.SZ	**Lidar**		Orbbec	688322.SH		
HL Mando	204320.KS			RoboSense	2498.HK	OPT	688686.SH		
				Hesai	HSAI.O				
Coreless motor		**Screw**		**Reducer**		**Bearing**			
Maxon	NA	Schaffler	SHA0.DE	Harmonic Drive	6324.T	Timken	TKR.N		
Moon's Electric	603728.SH	THK	6481.T	Nabtesco	6268.T	SKF	SKFb.ST		
Zhaowei	003021.SZ	Zhejiang Rongtai	603119.SH	Leader Drive	688017.SH	Schaffler	SHA0.DE		
Jiangsu Leli	300660.SZ	Hengli Hydraulic	601100.SH	Guomao	603915.SH	NSK	6471.T		
Frameless torque motor		Beite	603009.SH	Shuanghuan	002472.SZ	Changsheng	300718.SZ		
Kollmorgen	NA	Seenpin	NA	Zhejiang Sling	301550.SZ	Fujian Longxi	600592.SH		
Leadshine	002979.SZ	Zhenyu Technology	300953.SZ	Kedali	002850.SZ				
Veichi	688698.SH	Wuxi Best	300580.SZ						
Kinco	688160.SH								
Materials		**Machine tool**		**Semiconductor**					
CNRE	600111.SH	Tsugami China	1651.HK	**Analog/MCUs**		**Imaging**			
JI Mag	300748.SZ	Hiecise Precision	300809.SZ	Texas Instrument	TXN.O	Sony	SONY.N		
Zhongke Sanhuan	000970.SZ	Qinchuan	000837.SZ	ADI	ADI.O	Samsung	005930.KS		
Lynas	LYC.AX	Neway CNC	688697.SH	On Semi	ON.O	Will Semi	603501.SH		
		Cutting tool							
		Huarui Precision	688059.SH						

Robot OEM		Downstream testing / applications	
Startup		**Auto**	
Figure AI	Unitree	BYD	002594.SZ
Agility robotics	AgiBbot	NIO	NIO.N
1X technologies	Leju	BAIC	1958.HK
Boston Dynamics	Fourier	Geely	0175.HK
Apptronik		FAW-VW	NA
Auto		FAW-Audi	NA
Tesla	TSLA.O	Dongfeng liuqi	NA
Toyota	7203.T	Hongqi	NA
Xpeng	9868.HK	Li Auto	2015.HK
Xiaomi	1810.HK	Hyundai Motor	005380.KS
GAC	601238.SH	Kia Cor	000270.KS
Chery	NA	**Electronics**	
BYD	002594.SZ	Foxconn	601138.SH
NIO	NIO.N	Samsung	005930.KS
Hyundai Motor	005380.KS	**Logistics**	
Chang'an (planning)	000625.SZ	GXO Logistics	GXO.N
Kia Cor	000270.KS	SF Express	002352.SZ
		Hyundai Glovis	086280.KS
Industrials			
Kawasaki	3045.T	**Consumer**	
Teradyne	TER.O	Haier	600690.SH
Rainbow Robotics	277810.KS	Midea	000333.SZ
Techman (Quanta)	2382.TW	Easyhome	000785.SZ
Estun	002747.SZ	**Services**	
Dobot	2432.HK	China Construction Bank	601939.SH
UBTECH	9880.HK	Yongda Automobiles	3669.HK
Geekplus	2590.HK		
Yunshenchu	NA		
Commercial			
Qinglang Intelligence Tech	NA		
Pudu Robotics	NA		
Yunji Tech	2670.HK		
Home appliance		**Research and education**	
Midea	000333.SZ	**Household**	
Dreame	NA	**Emergency rescue**	
Internet		**Entertainment**	
Naver labs	NA		

Related investment & cooperation			
Shenzhen humanoid center		**Zhejiang humanoid center**	
Zhaowei	003021.SZ	Supcon	688777.SH
Fortior Technology	688279.SH	Wolong Electric	600580.SH
Orbbec	688322.SH	**Shanghai humanoid center**	
Anhui humanoid center		Shanghai Electric	601727.SH
NIO	NIO.N	**Beijing humanoid center**	
Iflytek	002230.SZ	Xiaomi	1810.HK
		UBTECH	9880.HK

Source: UBS-S, UBS. Note: For robot OEMS under industrials, Kawasaki and Estun are primarily industrial robot players; Teradyne, Techman and Dobot are mainly cobot companies; UBTECH and Rainbow Robotics focus on humanoid robots; Geek+ is an AMR provider; and Yunshenchu is a leading quadruped robot company.

Midstream OEMs

OEM evaluation metrics

For robot OEMs, we segment the robotics universe into **three groups** based on current business exposure: 1) pure-play humanoid robotic startups; 2) established robotics companies with no meaningful humanoid robotics exposure; and 3) established robotics companies that are expanding into humanoid robot products. While a growing number of companies from adjacent sectors (e.g. autos and home appliances) are also entering the humanoid robotics market, we exclude these cross-sector participants from the scope of our detailed analysis in this report.

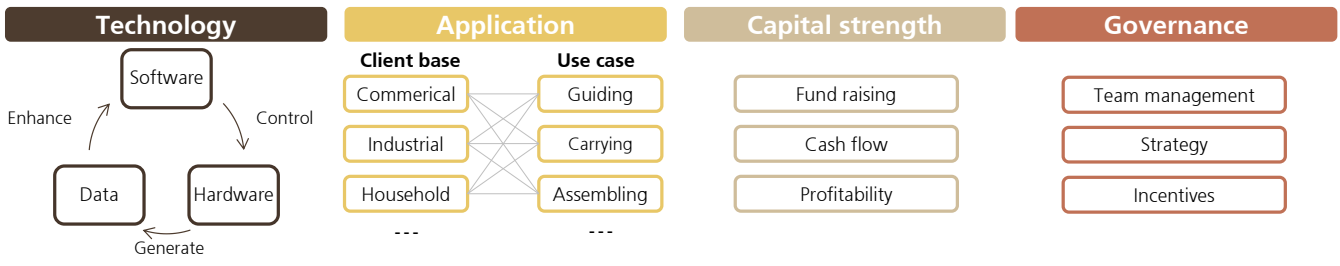
We believe all three groups can benefit from the advancement of AI technologies through higher product penetration rates. However, compared with component suppliers, we believe China's robot OEMs face greater profitability pressure, primarily because many OEMs in China have relatively low in-house manufacturing capabilities and operate in a highly competitive market (each market segment has its own established companies). Meanwhile, a number of traditional companies have begun entering the humanoid robot industry (in contrast, traditional overseas robotics companies appear to have been relatively cautious about entering the new market), increasing their investments in both hardware and software (with particularly substantial capital requirements for the development of "brain" technologies).

The following are the criteria we use for company selection.

1) We think ***humanoid robot OEM startups*** can be assessed across four core dimensions: technology, application, capital strength and governance. **1) Technology** reflects the company's capabilities in hardware design, software algorithms and data accumulation, which determine product performance and iteration speed. **2) Application** showcases the company's customer base and use cases, indicating whether it can translate technology into scalable commercial deployment. **3) Capital strength**, measured by cash reserves and profitability, determines whether the company can sustain long-term R&D, manufacturing ramp-up and market expansion.**4) Governance**, a qualitative metric, is essential to company development, especially for early-stage humanoid startups. We believe clear goal alignment, effective team management and incentive structures will likely promote sustainable development in the long run. Overall, we think the strongest companies are those combining robust technical foundations, visible commercialisation pathways, sufficient financial resources and sound company governance to support continuous execution.

Based on these metrics, we believe well-rounded development is needed for long-term success. However, at this stage, with technology rapidly evolving and applications just starting to emerge, we find it difficult to identify a clear outperformer across all metrics. Therefore, we suggest investors selectively look for differentiation in one or more of these dimensions while maintaining a balance between near-term advantages and long-term sustainability.

Figure 24: Humanoid robot OEM evaluation metrics

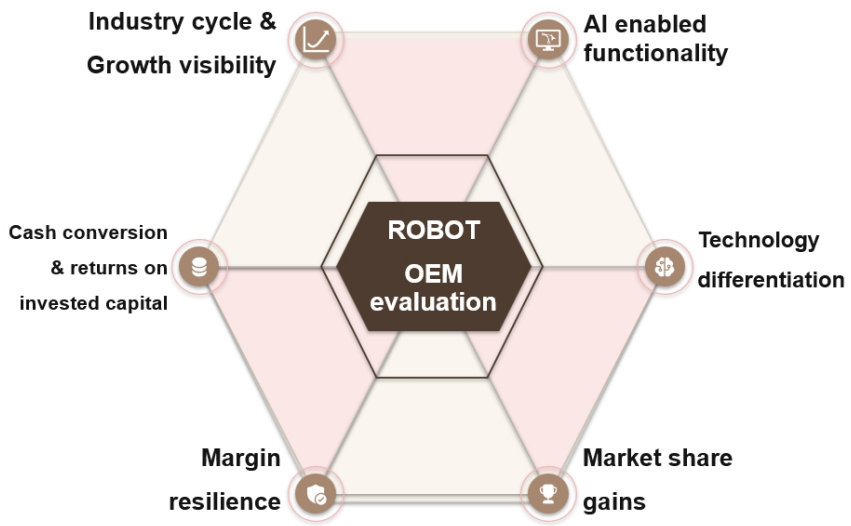


Source: UBS-S

2) For ***robotics OEMs focusing on non-humanoid robot products*** (e.g. industrial robots, cobots, AMRs and service robots), we evaluate traditional robot OEMs primarily on industry-cycle exposure, technology capability, market-share gains, margin resilience,

cash conversion and returns on invested capital. We also assess whether AI-enabled functionality can enhance product differentiation, expand addressable use cases and support higher automation penetration.

Figure 25: Traditional robot OEM evaluation metrics



Source: UBS-S

3) For ***established robotics companies that are expanding into humanoid robot products,*** we apply the analytical frameworks outlined in categories (1) and (2) to assess the two business segments separately. For humanoid robotics initiatives, in addition to the factors noted above, we assess how effectively the company balances investment in humanoid robots with its core business. We have observed that a number of traditional robot OEMs (e.g. industrial robot, AMR, service robot and quadruped robot manufacturers) are aggressively investing in this new technology. Although their existing mature products may have gained recognition across industries such as manufacturing, services and logistics, and humanoid robots may offer some synergies with their traditional product portfolios, it remains uncertain whether these companies can emerge as long-term beneficiaries in the humanoid robotics sector. In addition, developing new products requires substantial capital investment and may weigh on their core businesses.

As a result, we remain relatively cautious on Chinese robot OEMs and focus only on select market leaders. Accordingly, we prefer traditional robot OEMs (2) given better earnings visibility rather than (1) and (3) in the short to medium term. Over the longer term, however, we believe humanoid robotics OEM companies (including (1) and (3)) offer greater growth potential if the "brain" technology bottleneck can be resolved.

WHAT´S PRICED IN?

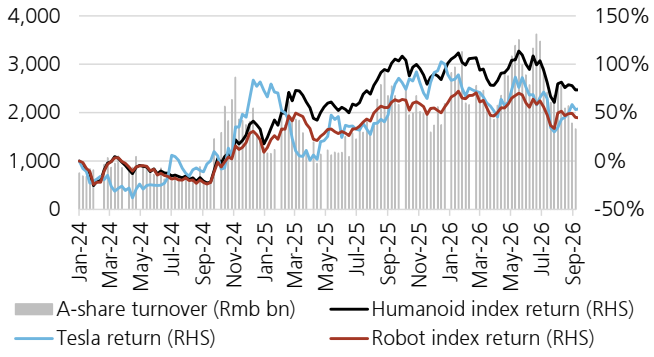
Both the **Chinese robotics index and humanoid robot index have underperformed the** machinery index YTD. We attribute this to three factors: 1) industry commercialisation appears to have fallen short of expectations (e.g.Tesla delaying production of Optimus since 2025); 2) valuations have been relatively high compared with those in the traditional machinery sector; and 3) capital has rotated into AI-related segments with clearer earnings and orders visibility at more attractive valuations, such as PCBs and semiconductor equipment.

The humanoid robotics and broader robotics indices have broadly tracked each other over the past two years. The broader robotics index appears to trade on a recovery in automation demand, improving earnings from mature businesses and optionality from humanoid robots. By contrast, the humanoid robotics index seems to be driven primarily by long-term expectations for mass production and commercialisation. The humanoid robotics index has underperformed the broader robotics index YTD (see figure 28), mainly because the market has favoured earnings visibility over thematic upside potential, in our view.

Chinese companies' share prices have significantly underperformed their overseas peers YTD, reversing the pattern seen last year. ***Among China's robot OEMs***, Estun-A/H has risen 26%/16% YTD and outperformed the index, mainly due to a turnaround in its financial performance. ***Among component suppliers***, Kedali, Leader Drive and Lens Technology have also outperformed the index, primarily due to the solid performances of their core businesses.

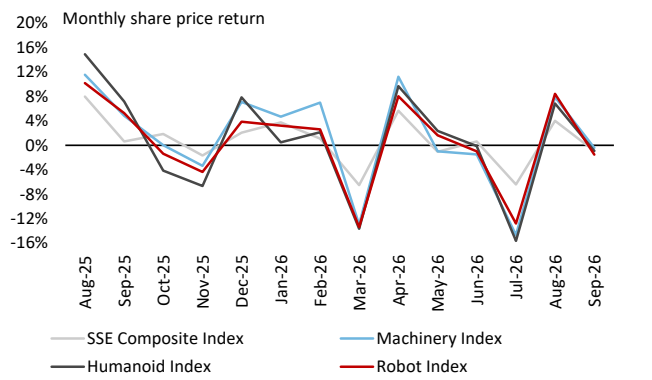
Looking ahead, we believe sentiment toward the robotics industry is unlikely to improve further until there is greater clarity on the mass production of Tesla's Optimus V3, tangible progress in the generalisation capabilities of AI models, and meaningful hardware advances demonstrated at upcoming conferences (Figure 29). Until one of these catalysts materialises, we believe the broader robotics sector could continue to outperform humanoid robotics names, supported by sustained, healthy growth in automation demand and non-humanoid robotics. We prefer key component suppliers with visible core businesses or strong customer bases, particularly those serving overseas brands.

Figure 26: Robot index has fluctuated since January



Source: Wind, UBS-S. Note: We use the Wind AI Robot Concept Index as a proxy for our humanoid robot index. Data as of 21 Sep 2026.

Figure 27: Robot, humanoid and machinery sentiment weakened MTD



Source: Wind. Note: Data as of 21 Sep 2026.

Figure 28: Monthly share price returns – humanoid robots

Monthly share price return		YTD	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26
Chinese indices																
000001.SH	SSE Composite Index	0%	8.0%	0.6%	1.9%	-1.7%	2.1%	3.8%	1.1%	-6.5%	5.7%	-1.1%	0.6%	-6.4%	4.0%	-0.9%
882131.WI	Machinery Index	-3%	11.5%	4.8%	0.0%	-3.4%	7.1%	4.7%	7.0%	-13.0%	11.2%	-1.0%	-1.5%	-14.7%	7.9%	-0.4%
8841699.WI	Humanoid Index	-11%	14.9%	7.2%	-4.1%	-6.6%	7.8%	0.5%	2.1%	-13.6%	9.7%	2.3%	-0.1%	-15.6%	6.8%	-0.9%
884126.WI	Robot Index	-7%	10.2%	5.3%	-1.4%	-4.4%	3.9%	3.2%	2.6%	-13.4%	8.0%	1.6%	-1.0%	-12.8%	8.4%	-1.5%
	Humanoid vs. Machinery	Under-perform	Out-perform	Out-perform	Under-perform	Under-perform	Out-perform	Under-perform	Under-perform	Under-perform	Under-perform	Out-perform	Out-perform	Under-perform	Under-perform	Under-perform
Chinese companies																
OEM																
9880.HK	UBTECH*	-36%	6%	61%	-11%	-18%	12%	11%	-13%	-30%	24%	-4%	1%	-21%	4%	-5%
2432.HK	Dobot*	-44%	-1%	21%	-22%	-20%	-5%	-4%	6%	-16%	-2%	-2%	-16%	-6%	-3%	-11%
2590.HK	Geek Plus*	-63%	30%	35%	-7%	-9%	-12%	36%	-20%	-29%	3%	-15%	-19%	-19%	-1%	-14%
2715.HK	Estun*	16%								-13%	14%	31%	11%	-10%	2%	-13%
002747.SZ	Estun	26%	14%	7%	-2%	-13%	8%	-1%	1%	-16%	9%	27%	35%	-20%	6%	-6%
Components																
300124.SZ	Inovance	-29%	18%	12%	-8%	-8%	7%	-1%	-2%	-8%	2%	8%	-10%	-3%	-3%	-15%
601100.SH	Hengli Hydraulic	-15%	21%	7%	0%	6%	8%	-1%	4%	-15%	9%	4%	-1%	1%	-5%	-9%
688017.SH	Leader Drive	50%	16%	20%	-10%	-10%	31%	19%	1%	-19%	20%	37%	37%	-27%	-1%	-4%
688686.SH	OPT	14%	47%	2%	-13%	-8%	7%	-3%	-3%	-23%	21%	37%	13%	-38%	45%	-6%
603915.SH	Guomao	-28%	14%	1%	-3%	4%	8%	-7%	0%	-15%	7%	4%	-13%	-8%	10%	-9%
601689.SH	Tuopu	-40%	36%	29%	-9%	-15%	22%	-6%	-6%	-16%	6%	4%	-10%	-17%	0%	-2%
002050.SZ	Sanhua-A	-34%	21%	52%	3%	-14%	29%	-8%	1%	-17%	10%	-1%	-5%	-14%	-3%	0%
2050.HK	Sanhua-H	-34%	19%	41%	-7%	-15%	11%	-8%	-4%	-17%	18%	-5%	-16%	0%	-4%	0%
002472.SZ	Shuanghuan	-20%	13%	34%	-12%	-9%	19%	-12%	0%	-13%	9%	0%	6%	-7%	-8%	7%
002850.SZ	Kedali	12%	27%	41%	-8%	-14%	2%	-2%	7%	8%	6%	-7%	9%	-4%	-3%	-1%
0425.HK	Minth	-23%	27%	3%	2%	-1%	-7%	16%	19%	-26%	5%	11%	-30%	8%	-6%	-8%
600699.SH	Joyson	-33%	16%	64%	-8%	-16%	17%	-11%	0%	-11%	15%	-8%	-17%	-5%	-7%	9%
HSAI.O	Hesai	-26%	36%	9%	-16%	-19%	16%	7%	13%	-29%	19%	-17%	-4%	-7%	-5%	2%
2498.HK	Robosense	-54%	31%	5%	-18%	-6%	12%	-7%	6%	-4%	-4%	-5%	-30%	7%	-24%	-6%
9660.HK	Horizon Robotics	-51%	39%	0%	-8%	-10%	10%	-5%	0%	-19%	10%	-27%	-23%	27%	-9%	-10%
300433.SZ	Lens Technology	16%	36%	8%	-12%	-7%	10%	20%	-3%	-20%	-8%	58%	32%	-41%	23%	-11%
Overseas companies																
OEM																
TSLA.O	Tesla	-19%	8%	33%	3%	-6%	5%	-4%	-6%	-8%	3%	14%	-3%	-26%	18%	-1%
HYUNDAI.NS	Hyundai Motor	-6%	15%	5%	-6%	-5%	-1%	-4%	-1%	-18%	2%	6%	-1%	14%	2%	-3%
0GRX.L	Hexagon	-13%	-3%	5%	4%	-5%	-1%	-5%	-2%	-11%	8%	-12%	-6%	17%	7%	-6%
Components																
012330.KS	Hyundai Mobis	1%	9%	-6%	6%	-2%	21%	20%	15%	-26%	12%	81%	-35%	-5%	-4%	-18%
373220.KS	LG Energy Solution	-4%	-8%	-1%	36%	-14%	-10%	8%	7%	-8%	17%	-1%	-21%	-9%	15%	-7%
6324.T	Harmonic drive systems*	64%	-11%	3%	8%	8%	22%	-10%	34%	-24%	51%	49%	0%	-21%	-6%	7%
6268.T	Nabtesco	24%	12%	7%	16%	-12%	11%	12%	22%	-24%	36%	6%	-6%	-9%	-2%	0%
6594.T	Nidec	34%	10%	-18%	-28%	5%	8%	3%	12%	-20%	22%	16%	-5%	-2%	0%	11%
SHA0.DF	Schaeffler	-17%	16%	-4%	24%	-5%	26%	19%	4%	-32%	15%	31%	-20%	-16%	4%	-6%

Source: Wind, UBS-S. Note: Data as of 21 Sep 2026. * Not covered by UBS or UBS-S.

Figure 29: Expected future humanoid industry events and catalysts

Date	Event
Sep 27- Oct 1, 2026	IROS 2026
October 12-16 2026	China International Industrial Fair in Shanghai
October 20-21, 2026	RoboBusiness 2026
October 21 2026	Tesla Q326 earnings release (TBC)
October 2026	3Q26 results of A-share humanoid-related companies, incl. Unitree
November 7 2026	Tesla annual shareholders meeting
December 6-9, 2026	IEEE-RAS Humanoid 2026 in Santa Clara
End 2026	Tesla expects to start mass production of Optimus Gen3 by end 2026

Source: Company data, UBS-S

Yushu Technology (Neutral) – OEM

We initiated coverage of Yushu Technology (known as Unitree) with a Neutral rating. Unitree is a global leader in embodied AI robot platforms, having sold 5,215 humanoid robots and 23,037 quadruped robots in 2025 (global market share: about 30%/28%). We expect Unitree's hardware and motion-control leadership to capture early humanoid-robot demand in commercial performances, research and data collection, while generalisation remains an industry-wide constraint. Over the longer term, sustained investment in AI models, ecosystem development and solid financials should support broader deployment in complex, high-value scenarios and underpin growth visibility. We estimate sales to reach Rmb6.4bn in 2028, implying a CAGR of 53%, driven by rising robot adoption. It is currently trading at 43x 2027E P/S and 225x 2027E PE, which we think looks fairly valued. Potential upside and downside risks relate to order growth, AI model progress and margins.

OPT (Buy) – sensor producer

We are constructive on OPT as a leading machine-vision solutions provider in China. We believe the company is well positioned to benefit from three growth engines. First, its deep exposure to Apple's supply chain should support demand for high-precision inspection and assembly solutions as AI devices, new form factors, advanced materials and 3D-printing processes raise manufacturing complexity. Second, OPT's full-stack industrial-AI platform – spanning data capture, model training, deployment and iteration – should lower adoption barriers and expand its value per production line. Third, the company is broadening beyond its core 3C and battery markets into faster-growing semiconductor, AI-server and optical-module, automotive and robotics applications. We believe this mix of customer-product innovation, AI-enabled solution upgrades and downstream diversification should sustain above-industry growth and reduce reliance on any single end market.

Leader Drive (Sell) – reducer supplier; PT raised from Rmb52.9/sh to Rmb216/s (see note)

We raise our 2026-28E net profit 16-59% on stronger traditional-robot demand and higher humanoid-robot volumes and content per unit. We change our valuation method from PE to SOTP and raise our PT from Rmb52.9/sh to Rmb216/sh. We believe Leader Drive is well positioned to capture the growth in embodied AI, underpinned by its attractive price-performance ratio, responsive service, rapid R&D capabilities, and ongoing harmonic reducer capacity expansion from 90k units/month by September to 120k units/month by end-2026. However, we see limited potential for upside after the strong YTD rally of over 50%, as industry capacity expansion pressures margins and leading companies prioritize market share. At 238x forward PE, broadly in line with its 227x average since 2022, we view the valuation as demanding against 2026-28E EPS CAGR of 40%, versus ~20% in 2023-25. We believe key risks include weaker traditional-robot demand, slower humanoid-robot mass production, and delays in capacity, product, or customer ramp-ups.We maintain our Sell rating.

Hengli Hydraulic (Buy) – roller screw supplier

We expect Hengli Hydraulic's traditional business to continue to deliver strong revenue growth, supported by a recovery in domestic and overseas construction-machinery demand, market-share gains in excavator cylinders and pumps and valves, expansion into non-excavator applications and the ramp-up of overseas capacity, further consolidating its leadership in high-end hydraulic components. Meanwhile, the company has made tangible progress in new businesses: ball screws for machine tools have entered mass supply, while roller screws have moved into initial small-batch production. We believe strong revenue growth in the traditional hydraulic business provides earnings visibility, while new products – including ball screws for machine tools and roller screws for robots – could become a new growth engine. We maintain our Buy rating.

Figure 30: Robotics OEM and comparable components

Company Name	Ticker	Market Cap (USD bn)	Share Price (LC)	PS (x) 2026	PS (x) 2027	Revenues CAGR 2026-28	PE (x) 2026	PE (x) 2027	EPS CAGR 2026-28	PEG (x) 2027	PB (x) 2026	PB (x) 2027	ROE (%) 2026	ROE (%) 2027	Share price performance 2025	Share price performance 2026 YTD	Robot related business
Mainland China																	
OEM																	
Unitree*	688836.SH	29.9	494.85	73.0x	43.3x	53%	331x	225x	42%	5.3	22.0x	20.5x	10.1	9.1	0%	-39%	Humanoid Robot OEM
UBTECH	9880.HK	5.2	80.35	10.9x	7.0x	48%	N.M.	194x	N.M.	N.M.	4.8x	4.4x	-4.6	1.8	130%	-36%	Humanoid Robot OEM
Dobot	2432.HK	1.2	21.10	11.9x	8.1x	48%	N.M.	N.M.	N.M.	N.M.	2.9x	2.9x	-5.2	-2.3	60%	-42%	Collaborative robot OEM
Geek Plus	2590.HK	1.3	8.16	2.6x	2.0x	31%	333x	33x	371%	0.1	2.8x	2.5x	0.6	7.8	24%	-62%	Autonomous Mobile Robots (AMR), Warehouse Automation (Non-Humanoid)
Estun Automation-A*	002747.SZ	4.1	29.78	4.9x	4.3x	13%	103x	97x	20%	4.8	8.3x	7.6x	10.3	8.2	28%	26%	Industrial Robot OEM, Servo Systems
Components																	
Horizon Robotics*	9660.HK	8.6	4.26	13.1x	8.6x	54%	N.M.	N.M.	N.M.	N.A.	3.6x	3.9x	-28.7	-11.6	141%	-52%	AI Chips, Computing Processors, AI Inference Platform for robots
OPT*	688686.SH	2.6	140.70	10.8x	8.2x	25%	68x	46x	39%	1.2	5.4x	4.9x	8.1	11.1	65%	17%	3D vision cameras, LiDAR, sensors, machine-vision software for robots
Hesai*	HSAI.O	2.7	16.52	0.7x	0.4x	43%	30x	20x	36%	0.6	1.8x	1.7x	6.4	8.8	62%	-26%	LiDAR Sensors for robots
Robosense*	2498.HK	1.0	16.92	3.1x	2.1x	42%	70x	19x	138%	0.1	1.8x	1.7x	2.7	9.5	19%	-53%	LiDAR Sensors for robots
Orbbec	688322.SH	5.6	91.14	23.9x	15.8x	44%	122x	71x	61%	1.2	11.5x	9.7x	9.0	13.1	93%	3%	3D Vision Cameras, Depth Cameras, Spatial Perception Systems for robots
Hengli Hydraulic*	601100.SH	18.7	93.48	9.3x	7.8x	18%	36x	28x	24%	1.2	6.4x	5.5x	18.9	21.2	111%	-16%	Roller screws on humanoid robot body
Zhejiang Rongtai*	603119.SH	4.0	56.56	12.8x	7.9x	59%	72x	48x	49%	1.0	11.6x	10.0x	17.1	22.4	419%	-38%	ball screw/planetary roller screws on humanoid robot dexterous hands
Leader Drive*	688017.SH	7.9	288.88	59.7x	39.0x	42%	318x	217x	40%	5.4	14.5x	13.7x	4.6	6.5	78%	53%	Harmonic reducers, roller screw, bearing for robots
Laifual Drive	3952.HK	0.7	49.58	12.9x	7.1x	62%	N.M.	75x	N.M.	N.M.	0.0x	0.0x	-27.5	4.2	0%	-31%	Harmonic reducers for robots
Kedali*	002850.SZ	7.5	175.20	2.4x	1.8x	28%	20x	14x	33%	0.4	3.2x	2.7x	17.3	20.8	64%	11%	Harmonic reducers, planetary roller screw, dexterous Hand
Guomao*	603915.SH	1.3	13.18	2.9x	2.6x	10%	24x	21x	13%	1.7	2.2x	2.0x	9.1	9.7	60%	-29%	RV reducers for robot
Shuanghuan*	002472.SZ	4.8	37.90	3.2x	2.5x	25%	23x	19x	22%	0.9	2.9x	2.6x	13.5	14.6	57%	-23%	RV Reducers, Precision Gear Systems
Zhongda Leader	002896.SZ	1.8	61.50	10.0x	8.6x	16%	142x	118x	19%	6.1	9.7x	9.2x	7.1	8.1	203%	-31%	RV Reducers, Precision Transmission Systems
Sanhua-A*	002050.SZ	21.7	36.18	4.2x	3.6x	18%	33x	28x	18%	1.6	4.4x	4.0x	14.0	14.9	137%	-36%	Actuator module
Sanhua-H	2050.HK	21.7	25.04	4.9x	4.3x	13%	21x	17x	16%	1.1	2.6x	2.4x	13.1	14.1	71%	-34%	Actuator module
Zhaowei Machinery-A	003021.SZ	2.6	69.80	7.7x	5.9x	24%	58x	43x	29%	1.5	5.1x	4.7x	8.0	10.2	68%	-44%	Dexterous hand
Zhaowei Machinery-H	2692.HK	2.6	38.60	11.2x	8.8x	24%	44x	24x	53%	0.5	NA	NA	3.3	5.6	0%	-47%	Dexterous hand
Leadshine	002979.SZ	2.6	54.39	6.5x	5.1x	26%	47x	36x	28%	1.3	8.2x	6.9x	18.2	20.4	38%	32%	Servo Drives, Servo Motors, Motion Control Solutions
Inovance*	300124.SZ	21.4	52.84	2.7x	2.3x	14%	25x	20x	21%	0.9	3.6x	3.1x	15.4	17.0	29%	-30%	Motors, linear/rotary actuator, planetary roller screw for humanoid robots; industrial robot OEM
Minth*	0425.HK	3.5	23.72	1.0x	0.8x	13%	8x	7x	13%	0.5	0.9x	0.8x	12.4	12.9	114%	-22%	Lightweight body & head structural parts
Joyson*	600699.SH	4.6	20.95	0.5x	0.5x	7%	22x	19x	15%	1.3	1.8x	1.6x	8.1	8.7	103%	-35%	Hardware Integration for humanoid robots
Lingyi iTECH	002600.SZ	14.3	12.54	1.5x	1.2x	24%	32x	23x	37%	0.6	3.7x	3.2x	11.3	13.7	95%	-19%	Steletal structual parts and joint modules for humanoid robots
Lens Technology*	300433.SZ	26.7	34.83	2.3x	1.8x	23%	35x	21x	48%	0.4	3.3x	3.0x	9.6	14.8	41%	12%	Robot assembly; structures
China OEM average				**21x**	**13x**	**39%**	**256x**	**137x**	**145%**	**3.4**	**8x**	**8x**	**7.0**	**6.7**			
China components average				**9x**	**6x**	**28%**	**59x**	**38x**	**36%**	**1.4**	**5x**	**4x**	**10.8**	**12.8**			
Overseas																	
OEM																	
Tesla	TSLA.O	1,438.7	364.27	13.6x	12.0x	15%	210x	158x	33%	4.7	14.2x	13.1x	5.6	6.5	11%	-19%	Humanoid Robot OEM (Optimus)
Hexagon	0GRX.L	26.3	94.87	5.3x	4.9x	7%	25x	25x	5%	4.9	2.8x	3.0x	13.8	12.4	3%	-13%	Humanoid Robot OEM
Yaskawa	6506.T	7.5	4,383.00	2.0x	1.8x	8%	25x	20x	20%	1.0	2.2x	2.1x	9.2	10.8	19%	-7%	Industrial Robot OEM, Servo Systems
Fanuc	6954.T	36.6	5,852.00	5.9x	5.6x	6%	27x	25x	8%	3.2	2.8x	2.7x	10.9	11.5	46%	-4%	Industrial Robot OEM, CNC
Doosan Robotics	454910.KS	3.3	69,600.00	69.5x	44.5x	77%	N.A.	N.A.	N.A.	N.A.	14.9x	14.5x	-5.9	2.1	49%	-11%	Cobot
Components																	
Hyundai Mobis	012330.KS	24.2	373,000.00	0.5x	0.5x	6%	8x	7x	10%	0.7	0.6x	0.6x	8.1	8.5	62%	3%	Electric Drive Units, Actuators, Perception Systems
LG Energy Solution	373220.KS	59.4	352,000.00	2.6x	2.1x	25%	N.M.	42x	N.M.	NA	3.9x	3.5x	-2.6	8.6	6%	-1%	Lithium-ion Battery Packs, Energy Storage Systems
Harmonic drive systems	6324.T	3.8	6,200.00	8.2x	7.1x	13%	91x	61x	34%	1.8	7.0x	6.4x	8.0	10.9	14%	64%	Harmonic Drive Reducers
Nabtesco	6268.T	3.5	4,619.00	1.5x	1.4x	4%	20x	19x	6%	3.3	1.8x	1.7x	8.9	8.8	37%	24%	RV Reducers
Nidec	6594.T	21.7	2,856.00	1.3x	1.2x	6%	17x	16x	18%	0.9	1.6x	1.5x	9.4	9.6	-25%	34%	Frameless Torque Motors, Precision Servo Motors
Schaeffler	SHA0n.DE	7.6	6.93	0.3x	0.3x	4%	22x	11x	86%	0.1	2.4x	2.2x	8.8	22.8	0%	0%	Planetary Roller Screws, Bearings, Linear Motion Components
SKF	SKFb.ST	12.5	268.60	1.4x	1.3x	3%	16x	14x	11%	1.2	2.1x	2.0x	12.8	13.9	18%	9%	Bearings
TE Connectivity	TEL.N	59.5	205.42	3.0x	2.7x	8%	18x	16x	10%	1.6	4.4x	3.9x	25.3	25.5	62%	-9%	Sensor and connector
Amphenol	APH.N	191.2	77.55	5.4x	4.6x	15%	29x	24x	19%	1.3	10.6x	7.7x	41.5	38.3	96%	15%	connector
Hiwin	2049.TW	3.7	334.00	4.0x	3.6x	12%	37x	29x	18%	1.6	2.9x	2.7x	8.2	9.7	-40%	72%	Planetary Roller Screws, Linear Motion Modules
Sinbon	3023.TW	2.4	320.50	2.1x	1.9x	17%	22x	18x	22%	0.8	4.4x	4.0x	20.9	22.8			Connector/wire harness
Keyence	6861.T	118.7	76,580.00	12.6x	11.2x	12%	33x	29x	12%	2.5	4.7x	4.2x	15.3	15.6	-12%	36%	Machine Vision Systems, Industrial Sensors
Harmonic Drive	6324.T	3.8	6,200.00	8.2x	7.1x	13%	91x	61x	34%	1.8	7.0x	6.4x	8.0	10.9	14%	64%	Harmonic Drive Reducers
THK	6481.T	4.8	6,272.00	2.1x	2.1x	8%	16x	14x	12%	1.1	2.3x	2.1x	14.6	16.3	16%	58%	Planetary Roller Screws, Linear Guides
NSK	6471.T	3.4	1,082.00	0.5x	0.5x	5%	17x	13x	27%	0.5	0.8x	0.7x	4.7	5.9	49%	13%	Bearings, Ball Screws, Motion Components
Cognex Corp	CGNX.O	10.4	61.56	9.0x	8.3x	9%	36x	31x	15%	2.1	7.0x	6.1x	17.0	18.5	1%	72%	Machine Vision Systems, Industrial Vision Software
Overseas OEM average				**19x**	**14x**	**23%**	**71x**	**57x**	**17%**	**3.5**	**7.4x**	**7.1x**	**9.9**	**8.7**			
Overseas components average				**4x**	**3x**	**10%**	**32x**	**25x**	**22%**	**1.4**	**4.0x**	**3.5x**	**14.1**	**15.4**			

Source: Wind, Reuters, *UBS-S estimates . Note: Data as of 21 September 2026.

The following pages provide an appendix containing profiles of humanoid robot companies.

Figure 31: Comparison of major Chinese humanoid robot OEMs

Company Name	Primary industry/product	Humanoid Robot Technology												
		Body and Motion-Control Capabilities			Brain				R&D Expense (2025)	Production and Supply Chain		Target End Markets & Reference Customers	Post-Money Valuation	Latest Financing Details	Year Founded	Employees (End-2025)
		Flagship Models	Core Hardware Specifications	Motion-Control Capabilities	VLA/WM	Core Capabilities	Data Sources	Data Scale & Openness		Production & Scale-Up	Supply Chain & Industrial Partnerships	End markets				
Unitree (688836.SS, Neutral)	Quadruped robots	H1 / G1	• H1: 180 cm, 47 kg; 864 Wh swappable battery • 3D LiDAR and depth camera; 5 DoF per leg, 4 DoF per arm • G1: 23–43 DoF; optional 7-DoF force-controlled hand	• H1 reaches 3.3 m/s (>5m/s potential); 360 N·m knee torque • G1 supports force-position control, imitation and RL	**VLA+WM**	• Single-/dual-arm and whole-body manipulation • Force control with sim-to-real transfer	• Mainly real-world robot data • Supplemented with synthetic data	• G1/Z1, WBT teleoperation data and VLA/WM tools are open • Total dataset size not disclosed	RMB 145.0m	• >5,500 humanoids shipped in 2025 • G1 is standardized and commercially available from ~US$13,500	• Vertically integrated motors, platforms and control stack • Uses China's motor, reducer, sensor and machining ecosystem • External suppliers not fully disclosed	• Research, education and consumer development • Inspection, rescue and industrial material handling	USD 29.9bn market cap (2026-09-21)	A-share IPO; approximately RMB 6bn	2016	516
UBTECH (9880.HK)	Education	Walker S2	• Walker S2: 176 cm, 52 DoF; 15 kg dual-arm payload • Stereo vision, force sensing and dexterous hands • Autonomous battery swap in ~3 minutes	• Whole-body dynamic balance and 125° forward lean • 0–1.8 m operating workspace • BrainNet 2.0 and Co-Agent coordinate motion and planning	**VLA+WM**	• Spatial understanding and visual localization • Long-horizon planning and multi-robot collaboration	• Mainly real-world industrial data and task videos • Supplemented with synthetic data	• Thinker-4B weights are open • Refined from 20B raw data: >10 million data points	RMB 507.5m	• 1,079 full-size humanoids delivered in 2025 • Mass production began in November 2025 • 2026 capacity target: 10,000 units	• Siemens supports digital R&D and manufacturing • Validated in Foxconn, BYD and Geely environments • Some suppliers remain undisclosed	• Automotive, electronics and semiconductors • Smart manufacturing, warehousing and logistics	USD5.2 bn market cap (2026-09-21)	2025 share placements; approximately HK$7.3bn gross proceeds	2012	2,550
Dobot (2432.HK)	4-axis / 6-axis collaborative robots	ATOM / ATOM Max	• ATOM: 28 upper-body DoF and dual 7-axis arms • ±0.05 mm repeatability with stereo vision • Max: 41 DoF, dexterous hands and 1,500 TOPS	• NDS servo control at 200 Hz; ROM-1 at 24 Hz • Straight-knee gait uses ~42% less energy • Supports imitation and reinforcement learning	**VLA+WM**	• Task decomposition and imitation learning • Reinforcement learning and precision control	• Mainly real-world data • Supplemented with synthetic data	• X-Trainer provides open APIs • Cumulative scale not disclosed	RMB 114.7m	• Commercial mass production has begun • Output and annual capacity not disclosed • Uses an established cobot manufacturing base	• Leverages cobot arms, servo control and quality systems • Global distributor and integrator network • Key humanoid-component suppliers not disclosed	• Automotive assembly and material handling • Retail service, research and data collection	HSD1.2 bn market cap (2026-09-21)	Hong Kong H-share private placement (July 2025): HK$1bn	2015	768
Geekplus (2590.HK)	AMRs, picking robots, and warehouse orchestration	Gino 1	• Dual arms and three-finger hands • Vision-based warehouse picking, packing and inspection • 14 DoF; 20 kg dual-arm payload	• Integrates vision, dual-arm manipulation and mobility • Adapts to changing warehouse objects and layouts • Control frequency and joint torque not disclosed	Others	• Warehouse picking, packing and handling • Mobile inspection in changing environments	• Mainly real-world warehouse operating data • Simulation-data share not disclosed	• Model size and training scale not disclosed • Datasets and weights are not public	RMB 335.1m	• Gino 1 output not disclosed • Backed by 72,000 AMR deployments in 40+ countries	• AMR, software, delivery and service ecosystem • Serves 950+ customers; WES/RMS compatible • Robot-body supply chain remains opaque	• E-commerce, retail and 3PL warehouses • Pharmaceuticals, apparel and manufacturing	USD1.3bn market cap (2026-09-21)	Hong Kong IPO, July 2025; prior US$100m Series E	2015	1,054
Estun (002747.SZ, Buy; 2715.HK)	Industrial and collaborative robots; servo and motion control	Codroid 02	• 170 cm, 70 kg; 29/31 DoF • 7-DoF arms with 5 kg payload; 6 DoF per leg	• High-torque, fast-response proprietary actuators • Rigid, quasi-direct-drive and proprioceptive designs • Split-frequency "brain–cerebellum" control	Others	• Component picking and precision manipulation • Industrial process automation	• Potential access to industrial-robot data • Codroid training usage not disclosed	• Model size and training scale not disclosed • Datasets and weights are not public	RMB 418.7m	• Codroid 02 output not disclosed • Parent offers 87 industrial-robot models • Mature manufacturing, testing and delivery base	• In-house servos, motors, controllers and joint modules • >90%+ of core components sourced or made domestically	• Automotive, electronics and new energy • Semiconductors, metalworking, logistics and healthcare	USD4.1 bn market cap (2026-09-21)	Hong Kong global offering, March 2026; net proceeds of HK$1.407bn	1993	3,261
Galbot (not listed)	**N/A**	S1 / G1	• S1: dual 7-axis arms; 50 kg payload • 0–2.3 m workspace; NVIDIA Orin, 275 TOPS (AGX Orin 64GB) • Hot-swappable batteries; G1 has 21 joints (excl. chassis and end-effector)	• 1.5 m/s omnidirectional base • Vision plus 3D LiDAR localization and 360° obstacle avoidance • Dual-arm force control; ~8 hours with battery swapping	**VLA+WM**	• Hierarchical brain–cerebellum–control architecture • Whole-body control and unseen-motion generalization	• Mainly synthetic data • Real-world data used for fine-tuning	• WBC 0.5: 80.4m parameters and ~20,000 motion hours • Real-robot data scale not disclosed	Not disclosed	• Production volume not disclosed • CATL supports lines, infrastructure and deployment	• CATL supplies hardware and production lines • Joint after-sales and scaled-deployment support • Industrial customers validate heavy-load use cases	• Battery and automotive manufacturing • Heavy logistics, retail, pharma and home services	Over RMB 20bn (December 2025 financing)	RMB 2.5bn financing, 2026-03-02	2023	N/A
AgiBot (not listed)	**N/A**	A3 Ultra / G2	• A3 Ultra: 700 TOPS, 360° perception, UWB+RTK • LiDAR, multi-camera vision and NVIDIA Thor (G2: Jetson Thor T5000, 2,070 TFLOPS) • G2: heavy-duty force control; OmniHand: 19 DoF (12 active)	• Integrated locomotion, interaction and manipulation • G2 Max: force-controlled arms and omnidirectional base	others (ViLLA)	• Dual-arm and contact-rich manipulation • Long-horizon tasks and cross-robot training	• Mainly real-world data • Supplemented with synthetic data	• Beta: 1.00m trajectories / 43.8 TB • Alpha: 92,214 trajectories / 8.5 TB • Data and code restricted to non-commercial use	Not disclosed	• 15,000th robot completed in June 2026 • 5,168 humanoids shipped in 2025 • G2 operates on mass-production inspection lines	• Standardized components, assembly, testing and delivery • Longcheer and PIA support production and deployment	• Electronics manufacturing and industrial inspection • Commercial services, tourism and transportation	Rmb 15bn post-B (March 2025 financing)	Series B, March 2025 (Tencent led); B+ in May 2025 (JD.com), amount undisclosed	2023	1,500
Galaxea AI	**N/A**	R1 Pro	• 26 DoF and dual 7-axis force-controlled arms • 10 kg payload; 0–2 m workspace • Seven HD cameras, 360° LiDAR and 200 TOPS	• Force feedback and full-joint mapping • Isomorphic/VR teleoperation • 1.5 m/s omnidirectional base with synchronized sensors	**VLA+WM**	• Mobile manipulation and whole-body control • Teleoperation and edge deployment	• Mainly real-world data • Supplemented with synthetic data	• >500 hours of real-robot data; G0 code/weights open • G0Plus trained on >2,000 hours • G0Tiny trained on 1,000 hours	Not disclosed	• R1 deliveries began in Oct 2024 • 2025/26 volume figures are targets, not realized output	• Lens Technology is an investor and production partner • Modular R1 platform enables component reuse and scaling	• Manufacturing and logistics • Embodied-AI research, data collection and home services	US$2.87bn (April 2026 financing)	Approximately US$291m Series B+, 2026-04-02	2023	N/A

Source: Company data, Wind, UBS-S. Note: The humanoid OEMs listed above represent a select group of leading domestic companies and do not constitute a comprehensive list.

Figure 32: Mapping out major humanoid robot participants

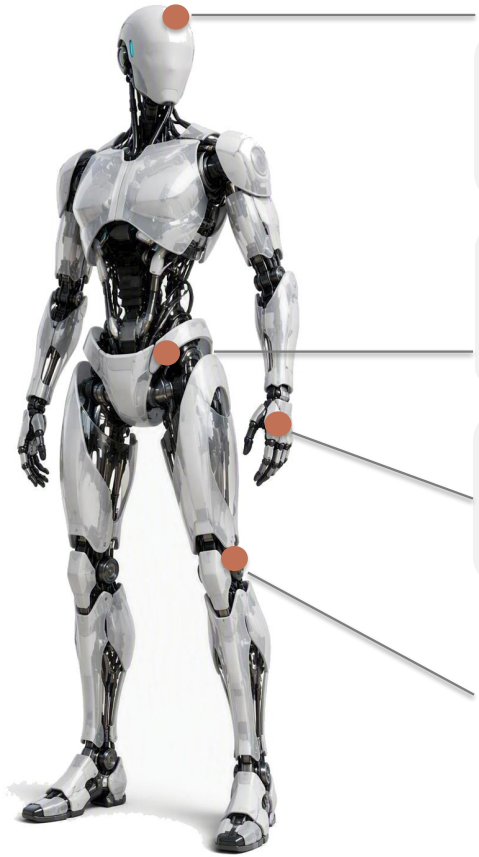
OEM Makers

China

Unitree Robotics*
AgiBot
UBTECH
Galbot
Dobot
Geek Plus
Estun* (Codroid)
Leju Robot
Fourier Intelligence
Stardust Intelligence
LimX Dynamics
Galaxea AI
EngineAI Robotics

Overseas

Tesla*
Boston Dynamics (Hyundai*)
Hexagon*
Figure AI
Agility Robotics
Apptronik
1X Technologies
Sanctuary AI
NEURA Robotics
PAL Robotics
Engineered Arts



Perception | *Head*
China Hesai* · RoboSense* · Orbbec · Sunny Optical* · OPT* · Omnivision* · DJI
Overseas Keyence* · Cognex* · Ouster · Luminar · Sony* · RealSense

Computing | *Brain*
China Horizon Robotics* · Cambricon · Black Sesame · Rockchip · Huaiwei (Ascend)
Overseas NVIDIA* · Qualcomm* · AMD* · Intel* · Physical Intelligence

Battery · Structure | *Torso*
China CATL* · EVE Energy* · Sunwoda* · Minth* · Joyson* · Lens Technology* · WeLion
Overseas LG Energy Solution* · Samsung SDI* · Panasonic*

Dexterous hands | *hands*
China Zhaowei · Moons' Electric · Leadshine · LingXin Dexterous Hand · INSPIRE Robots · BrainCo
Overseas ROBOTIS · WONIK Holdings · Maxon · Shadow Robot · SCHUNK

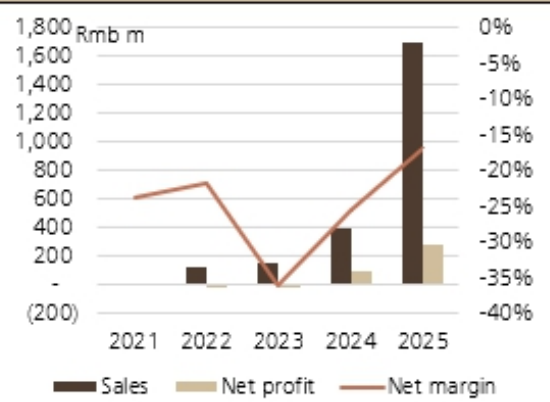
Actuators (reducers & drivers & motors) | joints
China Inovance* · Hengli Hydraulic* · Tuopu* · Sanhua* · Kedali* Leadshine · Leaderdriver* · Laifual · Guomao* · Shuanghuan* · Zhongda Leader · Kunwei
Overseas Hyundai Mobis* · Nidec* · Schaeffler* · Harmonic Drive Systems · Nabtesco · Hiwin* · THK* · NSK*

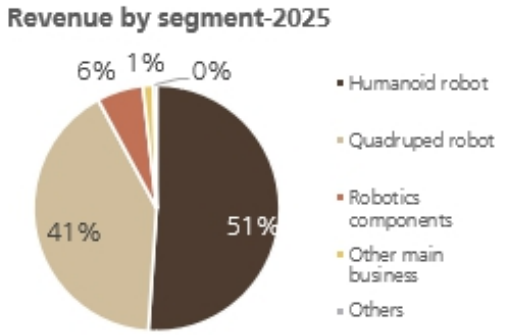
Source: Company data, UBS-S, UBS. Note: Companies shown in black are publicly listed, while those shown in grey are privately held. An asterisk (*) indicates companies that are covered by UBS and UBS-S.

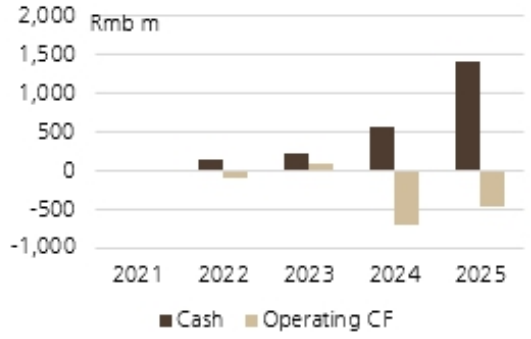
Figure 33: Yushu Technology (Unitree Robotics)

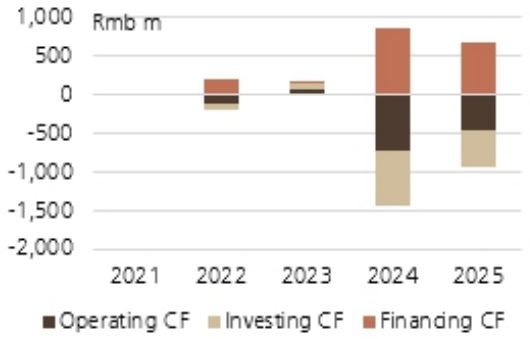
Humanoid business overview	
Milestones	•Aug 2023: H1 launched as Unitree's first general-purpose humanoid and its first full-size bipedal platform. •May 2024: G1 launched as a smaller, lower-cost humanoid platform for embodied-AI development. •July 2025: R1 launched as an ultra-lightweight entry-level humanoid with multimodal interaction. •Oct 2025: H2 launched as the next-generation full-size humanoid; H1-2 subsequently expanded the industrial/research lineup.
Current status	Humanoid robots are in mass production. • 2025 prodution exceeded 5,500 units and sales reached 5215 units; this excludes wheeled dual-arm and other non-humanoid robots.
Order	•2025: backlog on hand at ~Rmb282 mn (+93.15% YoY)
Customer	•Universities/research, developer education, consumer robots, inspection/rescue and industrial handling.

Financials overview







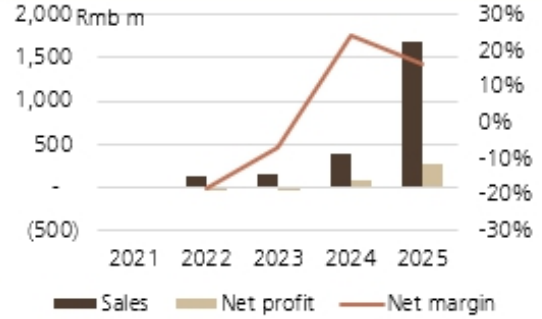


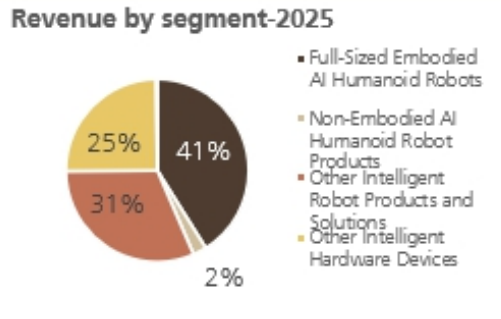
Source: Company data, SAG Robotics 360, UBS-S

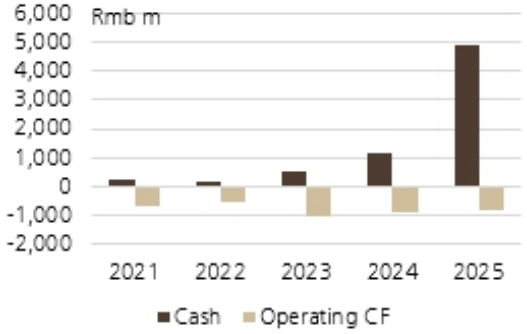
Figure 34: UBTECH

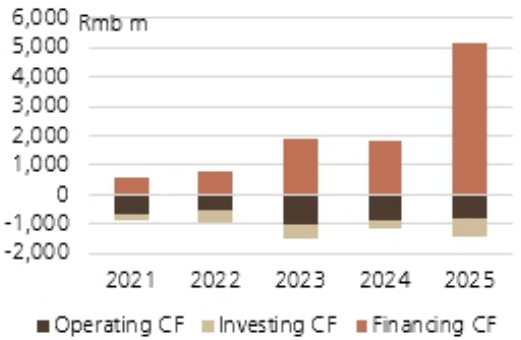
Humanoid business overview	
Milestones	•2016: Walker Gen 1 (exhibition display) •2019: Walker X (commercial display) •2021: Walker S (first mass-produced industrial humanoid) •July 2025: Walker S2 (3rd-gen industrial humanoid with auto hot-swap battery) + Tiangong Walker (for R&D/education). •Product line covers industrial, R&D/education, and
Current status	Annual capacity >1,000 units. Walker S2 in mass production •First batch of hundreds of Walker S2 units began shipment Nov 2025; 2025 deliveries exceeded 500 units.
Order	•2025: ~ RMB1400 mn in humanoid robot orders, including a RMB250 mn contract and a RMB159 mn project •H126: over RMB1000 mn new orders
Customer	•Automotive, 3C electronics, smart manufacturing, warehousing/logistics and semiconductors.

Financials overview







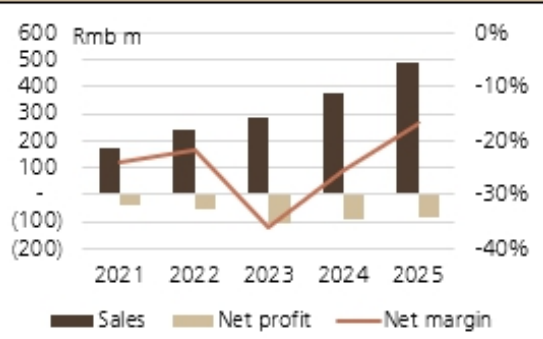


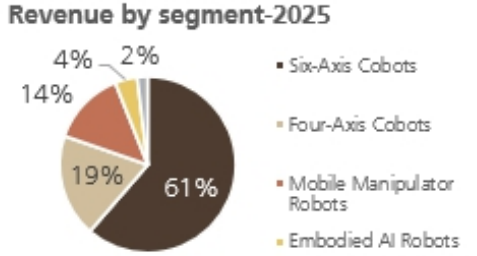
Source: Company data, UBS-S

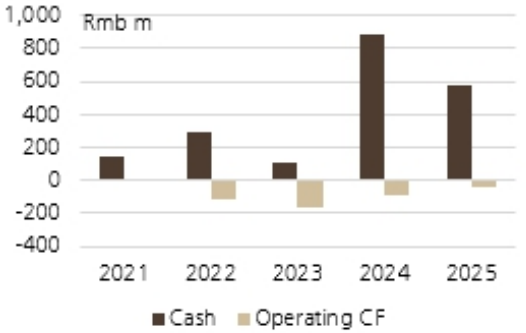
Figure 35: Dobot

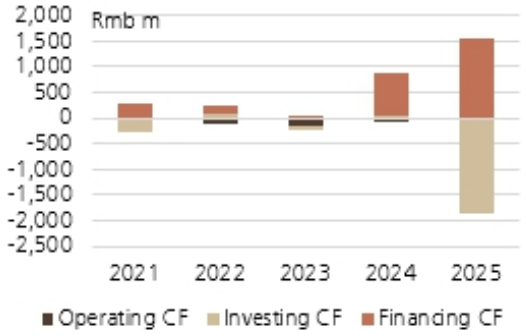
Humanoid business overview	
Milestones	•Apr 2024: X-Trainer embodied AI robot training platform •Mar 2025: Dobot Atom launch •Aug 2025: World Robot Conference launch of Atom II •Product portfolio now spans cobot arm + humanoid + quadruped + wheeled form factors.
Current status	Mass production •DOBOT officially debuted the global mass production and delivery of its humanoid robot DOBOT Atom in June 2025.
Order	•By H126 >Rmb 100mn collaborative robot backlog and >Rmb 60 mn embodied AI backlog. •By H126 >Rmb 40mn embodied AI shipment (already exceeds 2x the segment's 2025 full year revenues
Customer	•Automotive assembly/material handling, beverage preparation, overnight pharmacy operations, research and data collection.

Financials overview







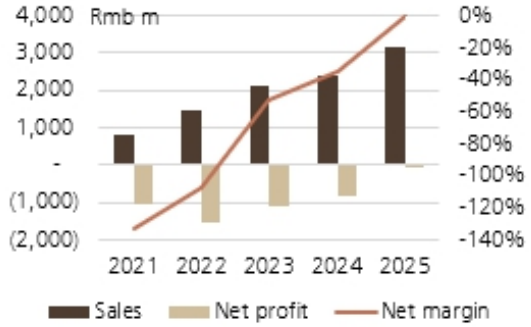


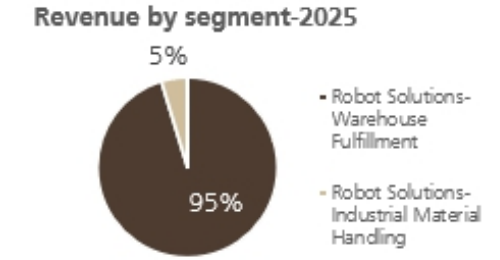
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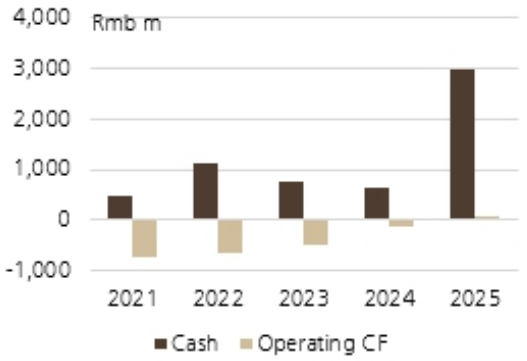
Figure 36: Geekplus

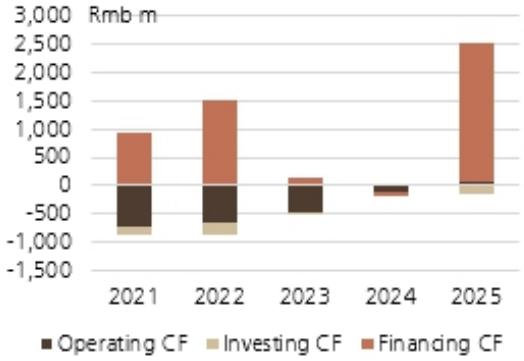
Humanoid business overview	
Milestones	•Jul 30, 2025: Established wholly-owned subsidiary Beijing Geek+ Embodied Intelligence Technology Co. •Oct 2025: unmanned picking workstation at CeMAT Asia •Feb 2026: Official launch of Gino 1 (general-purpose robot purpose-built for warehouse) •Strategy: mature AMR fleet + Gino 1 flexible manipulation + unmanned picking workstation
Current status	•Gino 1 launched Feb 2026; in commercial validation phase. •Unmanned Picking Workstation passed acceptance by an international giant (Oct 2025)
Order	•2025: full year backlog at Rmb4.137bn (+31.7% YoY), mainly includes AMR-based warehouse solutions and RaaS (no humanoid robot orders yet as Gino 1 launched in 2026).
Customer	•E-commerce, retail, 3PL, pharma, apparel and manufacturing warehouses

Financials overview







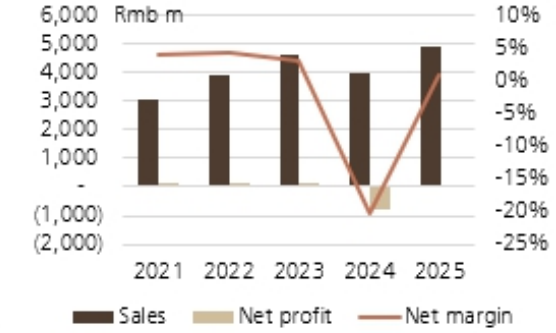


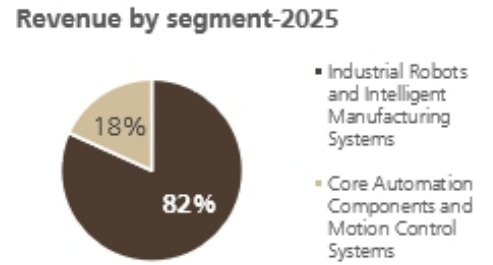
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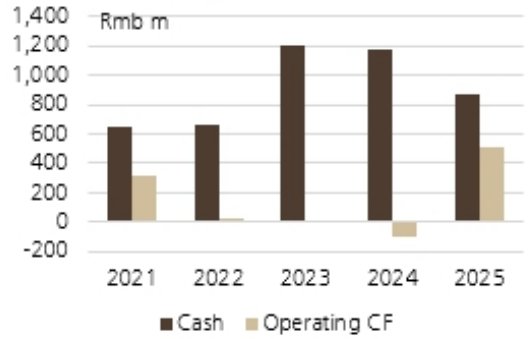
Figure 37: Estun

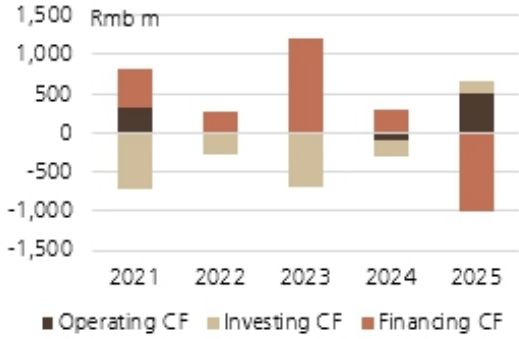
Humanoid business overview	
Milestones	•Estun incubated Coobot (Codroid) as its humanoid vehicle •Jul 2022: Coobot founded •Sep 2024: CIIF debut of Codroid 01 (biped, 170 cm, 44 DoF, workpiece grasping demo) •Jun 2025: Codroid 02 launched (31 DoF, fast-slow system architecture, a VLM / multimodal model)
Current status	Small-batch shipment •Sep 2025: first batch of tens of units delivered; all 3 product lines in small-batch shipment.
Order	•Not disclosed
Customer	•Automotive, electronics, new energy, semiconductors, metalworking, warehouse logistics and healthcare.

Financials overview









Source: Company data, UBS-S

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Valuation Method and Risk Statement

We believe risks for China's industrial automation sector include: 1) weaker-than-expected capacity expansion by downstream manufacturers; 2) weaker-than-expected domestic and overseas demand for renewable energy sectors (eg, lithium batteries and solar); and 3) intensifying competition and sharp declines in product ASPs.

Required Disclosures

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UBS Global Research: Global Equity Rating Definitions

12-Month Rating	Definition	Coverage[1]	IB Services[2]
Buy	FSR is > 6% above the MRA.	55%	24%
Neutral	FSR is between -6% and 6% of the MRA.	40%	21%
Sell	FSR is > 6% below the MRA.	6%	21%

Source: UBS. Rating allocations are as of 30 June 2026.
1:Percentage of companies under coverage globally within the 12-month rating category.
2:Percentage of companies within the 12-month rating category for which investment banking (IB) services were provided within the past 12 months.

KEY DEFINITIONS:Forecast Stock Return (FSR) is defined as expected percentage price appreciation plus gross dividend yield over the next 12 months. In some cases, this yield may be based on accrued dividends. **Market Return Assumption (MRA)** is defined as the one-year local market interest rate plus 5% (a proxy for, and not a forecast of, the equity risk premium). **Under Review (UR)** Stocks may be flagged as UR by the analyst, indicating that the stock's price target and/or rating are subject to possible change in the near term, usually in response to an event that may affect the investment case or valuation. **Equity Price Targets** have an investment horizon of 12 months.

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UBS Securities Co. Limited: Cheryl Wen, Jimmy Yu, Nora Min, Phyllis Wang.**UBS Securities Pte. Ltd., Taipei Branch:** Randy Abrams.

Company Disclosures

Company Name	Reuters	12-month rating	Price	Price date
Estun Automation	002747.SZ	Neutral	Rmb29.78	21 Sep 2026
Jiangsu Hengli Hydraulic	601100.SS	Buy	Rmb93.48	21 Sep 2026
Leader Harmonious Drive Systems	688017.SS	Sell	Rmb288.88	21 Sep 2026
OPT Machine Vision	688686.SS	Buy	Rmb140.70	21 Sep 2026
Shenzhen Inovance Technology	300124.SZ	Buy	Rmb52.84	21 Sep 2026
Shenzhen Kedali Industry	002850.SZ	Buy	Rmb175.20	21 Sep 2026
Yushu Technology[20]	688836.SS	Neutral (CBE)	Rmb494.85	21 Sep 2026
Zhejiang Sanhua Intelligent Controls	002050.SZ	Buy	Rmb36.18	21 Sep 2026
Zhejiang Shuanghuan Driveline[28]	002472.SZ	Buy	Rmb37.90	21 Sep 2026

Source: UBS Global Research; LSEG Eikon. All prices as of local market close. Ratings in this table are the most current published ratings prior to this report. They may be more recent than the stock pricing date.

20. Because this security exhibits higher-than-average volatility, the FSR has been set at 15% above the MRA for a Buy rating, and at -15% below the MRA for a Sell rating (compared with 6/-6% under the normal rating system).
28. UBS holds a long position of 0.5% or more of the listed shares of this company.

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