

June 16, 2026 07:53 AM GMT

Investor Presentation | Asia Pacific

Asia Summer School: Asia Robotics and Humanoids

Humanoids represent the largest embodied AI opportunity, with a projected global TAM of US\$7.5 trillion by 2050, based on Morgan Stanley Research forecasts. The industry remains at an early stage, but we believe small-scale commercialization will start this year.

Recent reports:

- [2026 Outlook – Humanoids: Commercialization](#)
- [China Humanoids Survey: High Willingness to Adopt Meets Premature Products](#)
- [Humanoid Horizons: Humanoids Coming to Your Bloomberg Screen](#)
- [Humanoids and Robots – The Next Chapter in China’s Dominance in Global Manufacturing](#)

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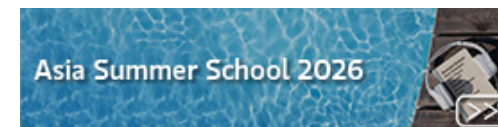
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CHINA INDUSTRIALS

Asia Pacific
Industry View In-Line

S. KOREA AUTOS & SHARED MOBILITY

Asia Pacific

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Industry View

In-Line

Asia Summer School 2026

FOUNDATION

Morgan Stanley

June 16, 2026

INVESTOR PRESENTATION

Asia Summer School: Asia Robotics and Humanoid

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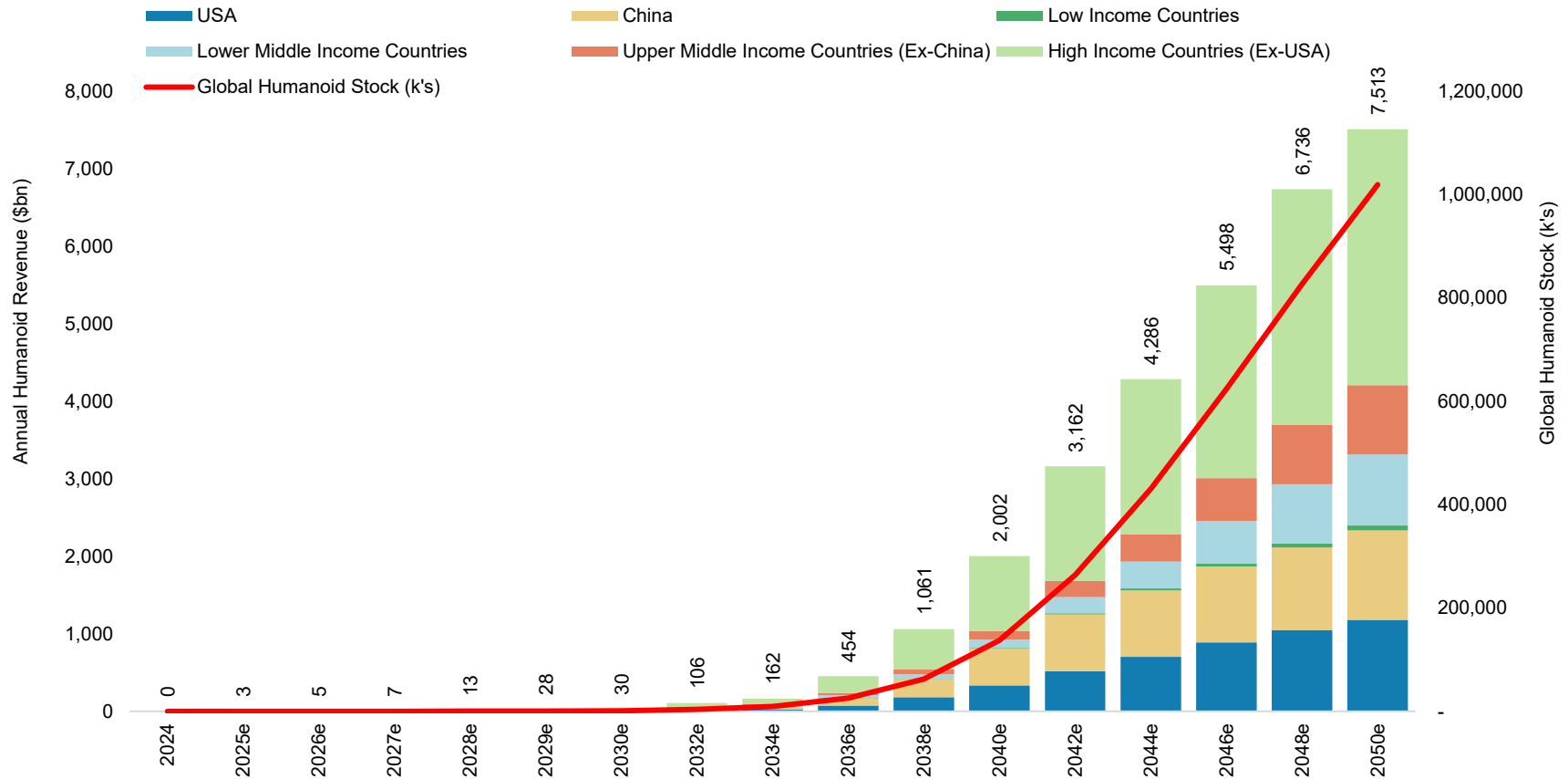
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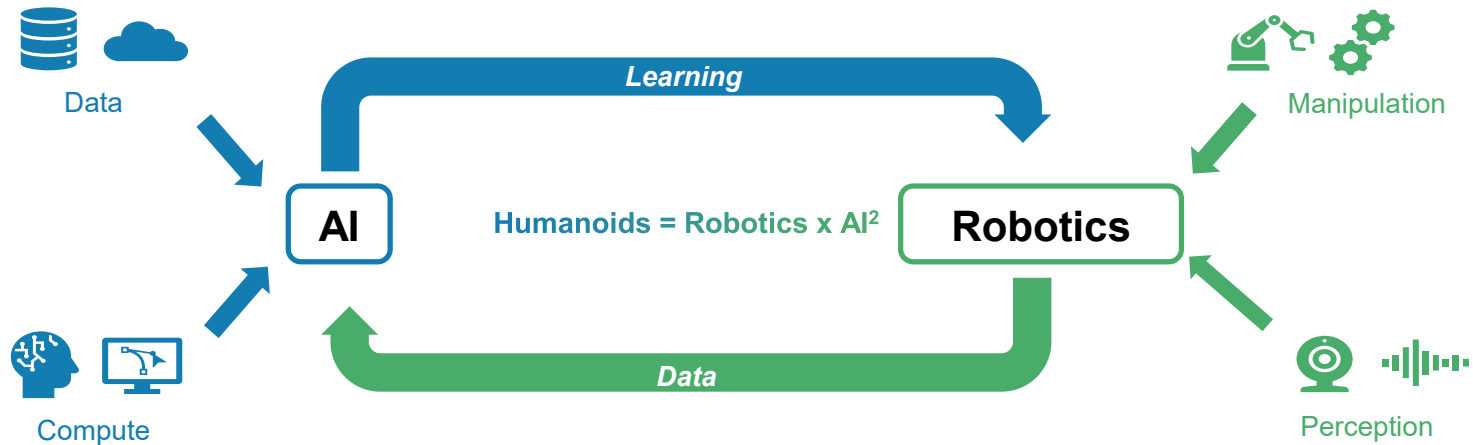
Humanoid Robotics – The Largest Embodied AI Opportunity; 1bn Stock and US\$7.5tn TAM by 2050e

Global humanoid market size and stock



Source: Morgan Stanley Research estimates. Note: This humanoid sales to external parties, we acknowledge and do not include prototype, internal R&D, and use.

Why Humanoid Robots?



Specialized Robotics

- + Technology readily available; Less mechanically and computationally complex
- + Highly effective at simple, repetitive tasks that require limited dexterity
- Ineffective at tasks that require advanced dexterity and/or intelligence
- May require significant modifications to the workplace to accommodate

Humanoids

- + Capable of accomplishing complex tasks that require advanced dexterity and/or intelligence
- + Limited need to modify existing workplace or methods; Interchangeable with humans.
- Technology still in development; requires highly-advanced AI and mechanical engineering
- May require significant training / trial & error

Source: Morgan Stanley Research.

What Can Humanoids Do?

Industrials



**Pick and place tasks
(material/box carrying)**



Logistic line sorting

Quality inspection/testing
(auto, battery, 3C production)
Plug-in assembly

Commercial/Entertainment



Unmanned retail/pharma store



Entertainment – dancing

Reception/shopping guidance
Patrol (police/property management)
Food/grocery delivery

Household



Companion robot



Helping on household chores

Elderly/assistive care
Health monitoring
Eldercare rehabilitation

Source: Company websites, Morgan Stanley Research.

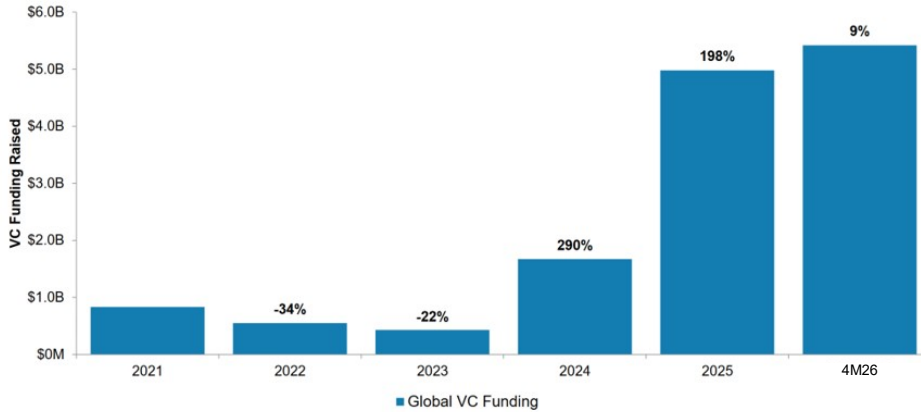
Numerous Companies Across Diverse Backgrounds Have Announced Initiatives in the Humanoid Robotics Business



Source: Morgan Stanley Research. Note: For illustration purpose only, not all inclusive. Represents companies that are either testing, using, or developing their own humanoids.

Capital Markets Activity is Accelerating – From VC/PE to IPO Preparation

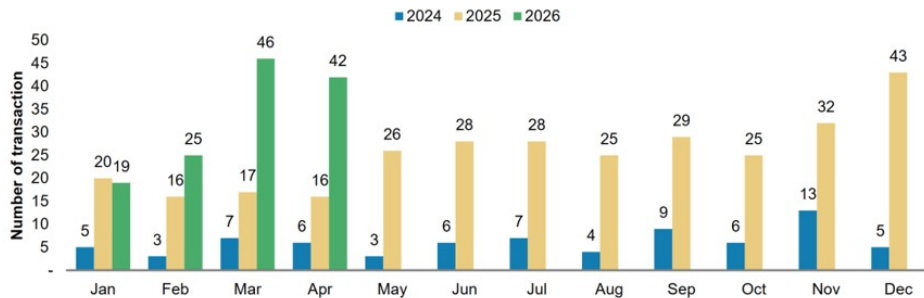
4M2026 global venture funding for humanoid robots has already exceeded the full-year total for 2025...



...resulting in multiple unicorns globally

Country	Date	Company	Valuation (US\$'bn)
US	Sep-25	Figure	39.0
	Feb-26	Apptronik	5.3
Germany	Jun-26	Neura Robotics	7.0
China	Jun-25	Unitree	1.9
	Feb-26	AI^2 Robotics	1.5
	Mar-26	Galbot	3.0
	Apr-26	EngineAI	1.5
	Apr-26	Spirit AI	1.5
	Apr-26	Galaxea	3.0

A similar VC/PE financing trend is happening in China



Companies that have filed for IPO to date

UNITREE

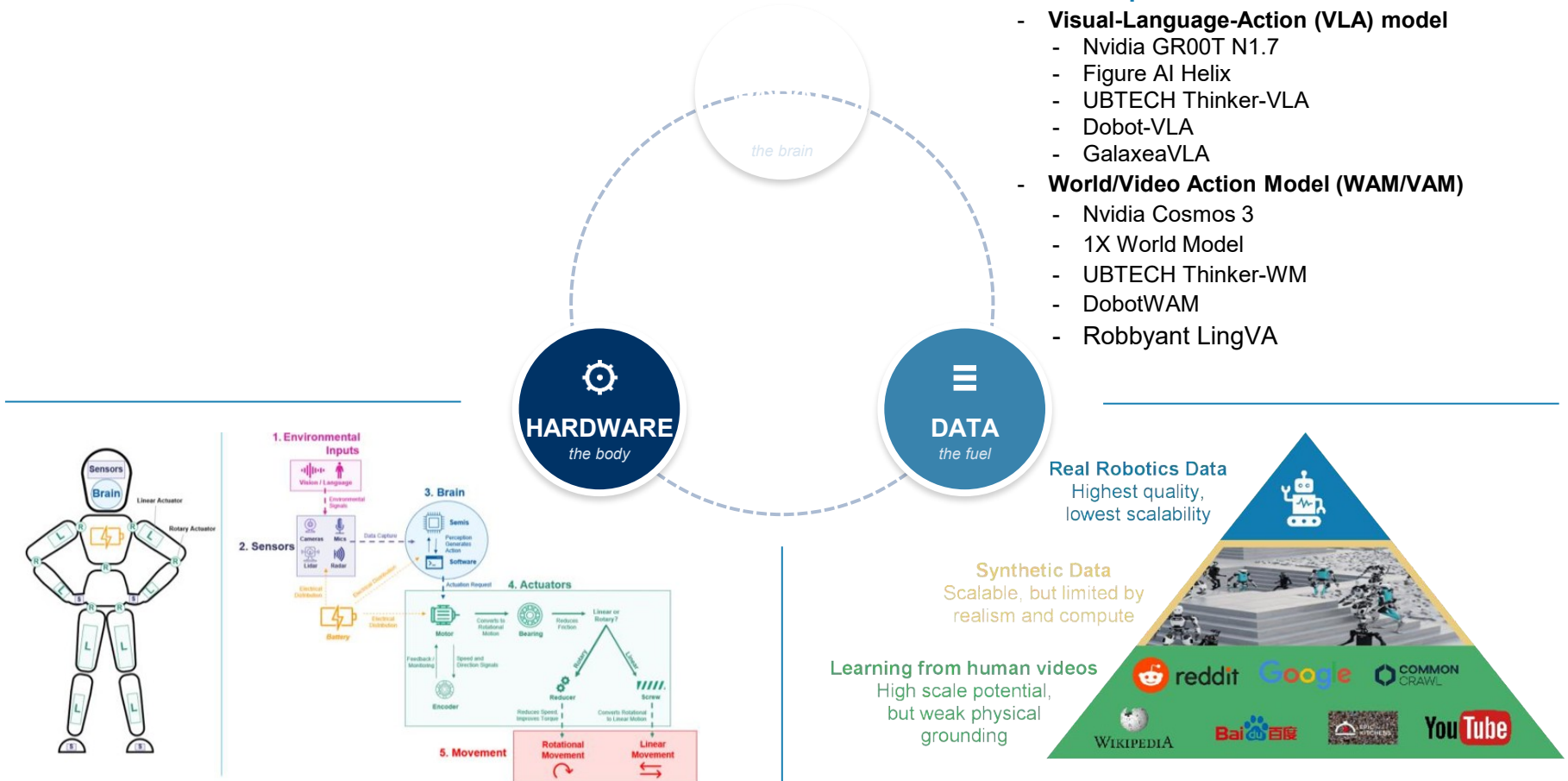
DEEPRobotics
云深处科技

Source: PitchBook, GGII, company/news announcements, Morgan Stanley Research. Note: Includes all notable funding disclosed based on our knowledge and some transactions may not be captured.

What Makes a Humanoid?

For example:

- **Visual-Language-Action (VLA) model**
 - Nvidia GR00T N1.7
 - Figure AI Helix
 - UBTECH Thinker-VLA
 - Dobot-VLA
 - GalaxeaVLA
- **World/Video Action Model (WAM/VAM)**
 - Nvidia Cosmos 3
 - 1X World Model
 - UBTECH Thinker-WM
 - DobotWAM
 - Robbyant LingVA

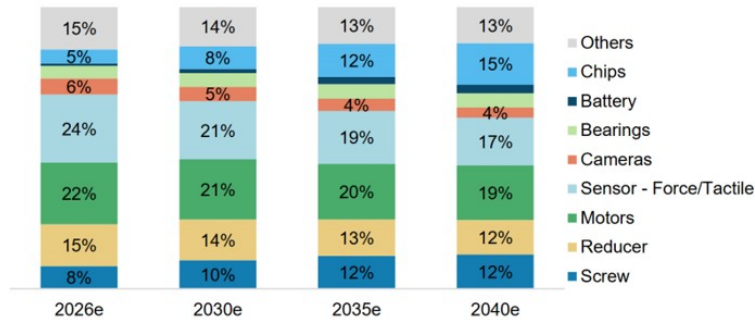


Source: Morgan Stanley Research.

Hardware BoM Breakdown

Key components include screws, reducers, motors, and sensors

BoM Cost Breakdown

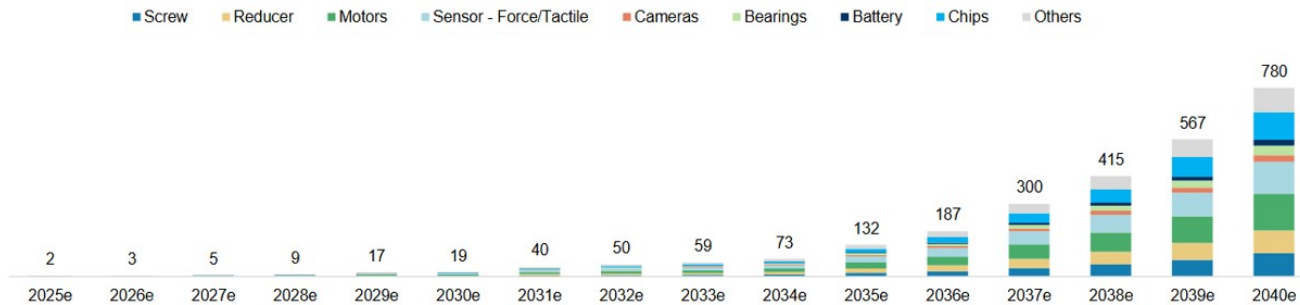


Combining demand from other robots, components are set for exponential growth



The component market is projected to have a global TAM of US\$780bn by 2040

Component TAM Market (US\$'bn)



Source: Morgan Stanley Research estimates. Note: The market size of the different components are as of 2025e; the multiple represents the difference compared to the 2025e market size.

An Industry at an Early Stage

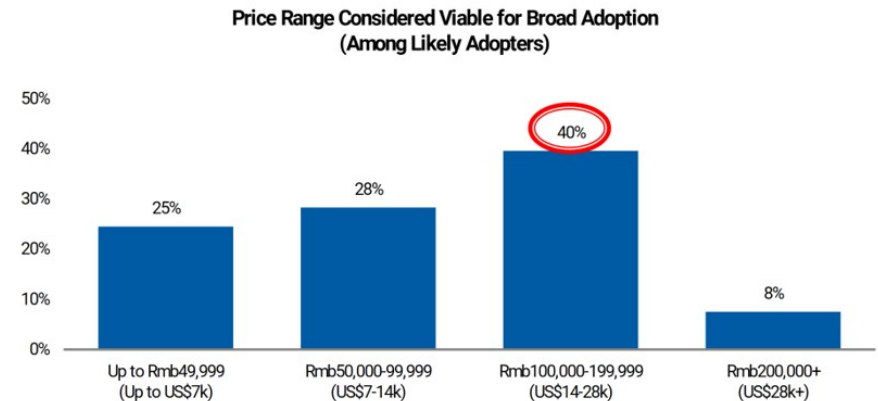
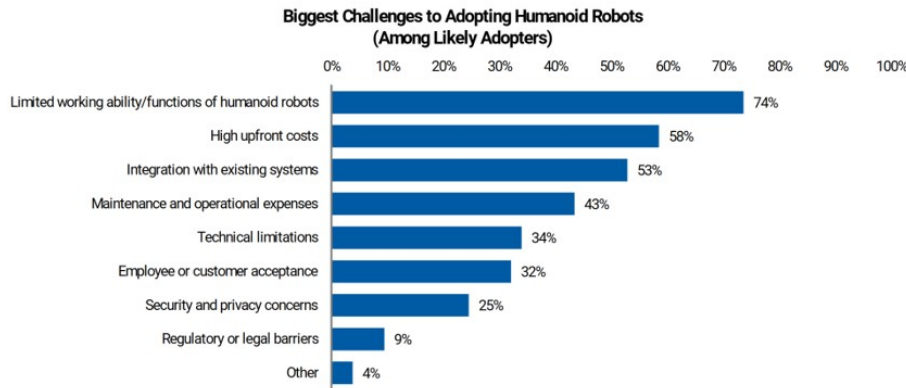
All three pillars of humanoid robotics have room for further improvement.

- **Model** – the path has not converged yet (VLA or World Model). The functionality and generalization capability are still limited. Commercial value to be proven (ROI and synergy with existing systems);
- **Data** – Rare and expensive, unlike LLM’s internet-scale of text/video data.
- **Hardware** – Cost, performance (accuracy, efficiency, and reliability).

Furthermore, as volumes ramps up, considerations extend to data/cybersecurity, government regulation/standards, and geopolitical constraints across both hardware and software.

According to AlphaWise Survey, key adoption barriers are limited functionalities, costs, and integration with existing systems

Companies expect Rmb100,000-199,999 (US\$14-28k) per unit of robots to be the sweet spot for broader adoption



Source: AlphaWise, Morgan Stanley Research. (Total respondents n=86). See the full report - [China Humanoids Survey: High Willingness to Adopt Meets Premature Products](#)

Zooming in to China: 2026, an Initial Small-scale Commercialization



Source: Morgan Stanley Research.

More Adoption Examples

Spirit AI's humanoids in CATL battery packing line



Midea Robot Ultra, a wheel-based 6-arm humanoid, working in washing machine production line



Collaboration of humanoid robot, cobot arm, and quadruped robot



Galbot's unmanned retail kiosk



DOBOT's Atom humanoid operating a popcorn counter autonomously



Robotera's L7 working in SF Express sorting line



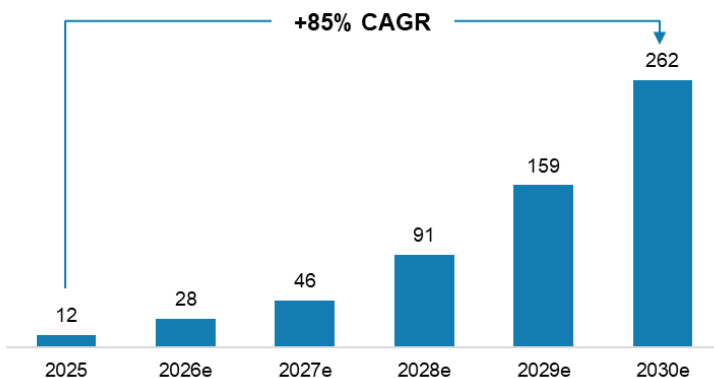
Source: Humanoid Daily, Midea, Galbot, Dobot, TechNode, Morgan Stanley Research.

Humanoid Robots' Shipment Volume by 2030 to be ~9x That in 2026

...supported by a series of government policy.

We currently forecast China's humanoid shipments to rise at an 85% CAGR over 2025-30e...

China Humanoid Volume ('k unit)



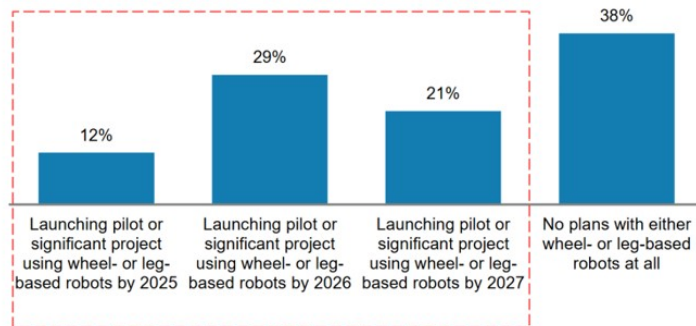
National Level Policy	
The 15th Five-Year Plan	Named robotics as a strategic emerging industry for the first time
Local Government Target	
Zhangjiang	Production to reach 20k units in 2027 , with core value chain reaching Rmb20bn
Shenzhen	To develop 10 core companies with annual revenue exceeding Rmb10bn, with total industry size reaching Rmb100bn by 2027
Shanghai	To scale the industry to Rmb50bn by 2027 , with subsidies of 30% for model R&D, 20% for adoption projects, and 50% for ecosystem projects
Beijing	To reach annual production capacity of 10k units by 2027 , with subsidies across the entire value chain
Hangzhou	To scale the embodied robotics industry above Rmb20bn and related industries above Rmb30bn by 2027

Source: Government announcement, Morgan Stanley Research estimates. Note: This humanoid sales to external parties, we acknowledge and do not include prototype, internal R&D and use.

Strong Government Support and Enterprises' High Willingness to Adopt

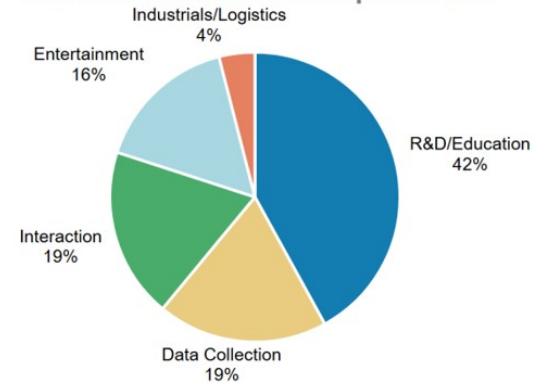
Our AlphaWise survey indicates a strong adoption willingness amid the industry's early stage, supporting the rapid use case verification process and initial adoption

% Share of Organizations Launching Projects with Wheel- or Leg-Based Humanoid Robots (Among Total Sample)



Government and SoE support is a big part of early commercialization

China 2025 Humanoid Shipment Mix



Date	Project	Value (Rmb'mn)
14-Jul-2025	China Mobile (Hangzhou)	124
20-Oct-2025	Guangxi Data Collection Center	126
5-Nov-2025	Sichuan Zigong Data Collection Center	159
25-Nov-2025	Guangxi Fangchenggang Data Collection Center	264
28-Nov-2025	Jiangxi Jiujiang Data Collection Center	143
22-Dec-2025	Huizhou Huiyang Data Collection Center	60
29-Dec-2025	Hohhot City Embodied Intelligence Tech Center	78
24-Apr-2026	State Grid	6,800

Source: AlphaWise, Morgan Stanley Research, Company/government announcement. (Total respondents n=86). See the full report - [China Humanoids Survey: High Willingness to Adopt Meets Premature Products](#)

China is Leading in Robotics

Government leadership

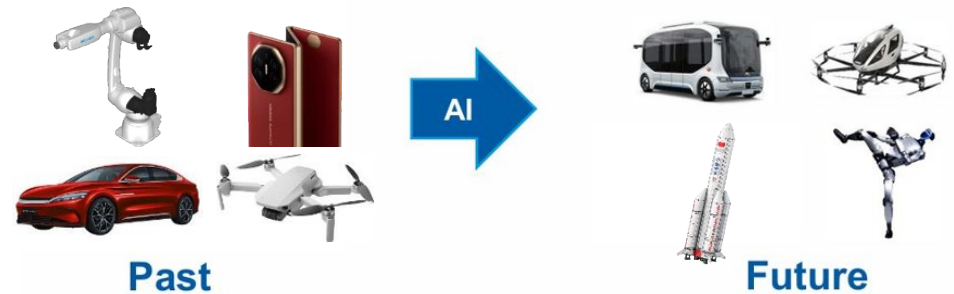
- Mentioned as “**A Strategic Emerging Sector**” in the 15th FYP.
- **Local governments are building their own “data early orders collection centre”**, providing accounting for 19% of total shipments in 2025.
- **Over Rmb187bn (~US\$27bn) government guidance funds** was established for robotics industry.
- **Established a National Standard** for humanoids.

Ecosystem – Support from upstream to downstream

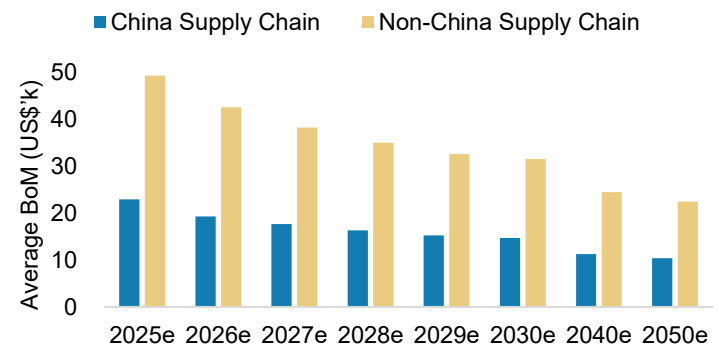
- **Supply chain:** Our checks indicate integrators use mostly local components, except for chips.
- **Rich data:** China’s diverse manufacturing scenarios provide fuel for robot model fast iteration.
- **Applications:**
 - Beyond government support, enterprises across various industries are also eager to adopt frontier technology, providing a testing environment for humanoids

Source: Morgan Stanley Research estimates.

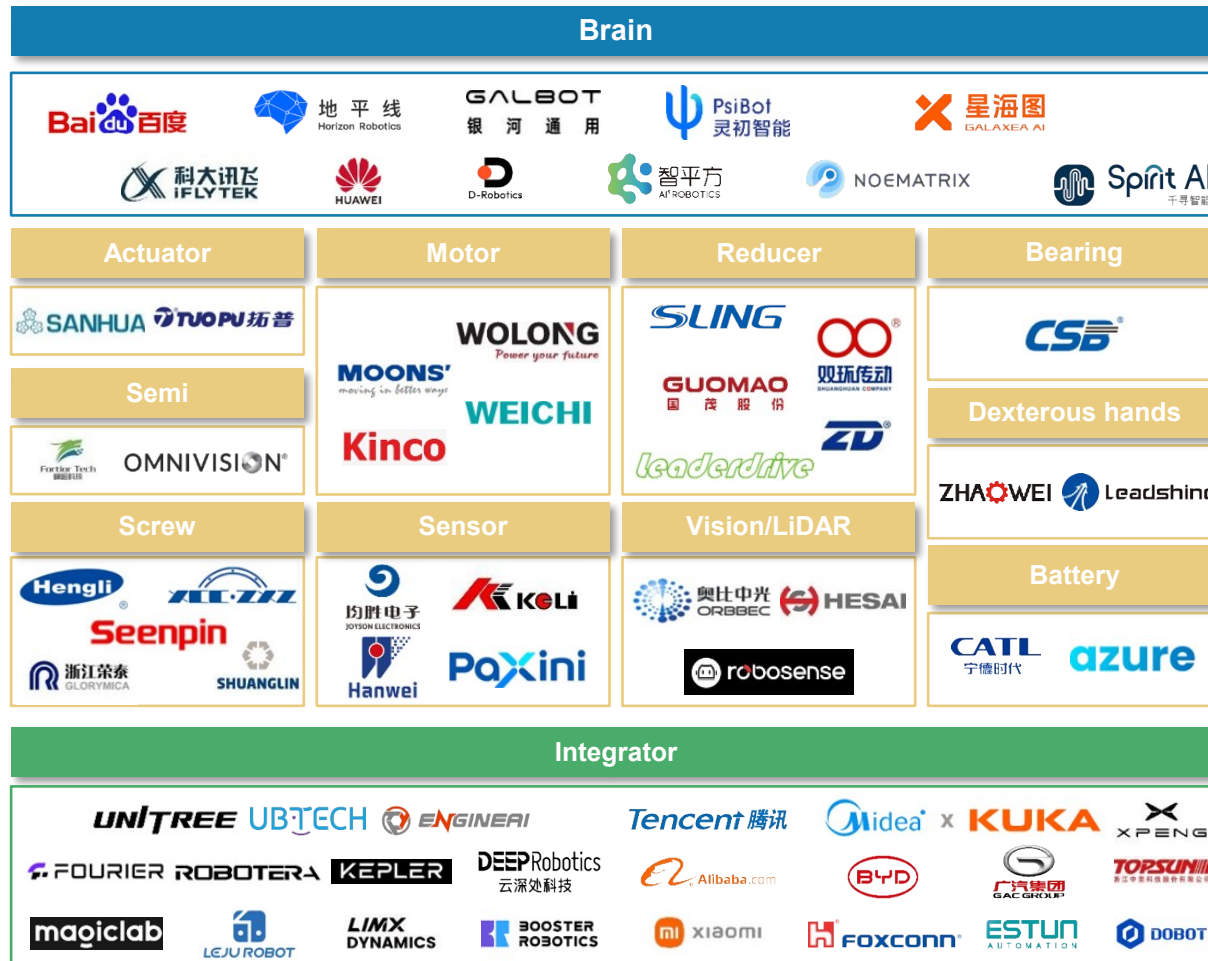
Manufacturing know-how is being converted to robots



Significant cost advantage vs. non-China supply chain



China Humanoid Value Chain List (Both Private And Public Companies)



Source: Morgan Stanley Research.

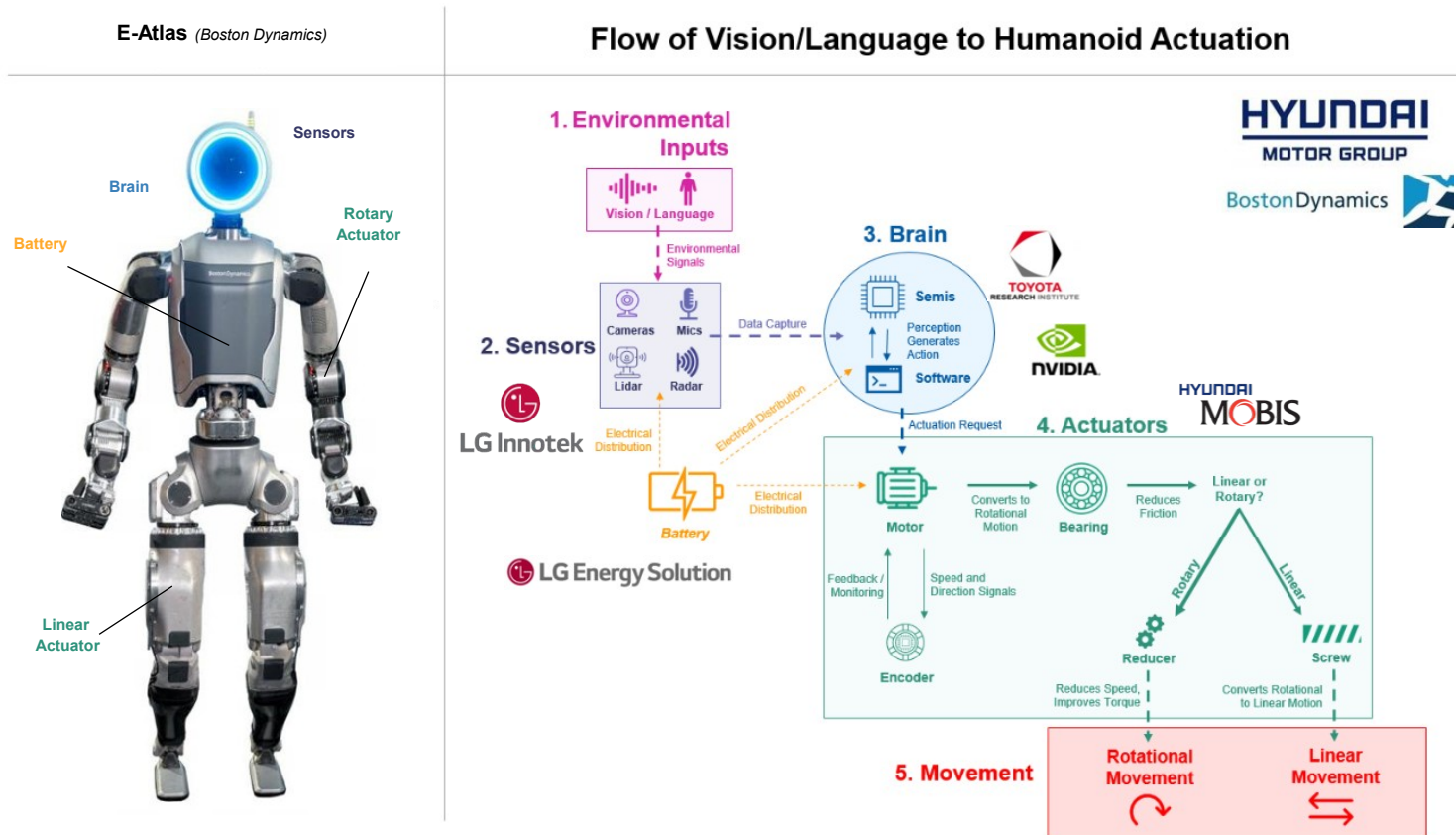
Hyundai Motor Group: Leveraging Synergies to Build a Moat



Leveraging Synergies to Build a Moat	
Strengths & Synergies	Weakness & Challenges
<ul style="list-style-type: none"> • Brand equity enhanced under Hyundai Motor Group • Leverage of HMG's manufacturing expertise and component supply chain • HMG's push for internal deployment across its global operations • Potential for continued/additional financial support from the group 	<ul style="list-style-type: none"> • More research-focused traditionally, with limited commercial deployment to date • Lagging in certain AI and vision-based perception technologies • Cost competitiveness versus global peers

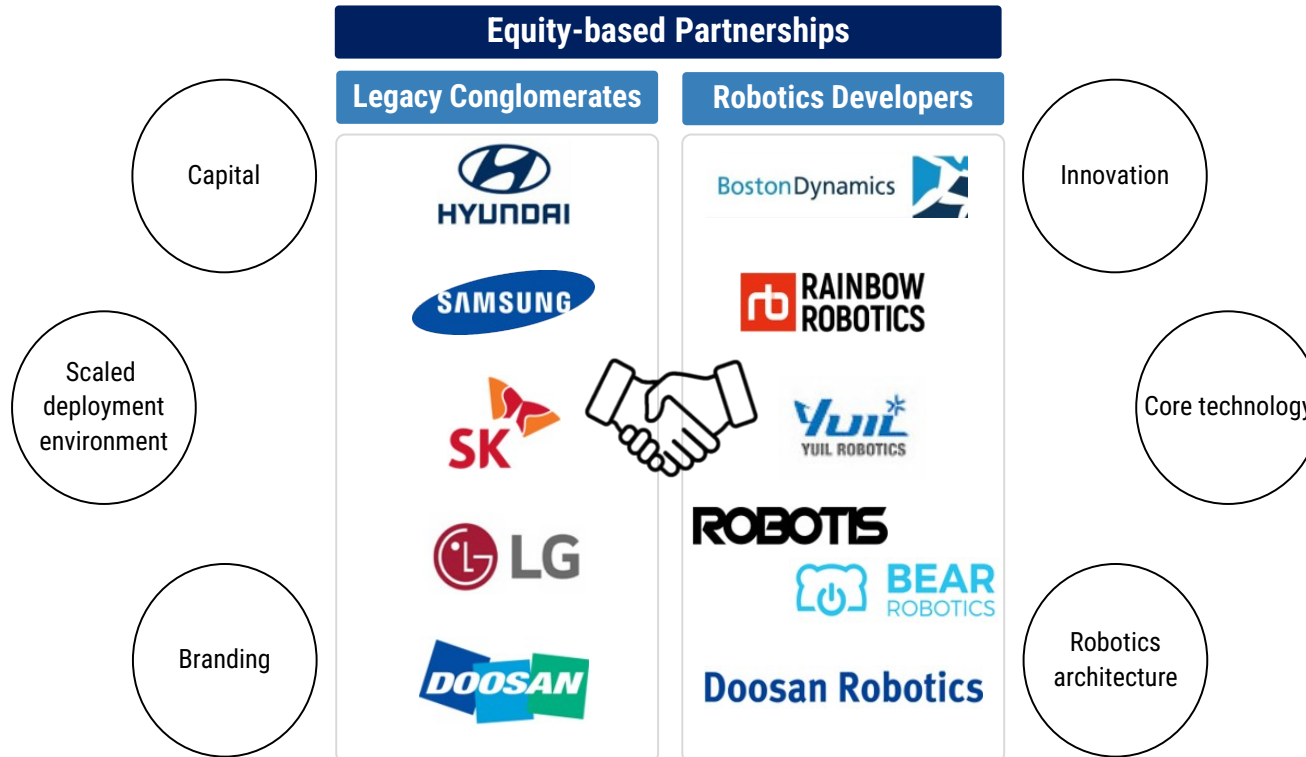
Source: Morgan Stanley Research.

Collaborating Across Each Layer of the Humanoid Value Chain



Source: Morgan Stanley Research.

Humanoid Landscape in Korea



Source: Morgan Stanley Research.

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Stock Rating Category	Coverage Universe		Investment Banking Clients (IBC)			Other Material Investment Services Clients (MISC)	
	Count	% of Total	Count	% of Total IBC	% of Rating Category	Count	% of Total Other MISC
Overweight/Buy	1542	42%	465	51%	30%	707	43%
Equal-weight/Hold	1571	43%	369	40%	23%	723	44%
Not-Rated/Hold	3	0%	0	0%	0%	1	0%
Underweight/Sell	551	15%	86	9%	16%	201	12%
Total	3,667		920			1632	

Data include common stock and ADRs currently assigned ratings. Investment Banking Clients are companies from whom Morgan Stanley received investment banking compensation in the last 12 months. Due to rounding off of decimals, the percentages provided in the "% of total" column may not add up to exactly 100 percent.

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COMPANY (TICKER)	RATING (AS OF)	PRICE* (06/15/2026)
Chelsea Wang		
China Railway Group (601390.SS)	E (05/12/2022)	Rmb4.66
China Railway Group (0390.HK)	E (08/11/2025)	HK\$3.69
China State Construction Engineering (601668.SS)	U (08/11/2025)	Rmb4.75
Han's Laser (002008.SZ)	O (10/02/2025)	Rmb124.20
Hefei Meyer Optoelectronic Technology (002690.SZ)	E (09/08/2025)	Rmb14.65
iRay Technology Company Limited (688301.SS)	E (01/16/2025)	Rmb116.00
Neway Valve (Suzhou) Co., Ltd (603699.SS)	O (09/12/2025)	Rmb56.00
Shanghai BOCHU Electronic Technology (688188.SS)	O (08/22/2024)	Rmb159.30
Shenzhen Envicool Technology Co Ltd (002837.SZ)	O (08/19/2024)	Rmb70.53
Sheng Zhong		
Beijing Geekplus Technology Co., Ltd. (2590.HK)	O (08/07/2025)	HK\$12.82
Centre Testing International Group (300012.SZ)	E (11/18/2024)	Rmb14.41
CRRC Corp Ltd (1766.HK)	U (01/22/2026)	HK\$5.49
CRRC Corp Ltd (601766.SS)	U (01/22/2026)	Rmb5.76
DR Laser (300776.SZ)	E (12/17/2021)	Rmb145.29
Estun Automation Co Ltd (002747.SZ)	U (06/30/2022)	Rmb33.23
Haitian International Holdings Limited (1882.HK)	E (09/08/2025)	HK\$21.08
Hongfa Technology Co Ltd (600885.SS)	O (05/23/2023)	Rmb32.76
Jiangsu Guomao Reducer Co Ltd (603915.SS)	U (01/08/2025)	Rmb15.99
Jiangsu Hengli Hydraulic Co.Ltd (601100.SS)	O (05/23/2023)	Rmb116.14
Jingsheng Mechanical & Electrical Co (300316.SZ)	U (01/08/2025)	Rmb52.15
Leader Harmonious Drive Systems (688017.SS)	O (01/22/2026)	Rmb372.62
Sany Heavy Industry Co., Ltd. (600031.SS)	O (01/08/2025)	Rmb19.19
Shenzhen Inovance Technology (300124.SZ)	++	Rmb69.30
Shenzhen SC New Energy Technology Corp (300724.SZ)	U (09/08/2025)	Rmb72.42
Sinotruk (Hong Kong) Limited (3808.HK)	E (05/19/2025)	HK\$45.92
Suzhou Maxwell Technologies Co Ltd (300751.SZ)	U (09/15/2023)	Rmb213.50
Times Electric (3898.HK)	E (01/22/2026)	HK\$40.74
WeiChai Power (2338.HK)	O (03/30/2026)	HK\$38.16
WeiChai Power (000338.SZ)	O (03/30/2026)	Rmb29.38
Wuxi Autowell Technology Co Ltd (688516.SS)	U (09/08/2025)	Rmb55.83
Wuxi Lead Intelligent (300450.SZ)	O (09/08/2025)	Rmb42.60
Zhejiang Dingli Machinery Co Ltd. (603338.SS)	O (11/05/2025)	Rmb49.53
Zhejiang Hangke Technology (688006.SS)	O (09/08/2025)	Rmb36.24
Zhejiang Shuanghuan Driveline Co. Ltd. (002472.SZ)	O (08/25/2023)	Rmb42.81
Zoomlion Heavy Industry (1157.HK)	O (09/08/2025)	HK\$8.30

Zoomlion Heavy Industry (000157.SZ)

O (09/08/2025)

Rmb7.63

Stock Ratings are subject to change. Please see latest research for each company.

* Historical prices are not split adjusted.

INDUSTRY COVERAGE: S. Korea Autos & Shared Mobility

COMPANY (TICKER)	RATING (AS OF)	PRICE* (06/16/2026)
Young Suk Shin		
Hankook Tire & Technology Co Ltd (161390.KS)	O (11/10/2025)	W71,000
Hanon Systems (018880.KS)	U (01/14/2022)	W5,190
Hyundai MOBIS (012330.KS)	O (01/24/2025)	W660,000
Hyundai Motor (005380.KS)	O (11/27/2024)	W640,000
Kia Corp. (000270.KS)	O (04/26/2022)	W170,200
LG Energy Solution (373220.KS)	E (04/03/2025)	W410,500
Mando (204320.KS)	E (02/05/2024)	W76,900
Samsung SDI (006400.KS)	O (04/28/2026)	W549,000
SNT Motiv Co. Ltd. (064960.KS)	E (05/01/2026)	W30,700

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