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The Impact of Embodied Intelligence and AI Leasing on the Commercialization Process of Humanoid Robots

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Keywords: Embodied Intelligence, AI Leasing, Data Assetization, Humanoid Robots

Abstract: This study examines the impact of embodied intelligence, AI leasing, and data assetization on the commercialization of humanoid robots through three dimensions. Key findings reveal: Technologically, embodied intelligence enhances dynamic task success rates and reduces hardware costs by optimizing motion control algorithms (e.g., hierarchical reinforcement learning) and perception-cognition fusion architectures (VLA models), surpassing industrial usability thresholds. Economically, AI leasing restructures cost models via dual-track computility/robot leasing, converting CapEx to OpEx to achieve per-unit costs significantly below human labor. This triggers economies of scale in manufacturing (MIT-validated: adoption surges when leasing costs fall below 70% of human labor expenses). Ecologically, data assetization bridges training gaps with simulation data, activates capital cycles through financialization, and lowers R&D barriers via standardization (e.g., improved training efficiency on heterogeneous datasets), establishing collaborative industrial foundations. These forces form a self-reinforcing cycle: technological cost reduction → leasing-driven scaling → data-enabled iteration, accelerating global market growth. Future competition will center on federated learning privacy frameworks and physical agent protocol dominance. Chinese enterprises must secure rule-making power through policy-technology-capital tripartite synergy.

1. Introduction

2025 is regarded as a "breakout year" for the commercialization of humanoid robots. Driven by global tech competition and manufacturing upgrades, the industry is undergoing a historic transition from lab R&D to scaled commercial deployment. According to the latest statistics, the global market for humanoid robots is projected to reach RMB 6.339 billion in 2025, with China’s market demonstrating particularly outstanding performance—exceeding RMB 8 billion, representing an explosive 190% year-over-year growth from 2024. Notably, Gaogong Robotics Industry Institute forecasts the global market will surpass USD 20 billion by 2030, with a 78% compound annual growth rate. This growth trajectory significantly outpaces most emerging industries in their early stages, signaling that humanoid robots are evolving from "technological marvels" into genuine economic production factors, as illustrated in Figure 1.

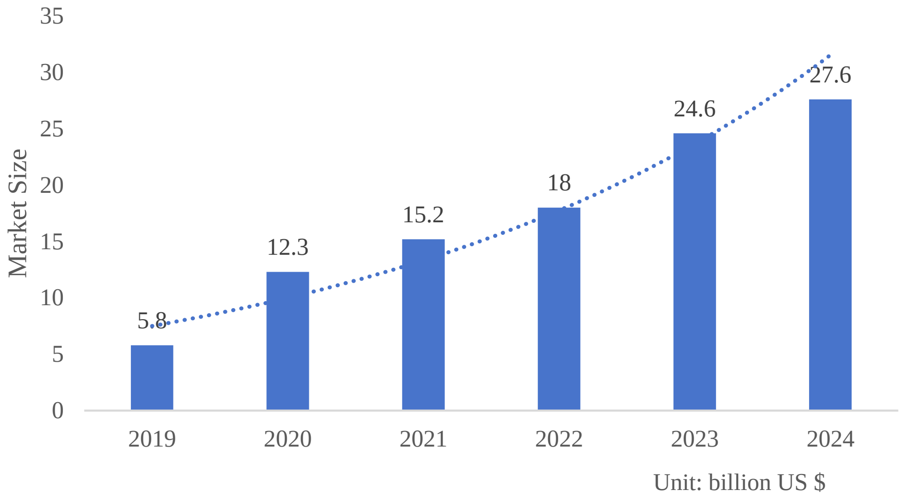

Figure 1 Global Humanoid Robots Market Size Presentation

Data Source: Data Bridge Market Research, Markets and Markets

Policy support has emerged as a critical catalyst for industrial acceleration, exemplified by China's Guidelines for Innovative Development of Humanoid Robots outlining a "two-phase" strategy: achieving breakthroughs in core technologies—"Brain" (decision intelligence), "Cerebellum" (motion control), and "Limbs" (actuation systems) by 2025 to establish a preliminary innovation system, followed by building an internationally competitive industrial ecosystem by 2027. The 2025 Government Work Report further elevated embodied intelligence to a "future industry" alongside AI and biomanufacturing, cementing its strategic status. This policy-market synergy has driven the Yangtze River Delta to cluster over 60% of robotics OEMs—forming an integrated R&D-manufacturing-application loop—while Beijing and Chongqing deployed 10,000+ robot application scenarios.[1]

However, commercialization faces triple challenges: hardware performance bottlenecks, scenario adaptability gaps, and prohibitive unit costs. These issues hinge on synergistic innovation between technology and business models, where embodied intelligence algorithms define robotic operational boundaries while AI leasing restructures cost frameworks and market penetration pathways—a convergence now propelling the industry toward a commercialization tipping point.[2]

2. Literature Review and Prospects

2.1 Embodied Intelligence Research

As a concept first proposed in 1950, embodied intelligence has gained widespread application in recent years with advancements in multimodal large models.[3] By deeply coupling perception, cognition, and physical execution, it is reshaping the commercialization of humanoid robots through two dimensions: motion control & dynamic behaviors and perception-cognition integration. Key concepts, experimental findings, and dimensional frameworks from seminal literature are summarized in Table 1.

Embodied Intelligence is an intelligent paradigm centered on adaptive physical-environment interaction, which endows robots with autonomous decision-making and execution capabilities in dynamic scenarios through high-precision motion control and multimodal cognitive fusion.[4] Its essence lies in the deep coupling of physical interaction intelligence and environmental cognitive intelligence: Motion Control and Dynamic Behaviors focus on algorithm-actuation synergy to resolve stability and energy efficiency challenges in unstructured environments; Perception-Cognition Integration enables zero-shot task transfer and intent comprehension in open-world scenarios.[5] This framework requires breaking through dual bottlenecks—mechanical dynamics constraints and perception-decision fragmentation—ultimately evolving machine intelligence from laboratory isolation to productive integration, thereby providing the core driving force for humanoid robot commercialization.

Table 1 Core Concepts / Experimental Findings and Dimensions of Embodied

Author	Time	Core Concepts / Experimental Findings	Dimensions
Wandong Sun et al.	2025	ULC achieved a 92%+ dynamic grasping success rate with 35% reduced bipedal energy consumption on Unitree G1 through phased reinforcement learning (PPO)	Motion Control and Dynamic Behaviors
Shanghai AI Lab, Liu M, Wang Z, et al	2025	By integrating a multi-critic reward mechanism with curriculum exploration strategies, this approach resolves dynamic balance challenges for humanoid robots autonomously recovering from falls, achieving a 40% enhancement in disturbance resistance	Motion Control and Dynamic Behaviors
Siyuan Huang, Liliang Chen, et al.	2025	EnerVerse enables robots to execute task commands by translating 4D world representations into physical actions through policy agents	Perception-Cognition Integration
Suneel Belkhale, Tianli Ding, et al.	2024	These policies not only allow for responding to language interventions, but can also learn from such interventions and outperform methods that learn from teleoperated interventions.	Perception-Cognition Integration

Data Source: arXiv, Crossref

2.2 AI Leasing Research

AI computility leasing, a cloud-based service model, enables on-demand access to AI computational resources without CapEx commitments for hardware procurement and maintenance. Robot leasing, as a critical segment of the humanoid robot industry chain, demonstrates substantial profit potential across industrial production and domestic service applications.[6] Collectively, these dual-track models constitute AI leasing, accelerating the commercialization of humanoid robots. Key concepts and dimensions from seminal literature are summarized in Table 2.

AI Leasing is an innovative model that decouples resource ownership from usage rights, restructuring humanoid robot commercialization cost structures through elastic computility supply and on-demand robotic services. AI computility leasing resolves technical feasibility by reducing R&D costs and accelerating algorithm iteration; Robot leasing overcomes market penetration barriers via economic model restructuring and scenario adaptation.[7]

Table 2 Key Concepts and Dimensions of AI Leasing Research

Author	Time	Core Concepts / Experimental Findings	Dimensions
Wang Yong et al.	2025	As a novel resource allocation paradigm, computility resource pooling demonstrates indispensable value in addressing challenges of short-term computility scarcity, guiding rational investment decisions, and optimizing computility resource allocation	AI Computility Leasing
Kang Yi	2024	Under identical conditions, plastering by humanoid robots halves labor requirements compared to traditional methods while enhancing on-site management efficiency	Robot Leasing
Zhao Yaohuan	2019	Computility resource pooling minimizes market constraints in IT development, establishing a pioneering computility paradigm; simultaneously, it drastically reduces costs for user hardware refresh cycles, accelerating the evolution of computility infrastructure	AI Computility Leasing
Lu Wei	2018	Deploying industrial robots in production lines effectively reduces costs, lowers labor input, and enhances product quality	Robot Leasing

Data Resource: CNKI

2.3 Data Assetization Research

Data Assetization refers to transforming traditional non-physical assets or physical asset rights into standardized digital forms through technologies like blockchain and big data.[8] The analysis unfolds across three dimensions: simulation data assetization, data financialization, and heterogeneous dataset standardization. Key concepts and dimensions from seminal literature are summarized in Table 3.

Digital assetization centers on activating the circulation value of data elements. By means of simulation environment modeling, heterogeneous resource integration, and financial instrument innovation, it constructs the foundational paradigm for the collaborative ecosystem of the humanoid robotics industry. Its essence lies in the deep synergy between the virtual training revolution and capital circulation engines. Synthetic data assetization liberates algorithm training from physical world constraints, Data asset financialization transforms static resources into cash flow engines, Standardized datasets reduce R&D costs for SMEs. Through converting robot operational data, simulation assets, and algorithmic models into quantifiable, tradable strategic resources, digital assetization is fundamentally reconstructing the commercialization process of humanoid robots.[9]

Table 3 Key Concepts and Dimensions of Data Assetization Research

Author	Time	Core Concepts / Experimental Findings	Dimensions
Chen Shenxiao	2025	The use of simulation data resolves the zero-fault-sample diagnosis issue caused by missing fault samples, providing effective data support for zero-fault-sample diagnosis under new operating conditions	Simulation Data Assetization
Chu Jiewang and Zhang Zifang	2025	Integrating attribute information from multiple data sources enables a more comprehensive characterization of the object	Heterogeneous Datasets Standardization
Zhang Lin et al.	2024	Digital resources become digital assets only when they generate value through utilization. This process of transforming digital resources into digital assets is termed "assetization"	Data Financialization
Li Aihua et al.	2023	The emerging characteristics of multi-source heterogeneous big data can be broadly summarized as: interconnectedness, diversity, variability, and consensus-driven nature	Heterogeneous Datasets Standardization
Xie Renqiang and Zhang Wende	2022	Ownership of digital resources on the blockchain is unequivocally defined at any given moment, enabling efficient and cost-effective rights confirmation, while infringement claims are relatively straightforward to assert	Data Financialization

Data Source: CNKI

2.4 Humanoid Robot Commercialization Research

Humanoid robots, which are also termed anthropomorphic robots, are robotic systems designed to mimic human morphology and behavior, specifically referring to types with biomimetic musculoskeletal structures.[10] When investigating their commercialization, the analysis should unfold along three core dimensions: breakthroughs in technological feasibility, restructuring of economic models and synergistic industry ecosystem development. Relevant conceptual frameworks and dimensional constructs in the literature are detailed in Table 4.

Breakthroughs in technological feasibility resolve dynamic environmental adaptation and cost bottlenecks; Restructuring of economic models validates the commercial closed loop of AI leasing contracts and digital assetization; Synergistic industry ecosystem development forms co-constructive mechanisms for policy frameworks, supply chains, and standardization initiatives. These three dimensions collectively shape the commercialization trajectory of humanoid robots.[11]

Table 4 Concepts and Dimensions in Key Literature on Humanoid Robot Commercialization

Author	Time	Core Concepts / Experimental Findings	Dimensions
Wang Tiexun et al.	2025	Tech-innovative enterprises must not only prioritize breakthroughs in core technologies but also focus on the transformation of their economic value	Breakthroughs in Technological Feasibility
Cao Fang and Chi Haotian,	2025	The upstream segments of the humanoid robot industry chain feature high product value-added, prompting proactive deployment by leading enterprises across major global economies	Restructuring of Economic Models
Chen Xiaohua et al.	2025	Industrial robots not merely drive industrial restructuring, but also enhance economic operational efficiency, optimize manufacturing processes and strengthen proactive technological catch-up capabilities	Synergistic Industry Ecosystem Development
Yu Zeliang et al.	2025	The application of industrial robots impacts urban industrial chain resilience through optimization of allocative efficiency, advancement of industrial restructuring and enhancement of innovation capabilities	Synergistic Industry Ecosystem Development
Zhang Zhibin et al.	2024	The penetration and integration of AI technologies—epitomized by industrial robots—facilitate efficient cross-sectoral and inter-regional flows of production factors, expanding resource allocation domains while elevating allocation efficiency	Restructuring of Economic Models

Data Source: CNKI

2.5 Research Commentary

Existing studies have preliminarily outlined the developmental trajectory of humanoid robot commercialization through technological enablement, scenario validation, and institutional innovation. Future breakthroughs must be achieved in standardization of data asset pricing models, engineering deployment of multimodal technologies and global regulatory coordination, which can realize complete commercial conversion of physical-world interactive value into tradable digital assets.[12]

2.5.1 Conceptual and Dimensional Synthesis

Key concepts and dimensions for Embodied Intelligence, AI Leasing, Data Assetization and Humanoid Robot Commercialization are synthesized in Table 5.

Table 5 Relevant Concepts and Dimensions

Concept	Interpretation	Dimensions
Embodied Intelligence	Enhanced motor control and dynamic behavior improve robots' adaptability to dynamic scenarios, boosting energy efficiency and reliability; Perception-cognition integration optimizes human-robot interaction and extends application boundaries	Motion Control and Dynamic Behaviors Perception-Cognition Integration
AI Leasing	AI computility leasing enables ultra-low R&D costs while accelerating algorithm iteration, resolving technological feasibility issues; Robot leasing restructures economic models and scenario adaptation, increasing market penetration	AI Computility Leasing Robot Leasing
Data Assetization	Simulation data assetization fills data gaps caused by data scarcity; Data financialization transforms static resources into cash flow engines; Heterogeneous dataset standardization reduces R&D costs for SMEs	Simulation Data Assetization Heterogeneous Datasets Standardization Data Financialization
Humanoid Robot Commercialization	Breakthroughs in technological feasibility establish technical foundations for commercialization; Restructuring of economic models unlocks economic tipping points for manufacturing-scale adoption; Synergistic industry ecosystem development fosters sustainable industrial ecology	Breakthroughs in Technological Feasibility Restructuring of Economic Models Synergistic Industry Ecosystem Development

Data Source: CNKI

2.5.2 Mechanism of Action

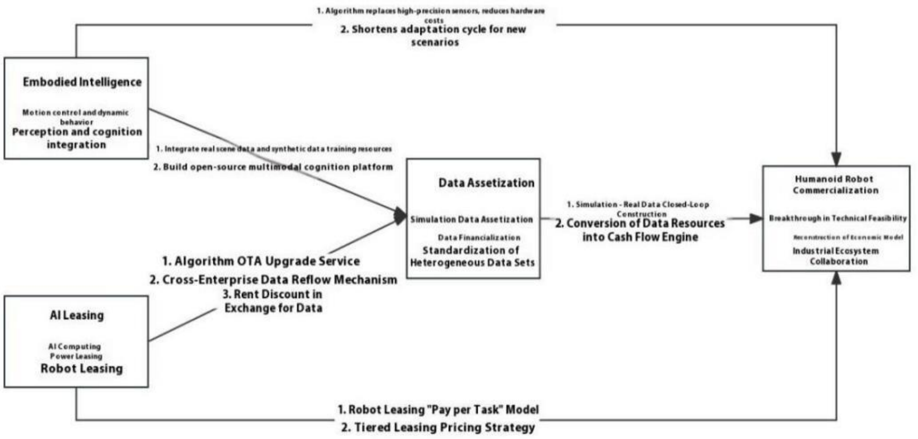

Figure 2 The Mechanism of Variables Action

Embodied Intelligence supplies data production capabilities, AI Leasing provides data acquisition scenarios, while Data Assetization multiplies value through technological innovation and institutional design. Throughout this process, enterprises must balance data compliance, technical synergy, and ecosystem co-construction, with the operational dynamics illustrated in Figure 2.

(1) Embodied Intelligence: Direct Breakthrough in Technological Feasibility

The Motor Control & Dynamic Behaviors Dimension realizes end-to-end joint control via hierarchical reinforcement learning, elevating dynamic task success rates, while its lightweight design reduces costs. In the Perception-Cognition Integration Dimension, multimodal generalization unifies visual-language-motor representations, shortening the adaptation cycle for new scenarios, and embedded lightweight models reduce cloud dependency.[13]

(2) AI Leasing: Direct Restructuring of Economic Models

In the AI Computility Leasing Dimension, dynamic resource allocation reduces algorithm training costs, accelerating development cycles for SMEs. And in the Robot Leasing Dimension, comprehensive maintenance packages (insurance + upkeep) lower client adoption costs. Task-based payment and tiered pricing models enable robotic commercialization.[14]

(3) Data Assetization: Synergistic Construction of Industrial Ecosystem

In the dimension of Simulation Data Assetization, the construction of a simulation-real data closed-loop advances the breakthrough in technical feasibility. In the dimension of Data Financialization, enriching the database through exchanging rent discounts for data during AI leasing, and linking with the dimension of heterogeneous dataset standardization, the transformation of data resources into a cash flow engine is realized by leveraging real-scenario data and synthetic data training resources provided by embodied intelligence.

3. Status and Driving Factors Analysis

3.1 Current Status of Humanoid Robot Commercialization

3.1.1 Market Growth Momentum

According to statistics from the Zhongyan Puhua Industrial Research Institute， the global humanoid robot market is projected to reach RMB 6.339 billion in 2025, representing a 190% year-on-year increase from 2024. China's market share exceeds 50%, with an estimated scale of RMB 8 billion. The Gaogong Robotics Industry Research Institute projects that by 2030, the global humanoid robot market will surpass RMB 64 billion, with China's share rising to 32.7%.[15]

3.1.2 Technological Breakthroughs Driving Commercialization

Leading companies across various sectors are achieving breakthroughs in different technical areas: in motion control, Unitree's G1 robot performs 720-degree spin kicks with torque density increased to 360Nm, raising industrial grasping success rates to 92%; in autonomous battery swapping, Ubtech's Walker S2 pioneered 3-minute hot-swappable battery packs that extend operational endurance by 40%, enabling 24/7 continuous operation; for decision-making systems, the Beijing Innovation Center's "Huisi Kaiwu" platform achieves end-to-end task planning, reducing task misinterpretation rates in industrial scenarios to below 5%.[16]

3.1.3 Accelerated Application Deployment

With industrial manufacturing being the core application area for humanoid robots, several leading companies are actively involved. For example, Ubtech's Walker S2 performs material handling and assembly tasks at BYD and NIO production lines, with orders exceeding 500 units; Tesla's Optimus has entered the assembly lines at the Shanghai factory; Agility Robotics' bipedal robot Digit achieves 65% of human worker efficiency at GXO logistics centers.[17]

3.1.4 National Policy Support Amid Standardization Challenges

China's Ministry of Industry and Information Technology has set targets in its "*Guidelines for Innovative Development of Humanoid Robots*": achieving mass production by 2025 and international competitiveness by 2027. Municipal initiatives in Beijing and Shanghai have established industry funds exceeding RMB 70 billion to drive technological breakthroughs and scenario development. However, the current absence of unified performance testing and safety certification standards poses an urgent challenge requiring resolution.[18]

3.2 Analysis of Driving Factors for Humanoid Robot Commercialization

3.2.1 Technology-Driven Breakthrough: Embodied Intelligence Overcoming Commercialization Bottlenecks

Embodied intelligence empowers robots with perception, decision-making, and execution capabilities in real-world environments through physically embedded learning architectures, emerging as the key technological paradigm for addressing dynamic adaptability and cost control challenges in humanoid robots. Its commercial value manifests in three dimensions:

(1) Motion Control and Dynamic Behavior Optimization: Traditional robots are constrained by pre-programmed instructions and static environment dependence, while embodied intelligence achieves breakthroughs in dynamic behaviors through reinforcement learning and bionic algorithms.

(2) Integrated Perception-Decision Architecture: Multimodal perception fusion and embedded large models form a "cerebral-cerebellar" collaborative system for embodied intelligence, where multimodal perception upgrades, vision-language-action model implementation, and edge-based intelligent decision-making collectively overcome commercialization barriers.

(3) Technological Reconstruction of Hardware Cost Curves: Embodied intelligence algorithms replace hardware redundancy with software capabilities, accelerating localization of core components and driving cost compression to advance humanoid robot commercialization economically.

3.2.2 Model Innovation: AI Leasing Restructuring Business Logic

The AI leasing model transforms high capital expenditures into scalable operational expenses through capability-as-a-service and data assetization mechanisms, emerging as a core pathway to resolve economic feasibility in commercialization. Its innovative value manifests in a dual-track architecture:

(1) AI Computility Leasing Lowers R&D Barriers: Leasing AI computility compresses training costs while advancing technical standardization and enabling closed-loop OTA algorithm upgrades.

(2) Robotic Leasing Accelerates Market Penetration: The leasing model reduces adoption barriers through tripartite economic restructuring—cost structure transformation, scenario penetration deepening, and technology validation acceleration—transitioning humanoid robots from technological demonstrations to productive assets. This activates short-cycle demand and stimulates market vitality starting from industrial necessities.

3.2.3 Digital Assetization Forging Industrial Closed Loops

Digital assetization systematically reconstructs cost structures and value chains for humanoid robot commercialization by converting operational data, simulation models, and algorithmic capabilities into quantifiable, tradable, and iterable strategic resources. Its core impact operates through dual mechanisms: foundational technology construction enhances algorithm generalization capabilities, while cost restructuring drives continuous compression of R&D marginal costs. Consequently, digital assetization evolves from a technical element into infrastructure, whose maturity directly determines commercialization breakout velocity and competitive landscapes.

4. Implementation Pathways and Innovation Strategies

The integration of embodied intelligence, AI leasing, and humanoid robot commercialization requires dual transitions in technological value and business models through the mediating variable of digital assetization. The essence of humanoid robot commercialization lies in converting interactive value from the physical world into tradable digital assets via digital assetization. Embodied intelligence provides data production capabilities while AI leasing supplies data acquisition scenarios, with digital assetization achieving value multiplication through technological innovation and institutional design. Embodied intelligence enables technological breakthroughs, AI leasing drives model innovation, and digital assetization realizes value reconstruction—forming the three pivotal supports for commercialization. Enterprises must leverage digital assetization as the fulcrum, establishing a virtuous cycle connecting technology, assets, and scenarios through dynamic digital pricing frameworks and gradual scenario penetration. Policy support, collective standard-setting, and ecosystem synergies become critical breakthrough factors, ultimately propelling humanoid robots from laboratory prototypes to cross-industry deployment, achieving a collaborative transition from machines to digital partners in production ecosystems, as shown in Figure 3.

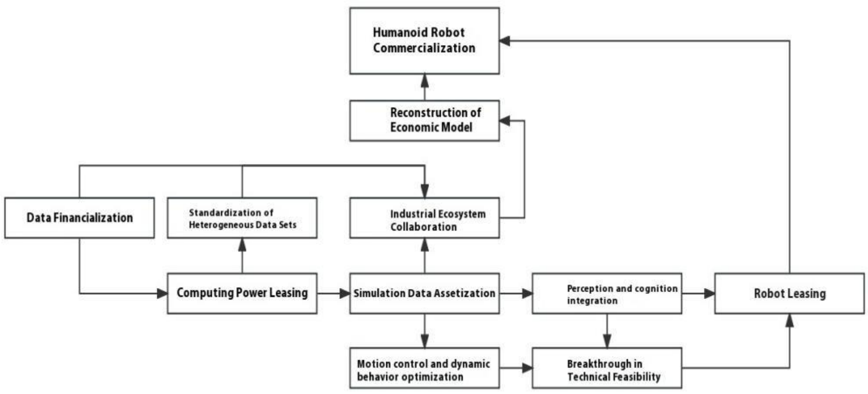

Figure 3 Humanoid Robot Commercialization

4.1 Embodied Intelligence Implementation Pathway: Core Engine for Technological Feasibility Breakthroughs

Embodied Intelligence systematically resolves core technological bottlenecks in humanoid robot commercialization through two primary pathways: motion control and dynamic behavior optimization, and perception-cognition integration.

4.1.1 Motion Control and Dynamic Behavior

In motion control, it achieves end-to-end mapping from sensor signals to joint actions via hierarchical reinforcement learning architectures, while hybrid rigid-flexible actuation designs reduce mechanical inertial energy consumption—elevating dynamic environmental adaptability from laboratory-grade to industrial-grade reliability.

4.1.2 Perception-Cognition Integration

For perception-cognition, constructing unified vision-language-action representation spaces enables cross-modal semantic alignment and edge-based lightweight inference, significantly enhancing open-task generalization capabilities. This technological paradigm directly drives substantial hardware cost reduction and crosses industrial usability thresholds, establishing the foundation for upgrading humanoid robots from demonstration devices to productive assets.

4.2 AI Leasing Implementation Pathway: Key Route for Economic Model Restructuring

AI leasing reconstructs the business logic and economic models for humanoid robots through dual-track mechanisms of computility power leasing and robotic leasing.

4.2.1 Computility Leasing

Computility Leasing decouples ownership from usage rights of computility resources, converting fixed R&D costs into pay-per-use variable expenditures—significantly compressing algorithm development marginal costs and triggering technology accessibility across long-tail markets.

4.2.2 Robotic Leasing

Robotic leasing ransforms capital expenditures (CapEx) into operational expenditures (OpEx) through risk-structured contract designs (where lessors absorb depreciation and obsolescence risks) and dynamic pricing game models (optimizing resource allocation via Nash equilibrium), reducing per-unit operational costs below human labor thresholds to activate manufacturing scale economies.

These dual mechanisms synergistically form a deployment-data feedback-algorithm optimization closed loop, where exabyte-scale scenario data feeds industry-level technological iterations, fundamentally resolving commercialization economic feasibility challenges.

4.3 Data Assetization Strategy: Foundational Infrastructure for Industrial Ecosystem Synergy

Data assetization constructs an industry-level collaborative ecosystem through three tiers: simulation data assetization, data financialization, and heterogeneous dataset standardization.

4.3.1 Simulation Data Assetization

Simulation data assetization employs physics-embedded neural radiance fields and domain-randomized transfer learning to significantly compress simulation-to-reality failure rates, replacing the majority of physical testing requirements.

4.3.2 Data Financialization

Data financialization utilizes blockchain-based ownership verification to tokenize operational data rights, activating capital circulation through collateralized financing and algorithm API subscriptions—thereby reducing financing costs for tech innovators.

4.3.3 Heterogeneous Dataset Standardization

Heterogeneous dataset standardization implements tiered open architectures (real-time updates for hot data / low-cost storage for archived data) and cross-platform protocol unification, enhancing training efficiency while shortening multinational collaboration cycles.

Collectively, these mechanisms advance technological democratization and transform data resources into strategic assets that define industrial competition rules.

5. Conclusions and Recommendations

5.1 Research Conclusions

Embodied intelligence, AI leasing, and data assetization constitute the core triangular driver framework for humanoid robot commercialization. As the technological engine, embodied intelligence breaks through industrial usability thresholds via lightweight motion control algorithms and perception-cognition integration, reducing hardware costs to propel technical feasibility from laboratory demonstrations to scaled deployment. Serving as the economic lever, AI leasing restructures cost models through dual-track computility/robot leasing, lowering per-unit operational costs below human labor benchmarks while activating manufacturing scale economies via dynamic pricing game mechanisms and data feedback closed loops. Data assetization builds the ecological foundation by leveraging simulation data to fill training gaps, financialization to unlock capital value, and standardization to reduce collaboration costs—shifting the industry from isolated innovation to co-evolution. These elements synergistically form a "Technology Cost Reduction-Leasing Scale Expansion-Data Feedback" enhancement loop, driving humanoid robots' transition from fragmented technological breakthroughs toward systemic commercial ecosystems.

5.2 Recommendations and Countermeasures

5.2.1 Integrated Strategy for Hierarchical Reinforcement Learning and Lightweight Materials

In the embodied intelligence dimension, enhance hardware-software co-design for motion-perception systems by promoting deep integration of hierarchical reinforcement learning and lightweight materials. This replaces high-precision sensors with algorithms to reduce hardware costs while improving dynamic environmental adaptability. Concurrently, the enterprise should establish an open-source multimodal cognitive foundation through a national vision-language-action model platform integrating real-world and synthetic training data, standardizing cross-task generalization capabilities to shorten new scenario adaptation cycles from months to under 48 hours. Additionally, the government should implement embodied intelligence algorithm certification systems with R&D subsidies for enterprises adopting domestic open-source frameworks to accelerate technology diffusion.

5.2.2 Tiered Leasing Pricing Strategy

The enterprise should implement a tiered leasing pricing strategy: for short-cycle scenarios, it should adopt activity-based dynamic pricing bundled with comprehensive insurance and maintenance packages to lower trial costs for customers; for industrial long-term leases, it should deploy task-based payment models coupled with over-the-air (OTA) algorithm upgrades to ensure continuous efficiency gains. Furthermore, the enterprise must establish cross-enterprise data feedback mechanisms that require lessees to contribute partial scenario data to public training pools. This fosters an algorithmic iteration flywheel effect where data contributions earn rental discounts in return. In addition, the government should incentivize financial institutions to develop robotic leasing insurance covering equipment failures and liability claims to mitigate lessors' risk exposure.

5.2.3 Data Assetization Strategy

The enterprise can bridge the simulation-reality gap by establishing closed-loop simulated-real data systems. It should pilot training-integrated production parks in free-trade zones, allowing robots to collect anonymized operational data during factory tasks, thereby drastically shortening deployment cycles. From the standpoint of government, it should initiate data financialization pilots by enabling regional trading of Data Asset Scrips (DAS), supporting operational data-collateralized financing to reduce innovators' funding costs.

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