

NETEASE LINGDONG

Leader in Construction Machinery Intelligence

Mining | Ports | Concrete Mixing Stations |
Emergency Rescue | Road Construction



About NetEase Lingdong

NetEase Lingdong is the NetEase robotics brand focused on smart construction machinery. Powered by proprietary industrial large models, it drives NetEase's AI and robotics R&D and applications, demonstrating NetEase's commitment and capability in bringing AI into physical industries.

With two core products—loading and excavating robots—its superior performance and adaptability serve mining, batching plants, ports, infrastructure, emergency rescue, and vocational education.

With successful cases across multiple provinces of China, it helps address safety risks and eases chronic labor shortages in construction, earning widespread user acclaim.

SOLUTIONS

Labor Shortage
High Safety Risks
Low Digitalization

Pain Points

Remote Smart Control
Smart Loading

Scenarios

Mining
Ports
Batching Plants
Emergency Rescue

Applicable Equipment



Excavator Loader Electric shovel ...

Awards & Honors



Invention Patents
500+

Won the German iF Design Award,
the "Oscars of Design"

Papers Published
200+

2023 Outstanding Case, MIIT
Industrial Metaverse Collaborative
Development Organization

Second Prize, Sci-Tech Innovation
Track, Zhejiang Round, 2025
"Data Element X" Competition

CAC 2023 Top 10 Innovative
Cases of Chinese Internet
Enterprises

Core Technology

"MechMind": The World's First Embodied AI Training Framework for Construction Machinery

The world's first embodied AI training framework for construction machinery. It merges a 3-stage paradigm (video learning + expert data + reinforcement learning) to grant machines dynamic adaptability and continuous evolution. This enables rapid scenario migration across mine loading, plant stacking, ship-hold clean-up, and factory transport. It will further expand to agricultural robotics, smart manufacturing, and logistics and warehousing, defining the future industrial AI agent ecosystem.

"MechMind"

- Scalable & Diverse Scenarios

The framework is highly versatile and scalable. Successfully applied in mines, ports, and batching plants.

- Scenario-Driven Skill Training

Trains models with scenario data into executable "skills," forming core abilities like precise perception, efficient planning, and real-time decision-making.

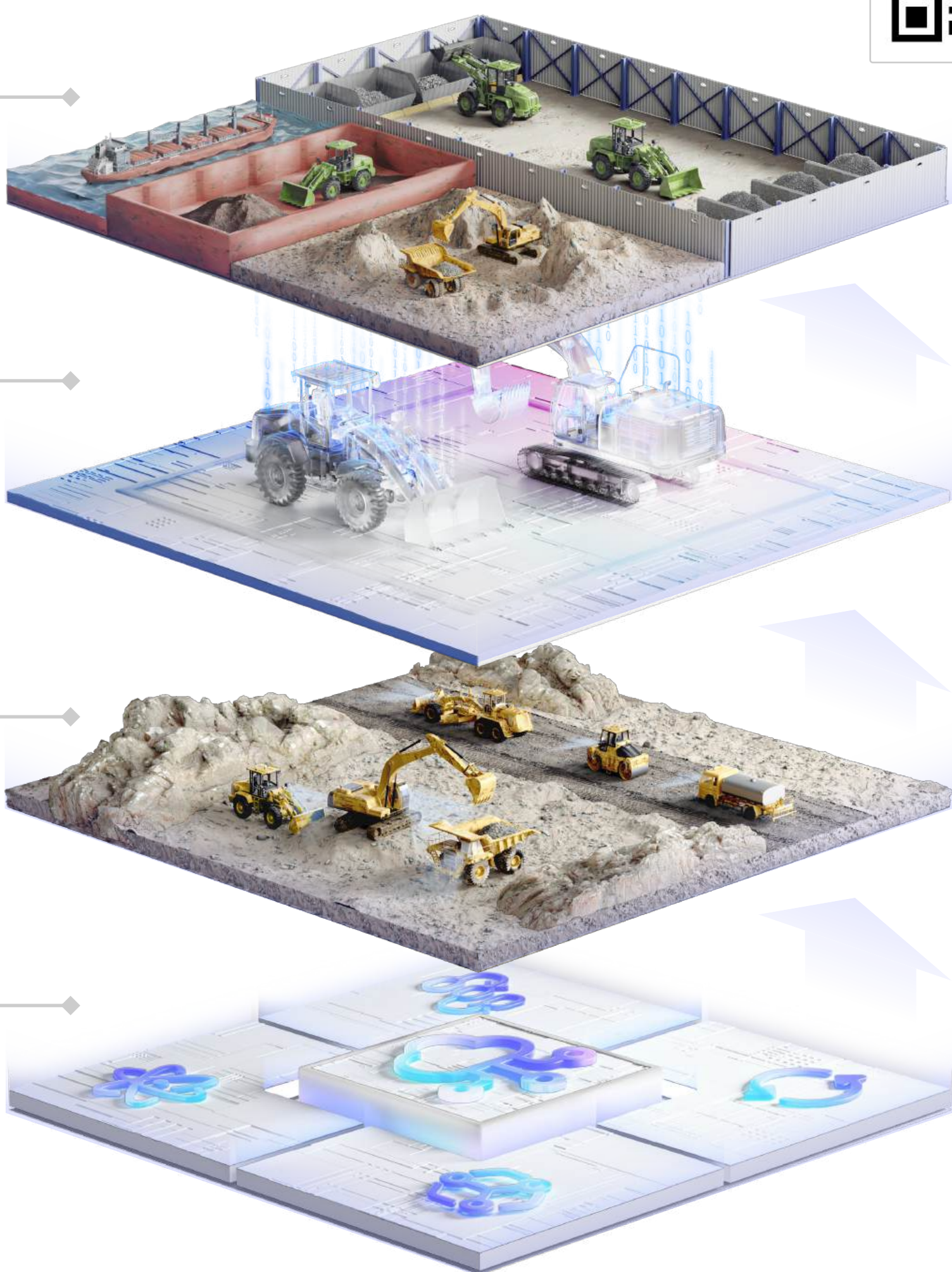
- Multi-Dimensional Data Collection

Uses multi-modal sensors to collect environmental data from real machinery, linking virtual and physical worlds.

- General Embodied AI Large Model

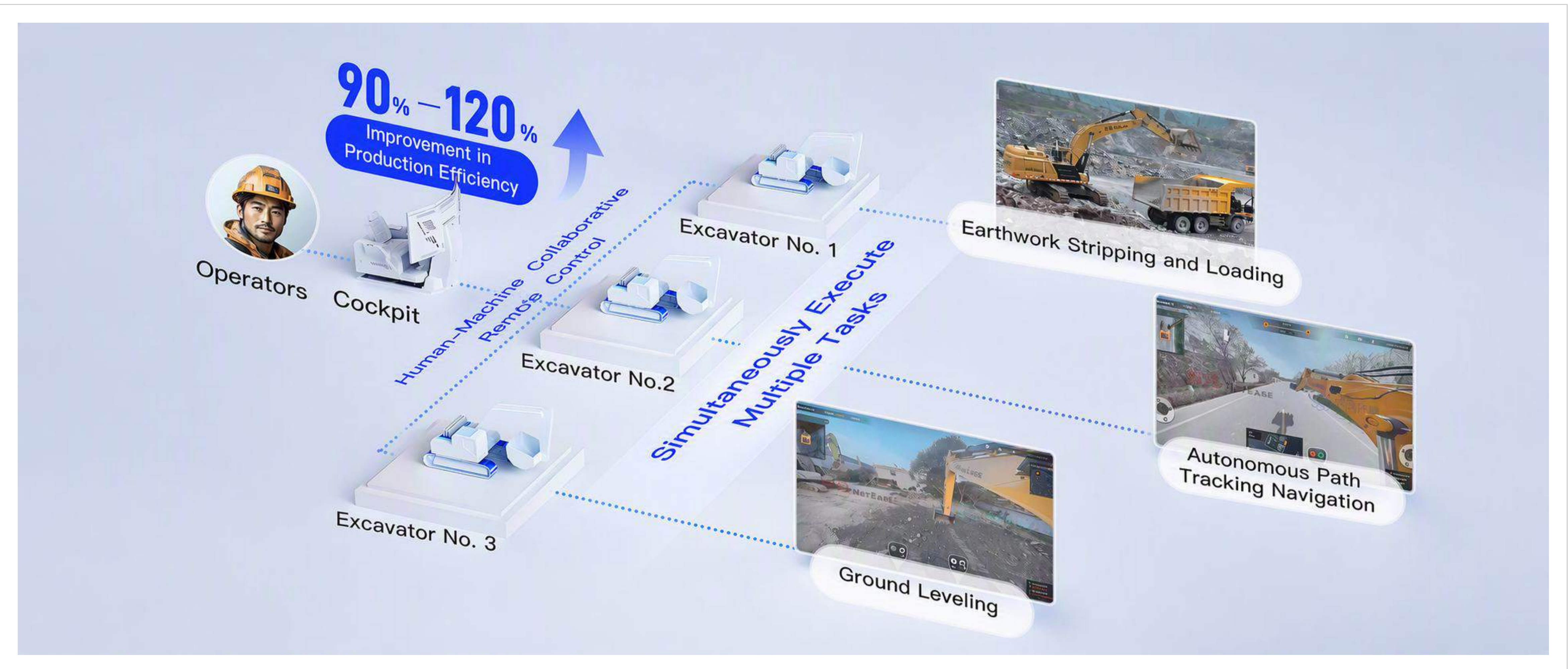
Pre-trained on massive data for spatial and physical cognition, providing a solid, generalizable base for advanced skill learning.

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One Operator, Multiple Machines: Smart "Shepherd" Mode

Operators can simultaneously manage multiple machines on the same site. Empowered by auto-loading, path-following navigation, and auto-dumping, one operator manages multiple machines, boosting overall efficiency by 90–120% and achieving safer, smarter construction with less manpower.



Lingzai · Loading Robot

03

For harsh, dusty bulk-material environments, NetEase Lingdong built the industry's first fully autonomous loader system via smart upgrades and autonomous driving, moving production management entirely online. Powered by NetEase Lingdong's proprietary LiDAR fusion, high-precision material-surface sensing, and smart shoveling point selection, it achieves precise, [24/7 continuous operations](#) even in complex, unlit conditions.

Equipped with an advanced smart dispatch platform supporting multi-machine synergy and dynamic planning. In real-world 24/7 tasks, [efficiency reaches up to 131% of manual work](#), [saving 30% in operational costs](#) and substantially cutting manpower requirements.

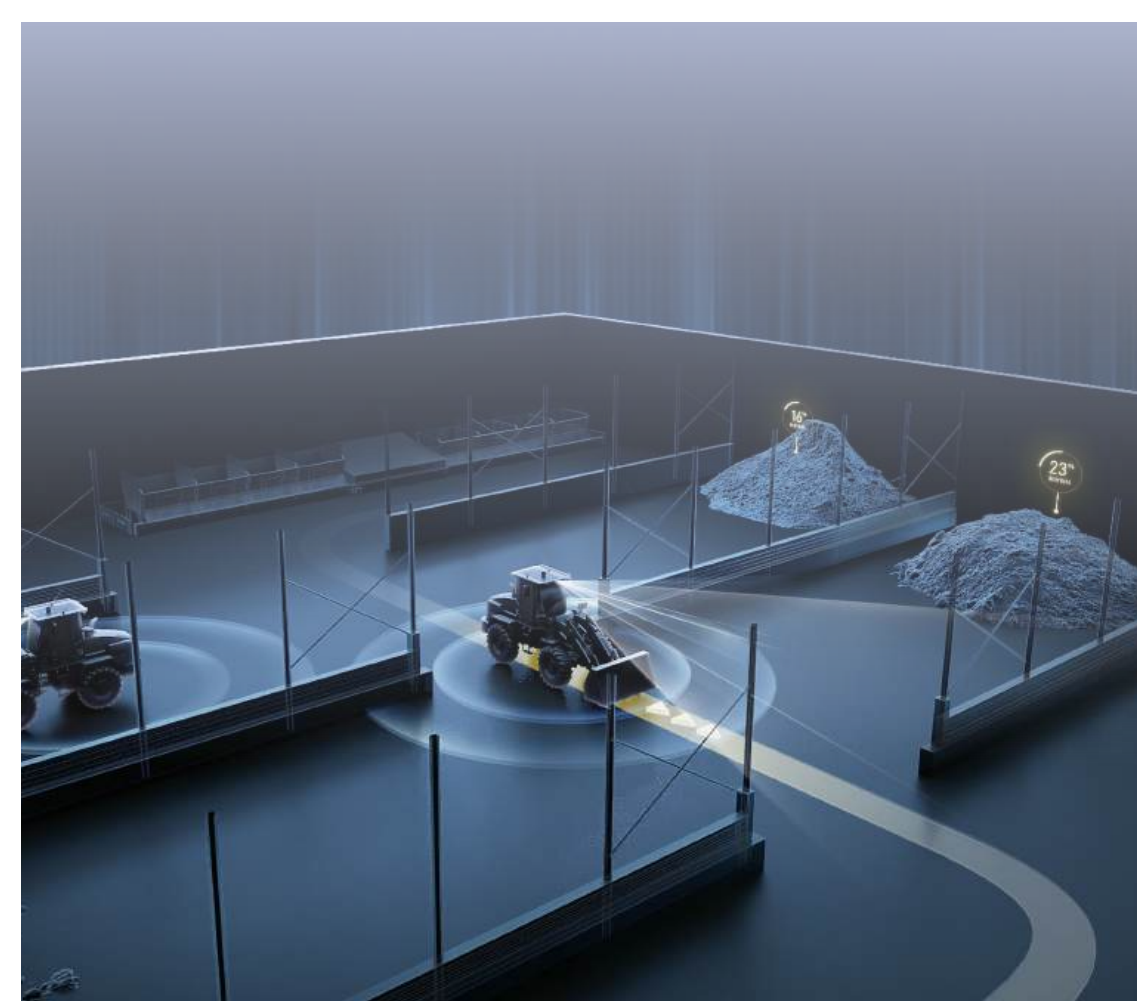


Key Features



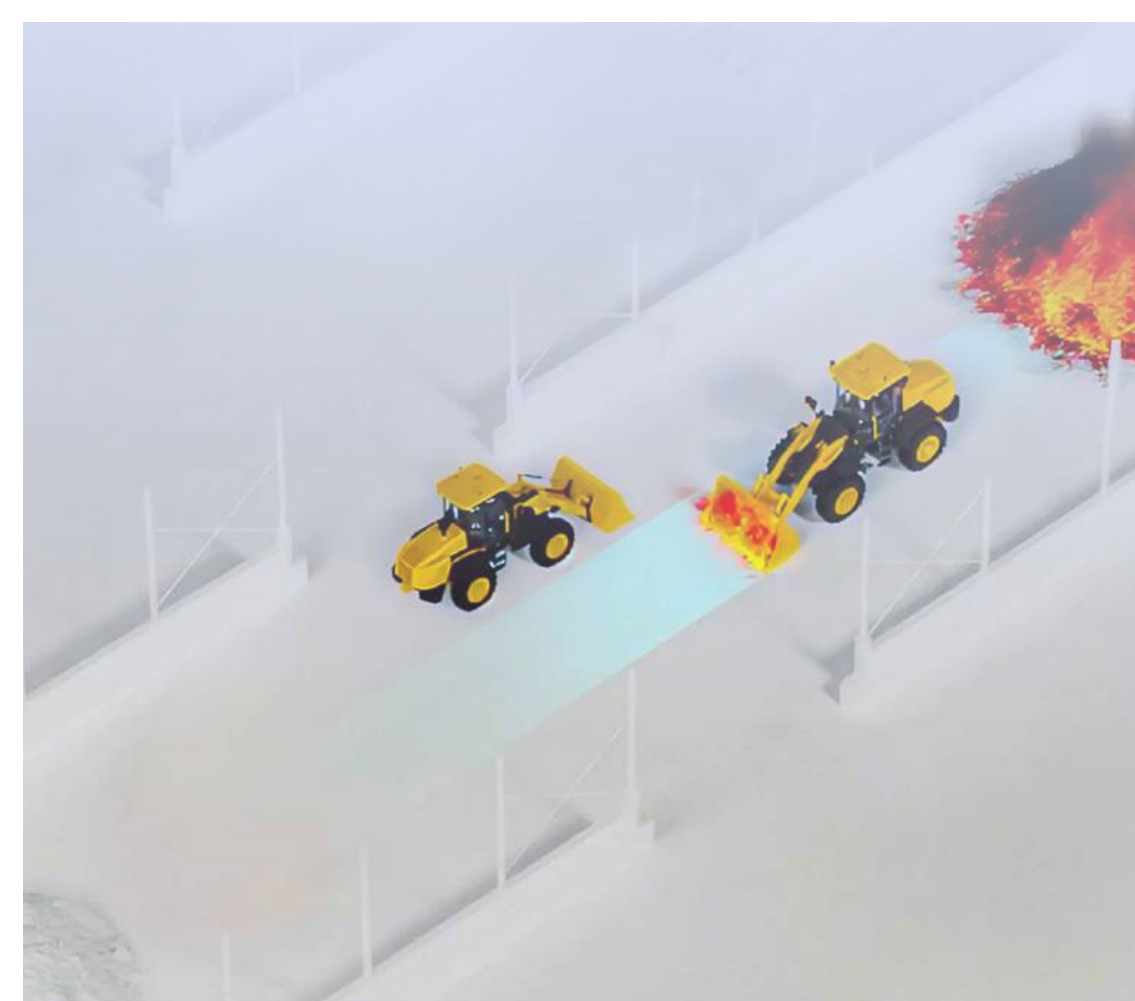
Autonomous Feeding

Auto-navigates to the designated silo, planthe dig-start point, and unloads at the hopper.



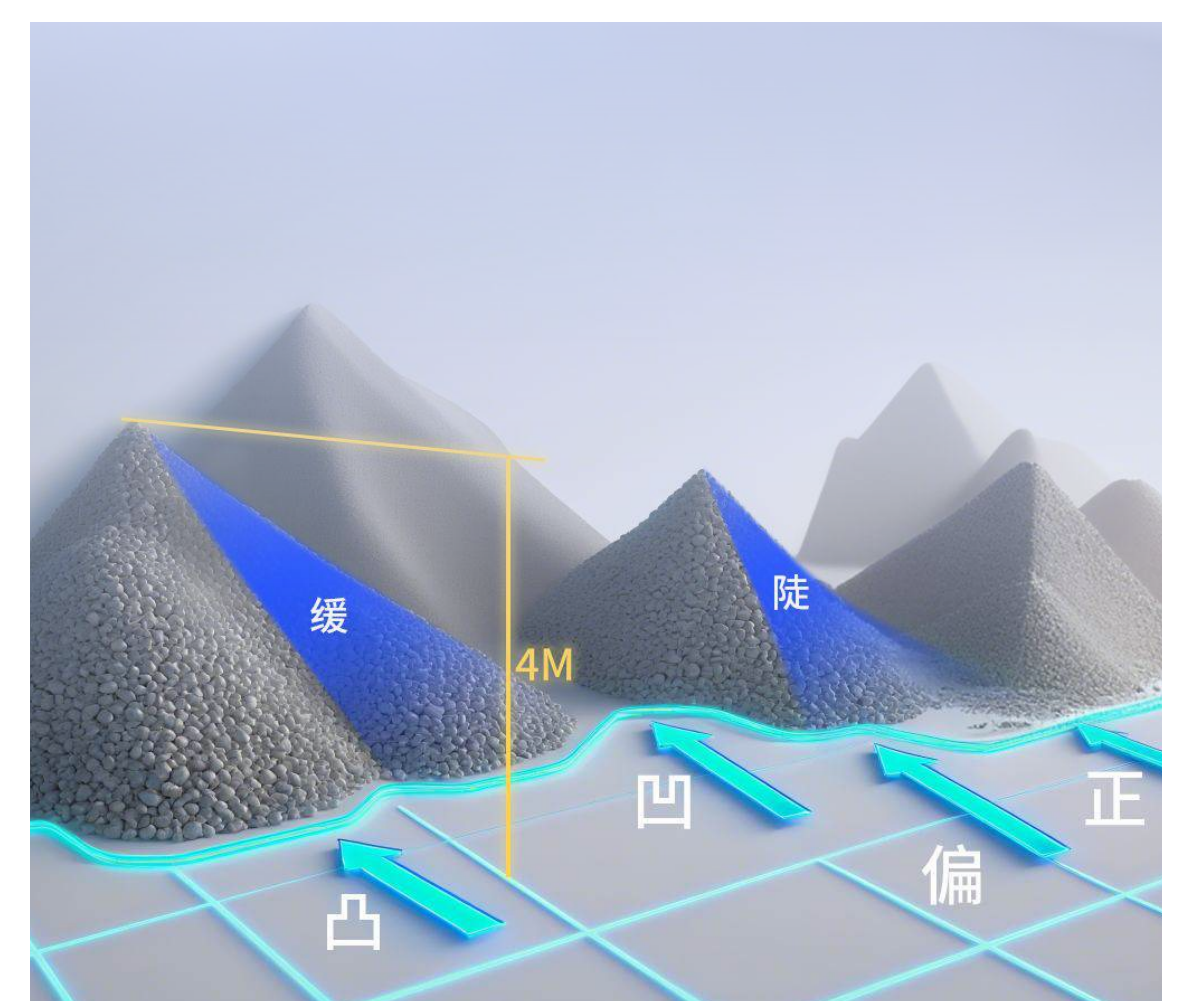
Lights-Out Site

Executes tasks reliably without external lighting for 24/7 continuous production.



Site-Wide Autonomous Transfer

Transfers materials between aggregate-yard stock silos; intelligently clears firebreak paths for critical-material protection during fire emergencies.



Adaptive Stacking

Smart gathering algorithms adaptively pile materials, reducing manual intervention.



Real-Time Inventory

Monitors hopper levels to auto-create tasks, and silo levels to predict refill cycles.



Dynamic Yielding on Haul Roads

Identifies and yields to other vehicles on main haul roads (dump trucks, water trucks).



Auto-Navigation

Uses precise mapping for positioning accuracy within 5 cm and autonomous motion control.



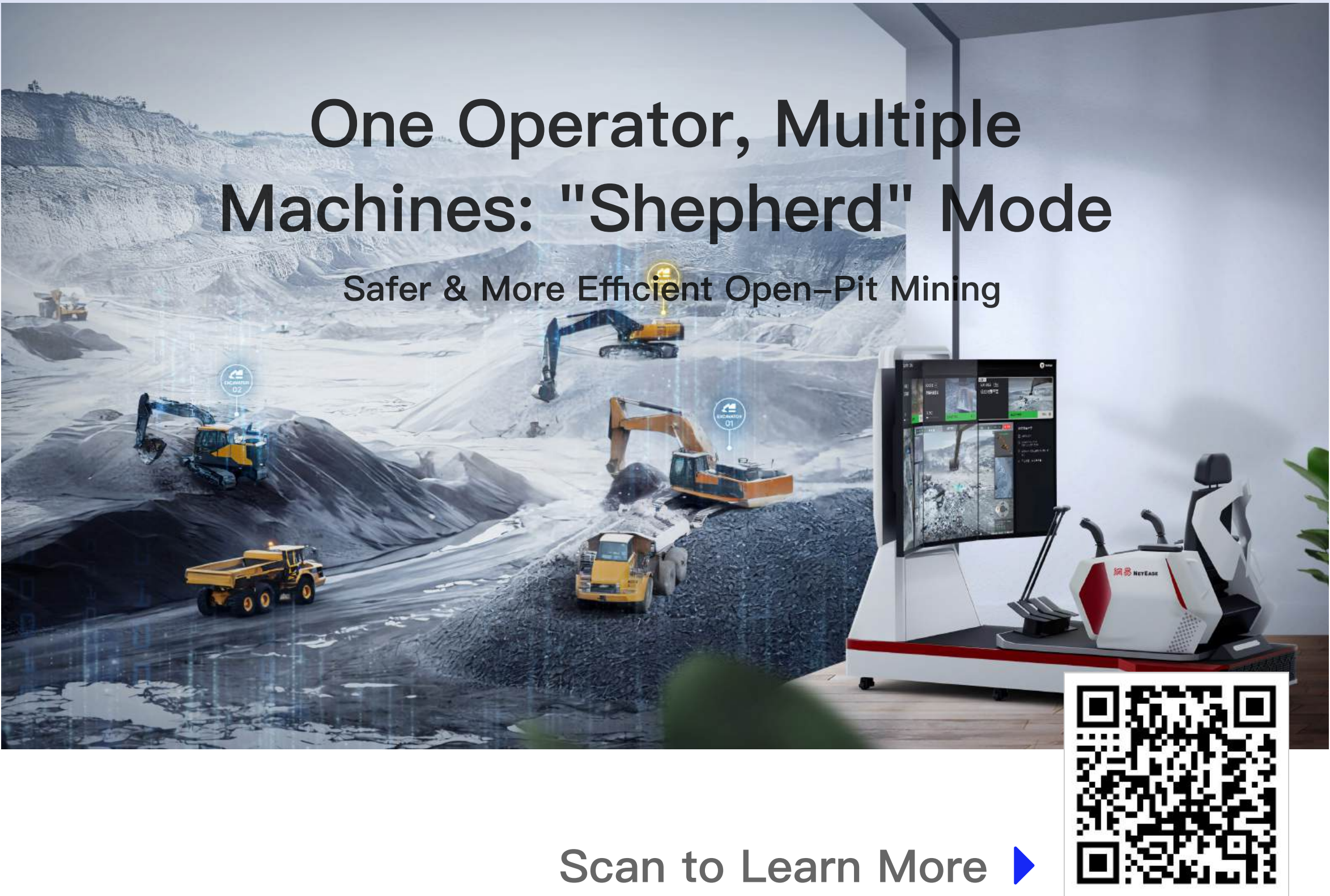
Multi-Machine Smart Dispatch

Links dispatch systems with site monitoring to orchestrate equipment for highly efficient automated operations.

Lingjue · Excavating Robot

Based on a self-developed embodied AI model, low-latency audio/video transmission, 3D digital twins, and high-precision positioning and control, Lingjue enables remote human-machine collaboration and semi-automation for highly efficient work in dynamic environments.

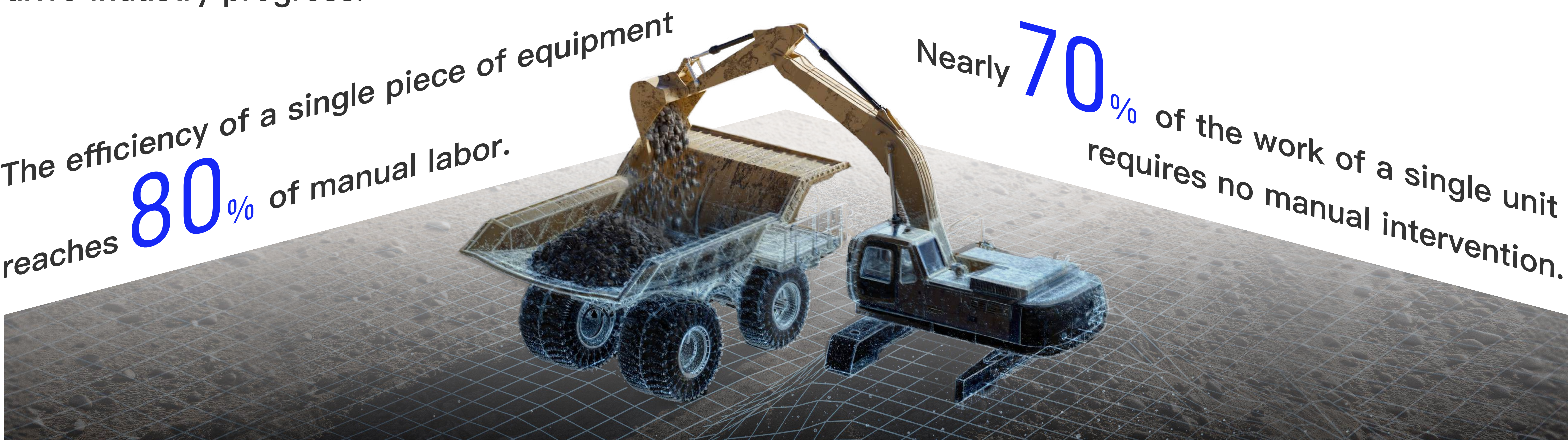
The system spans tiers from basic remote control to semi-automation and "shepherd" mode. It features auto-loading, path-following navigation, and auto-dumping, plus operator-assist systems such as bucket landing-point overlay and see-through dust, substantially boosting operational efficiency.



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! "Lingjue": The World's First Embodied AI Model for Open-Pit Loading

The first embodied AI model tailored for open-pit excavator loading. Using multi-modal autonomous learning, it resolves traditional issues like poor generalization and heavy customization. NetEase Lingdong was also the first to release an open scenario dataset and publish its technical approach to drive industry progress.



! Path-Following Navigation

Combines high-precision navigation and autonomous driving to dynamically bypass obstacles in real time.



! Auto-Dumping

Uses perception and smart control to execute optimal dumping, unloading precisely on target.



! Auto-Trenching

Operators set the target dimensions; the system then uses high-precision perception to model the area and execute automatic trenching.



! Bucket Tooth Detection

Outlines bucket-tooth contours in real time, alerting instantly if they are missing or severely worn.



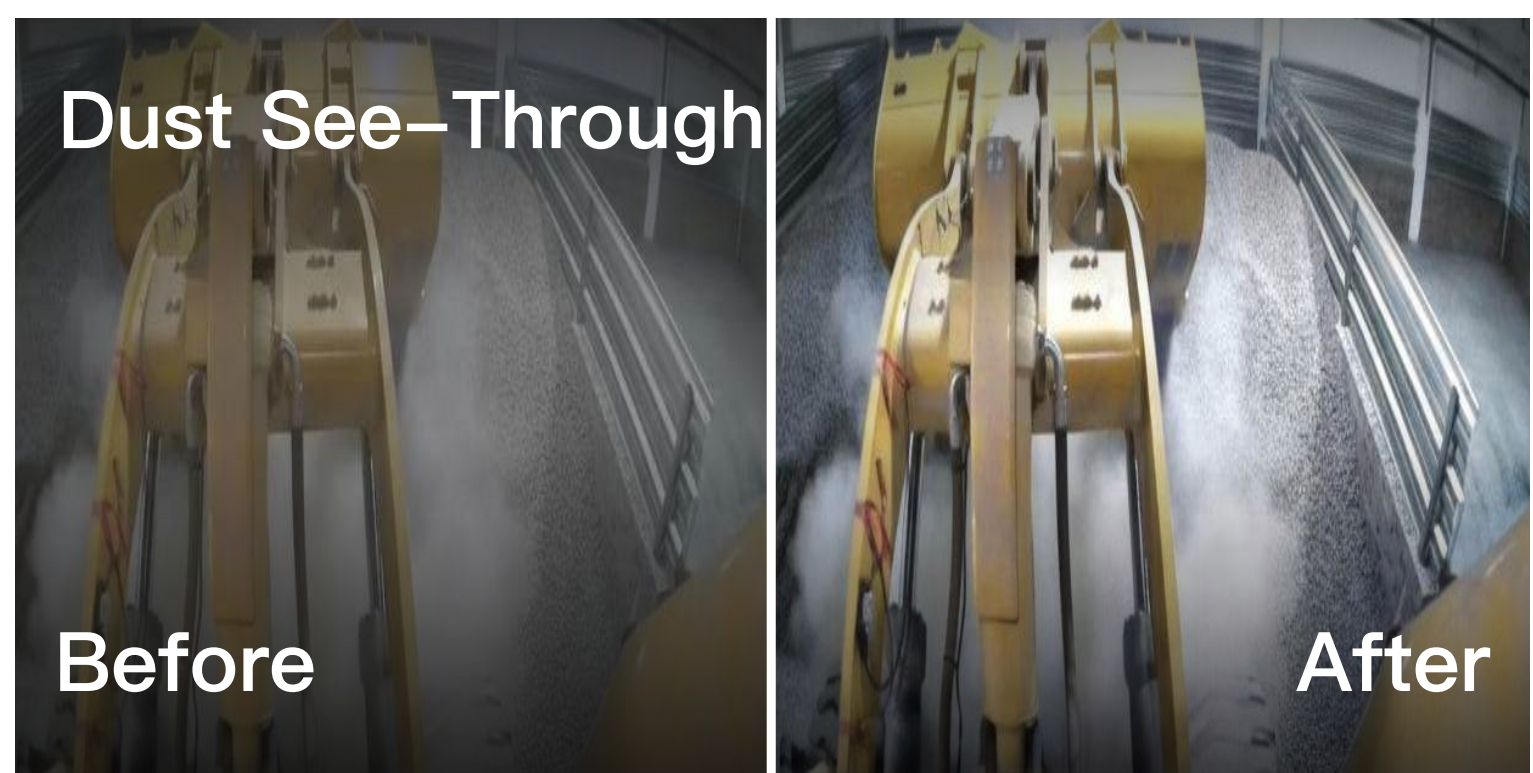
! Bucket Landing-Point Overlay

Displays the bucket landing-point overlay in real time for precise digging and unloading.



! Dust See-Through

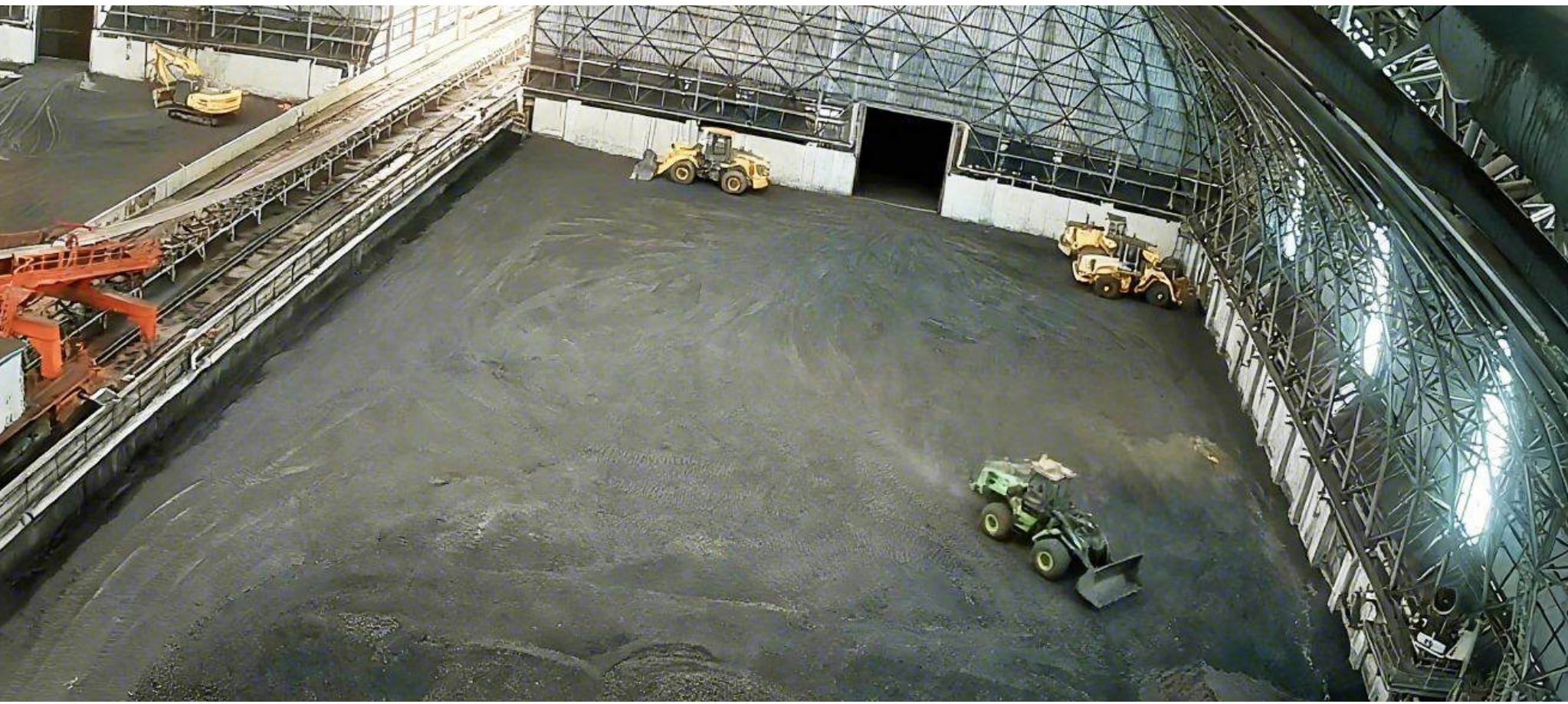
Uses AI image enhancement to instantly "remove dust and fog," restoring HD site visibility.



Application Cases

Boosting Safety at State-Owned Power Plants

The loading robots join power plant operations, bringing China's most advanced production capability on site: unmanned, high-efficiency work that improves both workplace safety and operating efficiency.



National Infrastructure & Workplace Safety

The loading robots are deployed at concrete batching plants nationwide, including Shanghai, Zhejiang, Sichuan, Gansu, and Jiangsu, aiding national infrastructure and safety.



Enhancing Port Safety

The human-machine collaborative loading robots let experienced operators run production remotely, away from the high-dust, toxic bulk-material environments of the port, keeping port operations safe.



Safeguarding National Energy Security

The excavating robots are deployed in Xinjiang and Inner Mongolia open-pit coal mines. The 24/7 "shepherd" mode safeguards national energy security.



Implementation and Partners



*The above represents a selection of our partners, listed in no particular order.

WeChat Official Account



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