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iFlytek applies multimodal AI to pig farming, boosting efficiency and disease detection

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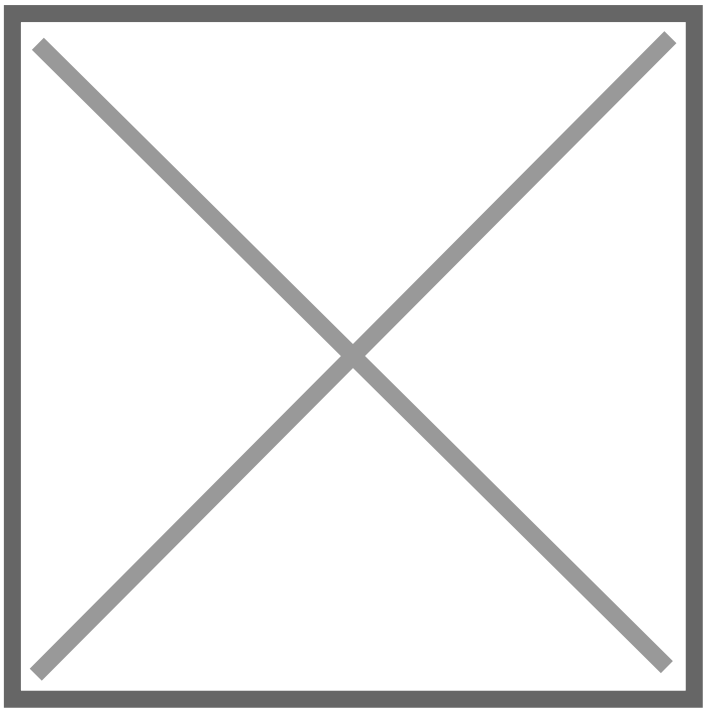
Multimodal AI, robotics, and precision analytics converge to transform Chinaâ??s largest hog farming sector into an intelligent, real-time managed ecosystem



Multimodal AI, robotics, and precision analytics converge to transform Chinaâ??s largest hog farming sector into an intelligent, real-time managed ecosystem

At the Changling Smart Farming Base operated by COFCO Joycome in Jilin province, Chinese artificial intelligence company iFlytek is deploying large AI models to re-engineer traditional pig farming into a fully data-driven and intelligent livestock management system.

The initiative marks a significant step in the digitisation of Chinaâ??s livestock sector, which remains the worldâ??s largest in both production and consumption scale. In 2025 alone, national hog slaughter volume reached 719.73 million heads, according to official data, underscoring the systemic importance of efficiency improvements across the industry.

From experience-led farming to algorithm-driven livestock management

The smart farming platform developed by iFlytek and its subsidiary iFLYHG Technology is designed to replace traditional experience-based decision-making with real-time, data-driven operational intelligence.

Under the new model, frontline expertise from veterinarians and breeders is systematically encoded into AI algorithms. Subjective observational practices are being replaced with continuous digital monitoring, while manual barn inspections are progressively substituted by automated systems capable of round-the-clock analysis.

The company describes this transition as a structural shift in livestock managementâ??from human intuition to machine-assisted precision farmingâ??aimed at improving consistency, scalability, and biosecurity outcomes.

AI infrastructure built on collaborative ecosystem design

The system architecture is based on a multi-stakeholder collaboration model. Infrastructure partners provide computing and connectivity frameworks, iFlytek contributes core AI capabilities including multimodal perception systems, while iFLYHG Technology focuses on application-layer deployment and integration across farming environments.

This distributed model allows for rapid adaptation across diverse farm settings, enabling scalability without requiring full redesign of existing physical infrastructure.

A key technical advancement lies in the systemâ??s ability to unify data streams across multiple equipment brands, overcoming long-standing fragmentation issues in farm-level digital ecosystems. This enables consolidated analytics and centralised decision-making across entire production units.

Multimodal AI systems enable early disease detection and precision monitoring

One of the most critical innovations in the platform is the use of acoustic fingerprint models that analyse barn-level sound environments. These systems are capable of identifying abnormal animal vocalisations against background noise, enabling early disease detection up to two to three days ahead of conventional observation methods.

In parallel, intelligent inspection robots equipped with rail-based mobility systems perform continuous monitoring of livestock populations. These machines conduct automated counting, weight estimation, and temperature assessment, significantly reducing manual labour requirements while improving monitoring frequency and accuracy.

Environmental control systems integrated into the platform dynamically regulate ventilation, temperature, and humidity in real time, ensuring optimal livestock conditions and reducing stress-induced productivity losses.

Precision feeding systems optimise growth efficiency

The platform also incorporates AI-driven feeding algorithms that customise feed composition and dosage based on individual animal growth stages and physiological conditions. This precision feeding approach is designed to optimise feed conversion efficiency, reduce wastage, and improve overall herd health.

By aligning nutritional input with real-time biological data, the system enhances productivity while lowering input costs, addressing one of the most critical economic variables in modern pig farming.

Productivity gains and operational efficiency improvements

Early deployment results from the Changling Smart Farming Base indicate measurable improvements in production efficiency. The system has achieved a PSY (piglets weaned per sow per year) level exceeding 29, placing operations among leading industry benchmarks.

Labour efficiency has also improved significantly, with a single worker now capable of managing close to 800 piglets in farrowing units, reflecting a substantial reduction in manpower intensity per production cycle.

These gains highlight the potential of AI integration to address structural labour constraints in large-scale livestock production systems.

Towards scalable and replicable smart livestock ecosystems

Industry experts view the Changling deployment as a demonstration of a scalable model for agricultural AI adoption. The systemâ??s modular design, combined with its ability to integrate heterogeneous hardware and software systems, makes it adaptable across different farm sizes and operational conditions.

The approach is being positioned as a low-cost, replicable pathway for modernising traditional livestock systems, particularly in high-volume production environments where efficiency gains can have significant macroeconomic impact.

Reconfiguring the future of livestock production

The integration of large AI models into pig farming represents a broader transformation in agricultural production systems, where digital intelligence is increasingly embedded into core biological processes.

By combining data analytics, automation, and real-time environmental control, the system seeks to redefine how livestock health, productivity, and resource efficiency are managed at scale.

As deployment expands, the model is expected to contribute to a new generation of smart farming systems that blur the boundaries between traditional agriculture and advanced digital infrastructure, setting a precedent for AI-led transformation across global livestock industries.