FrigoSense Unveils Patented AI 'Digital Nose' for Proactive Food Storage

Patented IoT system shifts food safety from reactive detection to proactive prevention, using AI sensor fusion to drastically reduce global food waste

FrigoSense 'Digital Nose' for Proactive Food Storage

KYIV, NOT APPLICABLE, UKRAINE, March 12, 2026 /EINPresswire.com/ -- KYIV, UKRAINE – March 12, 2026 – FrigoSense, a pioneering AI-driven IoT system, is transforming food storage management by introducing real-time monitoring and dynamic shelf-life forecasting capabilities that go far beyond traditional temperature sensors. The technology creates an entirely new product category—a 'Digital Nose' for smart kitchens and industrial food storage.

Unlike existing passive monitoring devices, FrigoSense acts as an active decision-support agent by continuously analyzing the storage atmosphere to detect biological activity associated with food maturation, fermentation, and early-stage decomposition. This proactive approach enables the system to predict and prevent spoilage before it occurs, rather than simply reacting after food has deteriorated.

The system employs advanced sensor fusion technology, integrating multiple data streams including temperature, relative humidity, and critical gas-phase indicators such as volatile organic compounds (VOCs), carbon dioxide, ammonia, and hydrogen sulfide. Machine-learning algorithms correlate characteristic gas emission patterns with biological states, enabling accurate differentiation between products with similar appearance but distinct biological processes—such as fruit ripening versus dairy fermentation.

"FrigoSense represents a fundamental shift from reactive to proactive storage management," said Oryna Shadrina, co-founder of FrigoSense. "We're not competing with temperature sensor

manufacturers—we're creating an entirely new category that unlocks value traditional hardware simply cannot provide."

The technology is legally protected through a Utility Model Patent UA № 160179 (PCT/UA2025/000022) received in 2025, with the broader system patent 'Method for controlling food safety and system for implementing the method' currently in process. This protection ensures freedom to operate for future commercialization across both B2C smart home and B2B logistics/HoReCa sectors.

FrigoSense provides users with qualitative state classifications (Fresh, Consume Soon, Spoiled), anomalous event detection, and continuous shelf-life recalculation based on observed biological activity. The system is currently positioned for experimental validation within Living Lab environments(pilot installations in real storage conditions) to assess how biologically grounded freshness information influences storage management decisions and reduces food waste.

About FrigoSense:
FrigoSense is an innovative deep-tech startup developing advanced AI-powered IoT solutions for food quality monitoring. By combining sensor fusion with proprietary machine learning algorithms, FrigoSense aims to drastically reduce global food waste and optimize food storage management across consumer and industrial applications.

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