

Neousys Technology

Innovative IP-Rated Industrial Computers Revolutionizes Agriculture

Neousys Technology Inc.

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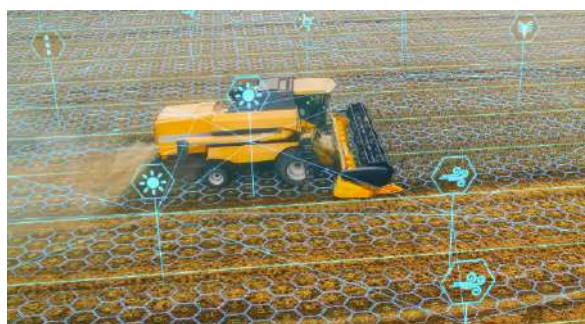
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Overview

Agriculture has undergone significant transformations, from traditional man-powered methods to the industrial age characterized by semi-automation. The advent of the Internet of Things (IoT) brought forth the ability to gather vast amounts of data from fields, enhancing decision-making for farmers. Today, we are witnessing the rise of waterproof edge AI computing that's unaffected by weather conditions to offer near full 24/7 automation, revolutionizing the management of extensive agricultural lands. This advancement not only enhances efficiency but also enables smarter farming practices that can significantly increase yields while minimizing cost and resource usage.

How Technology Improves Agriculture

In smart agriculture, IoT devices play a crucial role in collecting data essential for optimizing farming practices. Deployed in fields, these devices are equipped with various sensors that monitor critical parameters such as temperature, soil composition, moisture levels, and pH balance. Farmers can benefit from real-time data insights that help them make informed decisions without constantly stepping into the fields to manually collect data themselves.



Coupled with waterproof edge AI computer machines that can operate in rain or shine, day or night, acres of farm can be operated with a skeleton crew, saving on man power costs. With accurate data feedback, the waterproof edge AI computer-operated machines can be sent out onto the farm to collect produce at the perfect timing, regardless of weather conditions, making the whole operation more cost efficient.

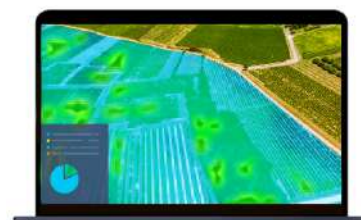
What Waterproof Edge AI Brings to the Table

Edge AI computers enable humanoid capabilities to collect, analyze and automatically execute tasks. While IoT has significantly advanced agriculture by providing farmers with vital data insights, it falls short in the automation and immediate responsiveness needed for modern farming challenges. For example, IoT devices may indicate that crops are not growing as expected, but the farmer must then manually assess potential causes, such as soil issues or water deficiencies.

By deploying them directly into the field, these advanced waterproof edge AI computers can operate in high moisture/ dusty environments to direct robots or machines. For instance, the waterproof system can automate tasks such as watering crops according to IoT data determining where it is needed most, without having to be concerned with water splashing onto the system. In another scenario, the waterproof edge AI computer allows the weedbot to operate regardless of the weather upon receiving request from IoT devices showing areas suffering from lack of nutrients (nutrient competition) due to weed manifestation.

Moreover, edge AI computers can also be implemented to track produce growth, noting when items are not yet ready for harvest. By estimating the perfect time for collection—even if the perfect collection time is in the middle of the night—the systems can optimize labor and resources, ensuring that products are harvested at their peak quality.

In contrast, edge AI computers can identify and diagnose data from IoT sensors, sensing discrepancies in crop growth and respond accordingly by streamlining operations and enhancing productivity. This transition from reactive to proactive management transforms how farmers approach produce cultivation, leading to healthier yields and more efficiency.



Challenges of Deploying Edge AI at the Edge

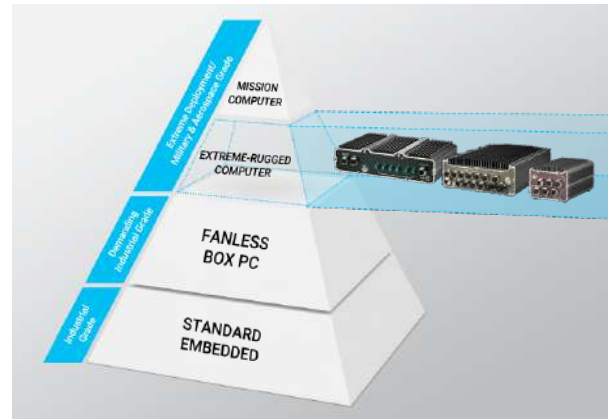
While waterproof edge AI computers offer significant advantages in harsh environments, their adoption has been limited:

- **Environmental Extremes:** Agricultural environments expose equipment to dust, moisture, extreme temperatures, and continuous shock and vibration. Ensuring AI computers can withstand these conditions requires robust, ruggedized designs.
- **Power Efficiency and Thermal Management:** High-performance AI processing demands significant power, leading to heat generation. In sealed, waterproof enclosures, effective thermal management is crucial to prevent overheating and ensure reliable operation.
- **Data Processing and Connectivity:** Real-time data processing from various sensors necessitates high-speed data transmission and reliable connectivity. Integrating technologies like GMSL (Gigabit Multimedia Serial Link), PoE (Power over Ethernet), and RTK (Real-Time Kinematic) is essential for precise operations.
- **Integration with Existing Systems:** Incorporating AI technologies into existing equipment requires seamless integration with existing machinery and practices, which can be complex and resource-intensive.
- **Economic Viability:** The high initial costs of deploying advanced waterproof AI systems can be a barrier for many farmers, especially small-scale operations, affecting widespread adoption.

Recognizing the challenges of deploying industrial computing systems in harsh environments, Neosys Technology has streamlined waterproof chassis with standardized cable kits, redefining the total cost of ownership (TCO) for industrial waterproof computing. These innovations enhance system durability, enabling reliable operation across extended temperature ranges and resistance to shock, vibration, dust, humidity, and salinity.

Moreover, Neosys identified a niche market gap concerning the structural integrity of existing embedded systems, which limits their deployment capabilities in extreme conditions.

This gap extends to various applications, including digitization and edge deployments. Addressing these challenges, Neosys' extreme-rugged computers are designed to withstand environmental and climatic factors, ensuring durability and reliability in demanding environmental settings.



Neosys Waterproof Edge AI Computers

With Neosys rugged DNA and unique designs, deploy a waterproof edge AI computer in smart agriculture to enable near 24/7 Automation, resource optimization, and enhanced operational efficiency and safety

Evolution Through Innovation



Waterproof & Dustproof

Featuring corrosion-proof stainless steel and aluminum chassis, our computers are built air-tight to withstand moisture, salinity, and other environmental contaminants.



Rugged Designs

Supporting -40°C to 70°C wide-temperature operation and complies with stringent MIL-STD-810H shock and vibration standards to ensure reliable operation.



x86/ NVIDIA® Jetson™ Support

Powered by Intel processors or NVIDIA® Jetson™ modules, the systems deliver high-performance AI computation for diverse customer needs.



Rich Interfaces via M12

Providing PoE+ GbE, 2.5GbE, 10GbE, USB3, and GMSL2 ports via durable M12 connectors for diverse sensor integration.



In-Vehicle Deployments

Equipped with 8V to 48V DC input with built-in ignition power control, RS-232/ 485, CAN bus and mini-PCIe for wireless communication expansion.

Neosys Waterproof Edge AI in Smart Agriculture

With market-proven successful experiences, Neosys Technology has emerged as a leader in deploying edge AI computers in agricultural settings. Their success stories illustrate the transformative impact of these technologies. For instance, Neosys' waterproof edge AI solutions, capable of operating in rainy or dusty environments, can enable the deployment of weedbots, which autonomously identify and remove weeds, significantly reducing labor costs and herbicide usage. Additionally, their systems enhance heavy machinery operations by allowing for precise control and automation of tasks, minimizing human error while maximizing safety.



Produce sorting is another area where Neosys waterproof edge AI can make strides. Unaffected by the moisture in the working environment, the employed edge AI can classify fruits and vegetables based on size and quality during the harvesting process. This not only increases efficiency but also ensures higher quality products reach the market, ultimately benefiting both farmers and consumers. The integration of edge AI in these applications enhances worker safety by reducing the need for manual labor in potentially hazardous environments, further establishing the technology's value in modern agriculture.



Conclusion

The implementation of waterproof edge AI computers in smart agriculture marks a significant evolution in farming practices. By facilitating near 24/7 full automation, rain or shine, these technologies allow for precise management of resources, improve operational efficiency, and enhance crop yields. As evidenced by successful applications like those from Neosys, waterproof edge AI not only streamlines tasks but also provides the agility needed to respond to agricultural challenges swiftly. As the agricultural landscape continues to evolve, the integration of edge AI will be paramount in driving sustainable and efficient farming practices for the future.