The Near Future of Industrial AI Computing

Artificially intelligent technology is changing a wide variety of sectors. From healthcare to retail, we are already seeing how AI computing can accelerate processes and make them more effective. But some of the biggest changes are coming in the field of industrial AI computing, as manufacturing, construction, engineering, and other industries reap the benefits of this technology.

In this article, we're looking at what we can expect in the coming years in these fields, as the development of AI continues at pace.

Industrial AI Computing Developments in the Coming Years

AI computing has gone from something speculative and theoretical to something very real indeed. We're no longer talking about what could be possible, 10 or 15 years down the line. Instead, we're looking at what is likely to be happening in the very near future. In many cases, we are already seeing the early development and application of these technologies.

Generative AI in Design

One of the key ways in which industrial AI computing will be developing in the coming years is in design and development. Working from a set of core parameters, artificially intelligent systems use generative processes to design products or components that are ideally suited to their intended purpose.

The use of artificial intelligence in design and development is not particularly new, but recent advances have seen significant leaps in just what is possible from this technology. Rather than depending on human teams to set out parameters or define key aspects of the project, AI computing systems can use machine learning to identify the best possible schema for the job. Generative AI can work almost independently, with just a bit of human oversight, to create the design.

Edge Computing Fuelling Growing Data Sets

Modern industrial processes depend on huge data sets, bringing together information from a large array of sources to provide insight and understanding. With the rise of AI, this appetite for data is only increasing, as artificially intelligent systems need a rich resource of data to work from.

AI edge computing certainly has a role to play here. Edge computing means placing computing hardware at distributed points around a network, as close as possible to the data source. Internet of Things (IoT) devices and edge servers capture and feed this data back to processing and storage points.

In terms of AI, edge computing both fuels artificially intelligent systems and relies on this intelligence for its functionality. In other words, it provides the large data models required for machine learning, but is also orchestrated by artificial intelligence. Smart AI is required to ensure that often vast IoT systems remain efficient and effective.

Smart Procedures for Dealing with Large Amounts of Data
Following on from that last point, we can expect to see industrial AI computing serve an increasingly valuable purpose in handling large amounts of data. As well as AI edge computing at the source of data, this data also needed to be stored and then wielded appropriately.

In the past, industrial enterprises may have used data lakes to achieve this – huge stores of data that systems can trawl to acquire the insight they need. However, as data volumes increase, this is no longer viable.

Industrial AI computing provides the answer. Smart systems can define where data is stored according to which facilities and processes are most likely to need it. This optimizes the use of storage space and server capacity while also accelerating the industrial processes that may need to use this data. When a usage request is received, systems know where to find the relevant data, increasing the efficiency of provision.

Quantum Sensing to Improve Process Precision
Accuracy and precision are always high on the agenda in industrial processes. Even the smallest inaccuracy can result in significant operational problems, so ironing out these errors is crucial.

Quantum sensing is at the forefront of this evolution in technology. Based upon the concept of quantum entanglement, sensing technologies can examine tiny changes in electric and magnetic fields, as well as rotation, positioning, temperature, and other attributes and properties.

Experts predict that quantum AI computing could revolutionize industrial projects in the not-too-distant future. By observing the "unobservable," machine learning algorithms gain access to a broad range of new data points. This can then be used to train AI systems to achieve ever more complex tasks.

The Computing Hardware Driving These Changes

These changes simply won't be possible without the proper computing hardware to power them. Here are a few of the products that Avalue believes can make a real difference in the industrial AI revolution.

- Server boards capable of processing data at high speeds and at high complexity – such as the HPM-ERSUA with Intel C741 Chipset.

- Tracking solutions to gather data across complex physical environments – such as the UB-A100 ARTEMIS-RTLS solution.

- High-performance but slimline embedded motherboards, providing major computing power without taking up significant amounts of space – solutions like the 1.8" SBC and Pico-ITX achieve strong levels of performance with low power consumption, and fanless operation in some cases.

- Rackmount systems to provide modular scalability and flexibility to organizations building highly capable data servers – such as the HPS-621U2A system.

- AI edge computing systems that collect data adjacent to the source – such as the NUC-TGU with 11th Gen Intel Core i7/i5/i3 processor.

- Robust hardware designed to function in difficult or challenging environments – such as the EPM-1722 Marine Power Module and the EPM-1721 Railway Power Module.

Find the Products You Need in Our Range

Here at Avalue, we relish the challenges that the new technological world brings our way, and we are proud to be at the forefront of changes in industrial AI computing. To find the solutions you need to keep your business and your facility ahead of the curve feel free to browse our product range.

Related Products

Avalue HPM-ERSUA

Single 4th/5th Generation Intel®Xeon® Scalable Processor ATX Server Board with Intel® C741 Chipset and IPMI2.0. Processor supports up to 270W TDP

Avalue HPS-621U2A

Single 2nd Gen. ® Xeon® SP processor with Intel® C621 chipset, 500W, 4 x RJ-45, IPMI2.0 workstation

Avalue NUC-TGU

11th Gen Intel® Tiger Lake Fanless NUC Slim System

Avalue EPM-1722

DC to DC 60W Marine Power Module

Avalue EPM-1721

DC to DC 60W Railway Power Module