

AI Controller for Industrial Automation

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Over the last several years, we have heard and read a myriad of material regarding how new advancements in AI and ML algorithms and computational platforms help to automate complicated industrial processes. These processes include collection and analysis of real-time data, assisting robots to perform complicated tasks using machine vision, quality control, material handling, and logistics in large manufacturing and distribution warehouses.

In essence, AI has provided computers the ability to mimic human's experience and decision-making ability. However, super-fast computers can make decisions and execute them at a very fast pace, beyond the physical capability of a human. This attribute of AI systems makes them a very attractive choice for real-time applications such as materials classifications and sorting, and quantification and qualification of random objects or products.

Nevertheless, AI systems need to be trained and retrained to maintain acceptable performance. Simply put, AI systems are hungry for information and data! The raw data must be collected and processed or labeled properly before they can be used for initial training, testing, and validating of neural networks. We still need to retrain them regularly to ensure an acceptable performance after the deployment in the field. Additionally, like any other industrial controller, an effective AI controller needs to offer a rugged industrial design to last in a harsh industrial environment, be flexible to adapt to different applications and networks, modular to be scaled and maintained easily, compatible with third-party technologies such as vision systems and PLCs, and more importantly cost-effective and affordable for the mainstream.

On top of having a variety of peripheral options such as an expandable I/O and data communication features, an effective AI controller must be equipped with server or cloud access to manage storing and utilizing a large and ever-growing body of data. This will be especially important when it comes to using an AI controller for data collection and analytics, quality control, random object classification, and process automation capabilities, including a variety of peripheral options allows for smooth integration with current processes and for expanded capabilities as well as reliable maintenance and regular AI model updates.

One popular application of such an AI controller is AI vision guided robotics, whether using open or closed robotics, the need for an AI controller is crucial for an effective solution. These robots can be employed to sort recyclables and dismantle, and repair used products in a circular economy, for example. Neatco Engineering is committed to developing technologies which not only fill the gaps towards a circular economy but also, satisfy the principles of a circular design. We encourage readers to review our following earlier publications on LinkedIn:

"Why is Open Robotics the best choice for scale-up manufacturing companies?"

"Open Robotics and Circularity"

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