

High-Precision Robot Control Software without Need for Time-Consuming Manual Adjustments



Photo: Chitose Robotics

An arm robot equipped with the camera information-based CREWBO visual feedback control system.

Many companies are considering introducing robots to reduce labor and streamline processes when manufacturing certain products in factories. However, having to spend a great deal of manpower to coordinate the actual operation of such industrial robots when they are built into the manufacturing system has been a major challenge. One Japanese company has solved this challenge by developing CREWBO, a robot control software that enables the construction of a high-precision robotic system. On top of that, the cost of introduction of this robotic system is reasonable. We interviewed the developer about this technology, which is getting worldwide attention.

(Text: SAKURAI Yuko)

Various manufacturing industries in Japan have seen the introduction of robots into the production process. However, robots have so far only been able to perform certain set operations. In assembling components for industrial products, for example, humans have had to make adjustments to ensure that the robot fingers that take over the tasks of human hands will accurately reach the exact target position. It is crucial to set the position and angle of the base of the robot arm precisely. This is because slightest difference will result in the robot's fingers missing their mark and unable to grasp the target. It was therefore necessary for humans to spend a great amount of time performing calibration (adjusting basic coordinates) and teaching (instructing movements).

“If a robot, which is supposed to cover for labor shortages, requires adjustments that involve signifi-



Photo: Chitose Robotics

NISHIDA Ryosuke, president of Chitose Robotics Inc



Photo: Chitose Robotics

A single CREWBO can control four robots from different manufacturers. Here, a needle threading operation is realized.

cant labor and costs, then we have a contradiction.” With this thought in mind, NISHIDA Ryosuke, president of Chitose Robotics Inc., developed an innovative robot control technology that enables high-precision operation without the need for minute adjustments.

Says NISHIDA, “When humans grasp something, we have a rough idea of where it is, and then we control our movements with high precision as we move our own hands. I thought that robot control should also be possible based on uncertain information, just like that of humans.”

CREWBO is a control software developed by NISHIDA that realizes a visual feedback control system that instantly feeds back image information captured by multiple cameras to the robot, and continuously moves the robot toward its goal. A robot equipped with this software can automatically follow a moving object or grasp an irregularly shaped one. Even if the robot’s position deviates somewhat, there is no problem because it will analyze multiple image data to follow along its path. In fact, this software eliminates the need for adjustment costs that had been necessary until now.

“Many of Japan’s manufacturing industries are going through a severe labor shortage,” says NISHIDA. “By providing robot labor, we hope to maintain the vitality and scale of our markets. We set the price at 1,100,000 yen for the minimum components (control PC with software, 2 cameras, etc.), so that the robot can be widely used at SME-scale manufacturing sites.”

Right now, CREWBO is in use at automobile, electrical, and food manufacturing sites, as well as distribution in Japan, Europe, the United States, and Asia,



Photo: Chitose Robotics

Placing fried chicken in individual containers. There’s no need to rewrite the program for different sizes and dimensions, even when grasping soft foods.

where it is contributing to factory floor automation and productivity enhancement.

NISHIDA confidently declares, “Going forward, we will continue to provide high-quality, vastly unique technology.” We have hopeful expectations for the future of this up-and-coming company. ▮



Photo: Chitose Robotics

An automobile manufacturing site. Performing position-indeterminate work (automatically following a moving object or grasping an irregularly shaped object) on an assembly line.