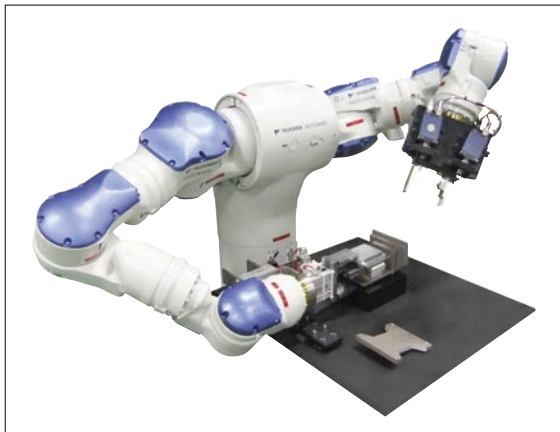


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Development of a Teachingless System That Realizes Autonomous Driving of Industrial Robots

Expansion of the Application Fields of Robots Through the Automatic Generation of Motion Programs and Use of Vision Sensors

Kyoto, Japan – November 7, 2011 – Dainippon Screen Mfg. Co., Ltd., with the cooperation of YASKAWA Electric Corporation (headquarters: Kitakyushu City, Fukuoka Prefecture; president: Junji Tsuda; hereafter “YASKAWA Electric”), has developed a teachingless system that automatically generates robot control and trajectory programs and uses vision sensors to recognize parts and materials and autonomously control and correct the position of robots. Screen will commence sales of the system in January 2012.



Assembly robot equipped with the teachingless system



Vision sensor

Please download the photos from
www.screen.co.jp/eng/press/nr-photo_2009-2011.html

Previously, teaching work to store in memory individual actual motion sequences using a programming pendant (robot operating terminal) was required for configuring the motion of assembly robots used on manufacturing lines. Many hours of programming work was necessary to input one minute of robot motions. In addition, although industrial robots have been utilized heretofore for simple work operations on mass production lines, expectations for expansion of the scope of application of robotic tasks and automation in new fields are increasing in conjunction with the diversification of consumer needs in recent years. For instance, tremendous attention has focused on the use of robots in cell production systems,* which are suited to high-variety, low-volume production.

Against the backdrop of this trend in the robotics industry, in April 2008 Screen began research into robotic technologies, concentrating on vision systems, by applying image processing technologies and inspection technologies cultivated over many years. Now, with development cooperation from YASKAWA Electric,

which boasts world-class technological capabilities in the industrial robotics industry, Screen has developed a teachingless system that automatically generates robot motion programs and uses cameras to recognize parts and materials and correct the position of robots.

This system enables the automatic generation of robot complex motion programs by importing into a personal computer 3D CAD data for parts and materials, thus eliminating the need for troublesome teaching work carried out on a programming pendant. Furthermore, the system ensures accurate work by using vision sensors that stereoscopically recognizes the position and orientation of parts and materials on a robot's motion trajectory and controlling the robot in the autonomous performance of assembly site error correction. These innovations enable significant reduction of the time required for programming. In addition, since the system makes possible picking from locations where different parts and materials are stored together, it aims to promote the introduction of robots at cell production sites that require various complex processes previously considered difficult to automate in addition to applications on conventional mass production lines.

Screen plans to take advantage of the development of the teachingless system to enter robotics-related fields and contribute to the development of industry and society by establishing new original technologies through R&D in robotics technologies.

* Cell production system

A production system in which one person or several persons perform all processes from parts mounting to assembly, processing, and inspection

Note: The system will be exhibited at the YASKAWA Electric Corporation booth at International Robot Exhibition 2011, to be held from November 9 (Wednesday) to 12 (Saturday), 2011 at Tokyo Big Sight in Ariake, Tokyo.