C-03 AI Solution

DENSO

Masterless Picking Using 3D Vision Mech-Eye, Powered by AI

- Enables recognition of day-to-day products of indefinite shape that are frequently replaced, using deep learning technology. Eliminates the need for master registration, greatly reducing start-up and operation times
- We developed an original robot hand with a variable angle on the picking part. This enables workpieces to be picked even from container corners, something that was conventionally difficult, achieving high-speed random picking with no leftover parts

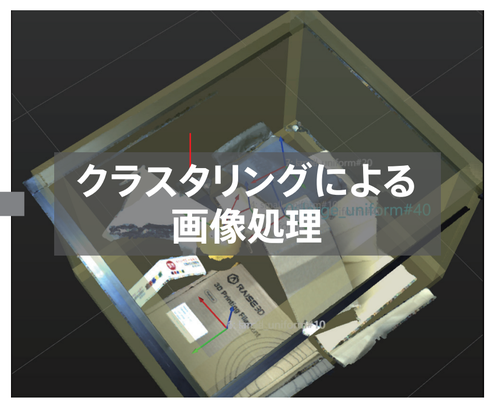
Image processing based on Mech-Mind's 3D Vision

Workpieces are recognized without the need for master registration by using a Deep Learning model (Super Model) provided by Mech-Mind Robotics Technologies Ltd.

Combined with image processing based on clustering (rule-based), this enables high-accuracy positioning

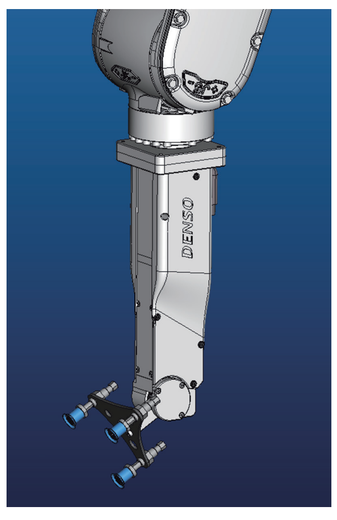
Deep Learning boxes are classified

Clustering picking points are selected



We developed an original hand capable of picking workpieces even from the corners of a box

The workpiece position and tilt are determined from data captured by 3D Vision, and the hand tip angle is changed as appropriate to pick workpieces even from the corners of a container, helping to improve productivity



VMB robot suitable for a wide range of work is used

VMB robot with a maximum reach of 1,804 mm and payload of 25 ㎏ is used

Enhanced internal wiring and piping option is available. This contributes to stable operations by eliminating the risk of broken wires or pipes caused by wires or pipes interfering with peripheral devices

VMB series specifications

Item	VMB-2515	VMB-2518
Maximum motion area (mm)	1,506	1,804
Maximum payload (kg)	25	
Repeatability (mm)	±0.05	

Mech-Eye PRO M specifications

Recommended viewing range	800 × 450@1.0m～1500 × 890 @2.0m
3D capture time (s)	0.3～
External dimensions (mm)	353 × 57 × 100
Weight (kg)	1.9
Protection grade	IP65

System configuration