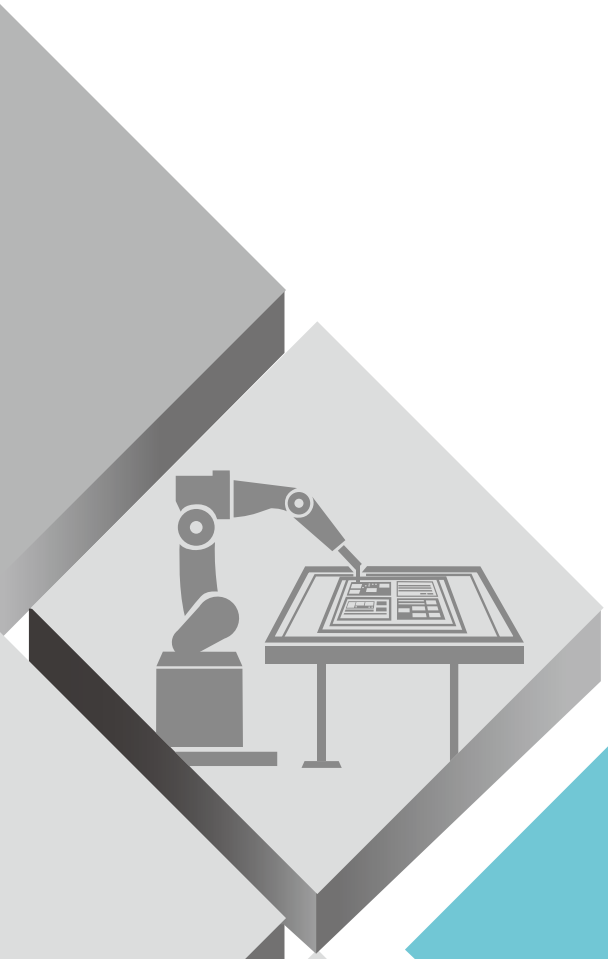
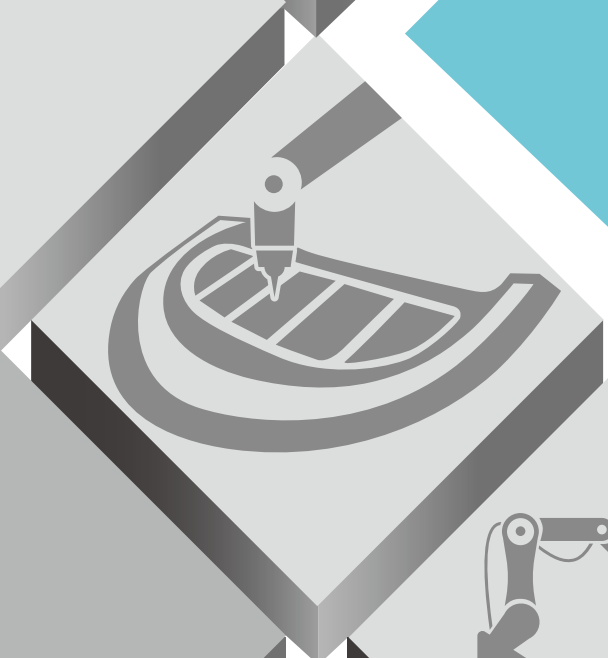
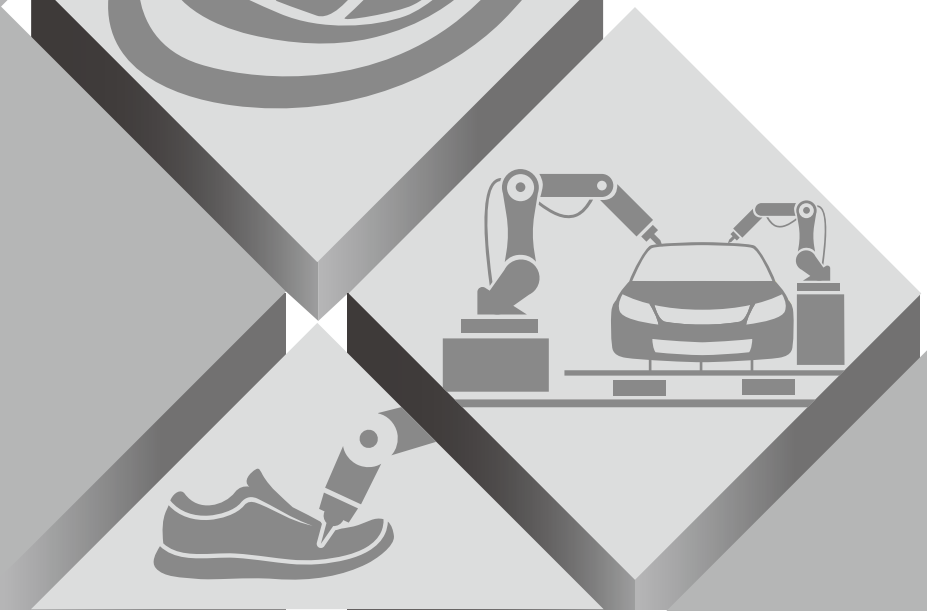
SOLOMON

Vision with Intelligence

Vision Systems DESIGN 2019 Innovators Awards GOLD







Solmotion

Vision Guided Robot Solution

- AI Deep Learning
- Fixtureless Path Generation
- Intelligent Path Planning
- 3D Defect Inspection

Solmotion

Where 3D Vision meets Deep Learning
Advanced AI Solution for Industry Leaders

* Demo of a car engine hood gluing procedure

Intelligent Eyes for Smart Robots

Without any programming required, Solmotion can accurately pinpoint a product's location, and intuitively generate the robot path, guiding it to complete its task and increasing throughput. Operable even in the most unfavorable conditions, this user-friendly solution combines advanced AI to optimize automation and eliminate costly precision fixtures.

Solomon's AI technology has developed 2D and 3D vision algorithms that can be combined in different scenarios. Through the use of neural networks, robots can be trained to "see", "think" and move just as if they had eyes and cognitive function, thereby overcoming conventional limitations and achieving high performance in unpredictable environments with random objects. A next generation imaging system, this innovative technology was honored in the Gold Category at the Vision Systems Design Innovators Awards 2019.

Bridging 3D vision and AI to facilitate value-added automation, Solmotion can be merged into larger integrated systems. The solution is compatible with over twenty major robot brands, effectively reducing switchover time and integration costs. It is also easy to deploy, providing flexibility to quickly automate or reconfigure production lines to keep pace with demand changes. For system integrators and end-users, Solmotion delivers a full spectrum of tools to revolutionize the modern smart factory.

Why Solmotion?

- Reduced manual intervention
- No more precision fixtures
  Shortened process of deployment
- Reduced machinery depreciation costs
- No programming required

Solmotion

Solmotion integrates 3D vision with deep learning to maximize manufacturing potential

Product Core Structure

Vision

- 3D Structured Light
- Time of Flight (ToF)
- Active Stereo Vision
- Laser Scanning

Applications

- Cutting
- Milling
- Riveting
- Welding
- Gluing
- Drilling
- Grinding
- Painting
- Inspecting
- Polishing
- Cladding
- Edge Trimming

Robot

Easy integration with 20+ Robot and PLC brands

UNIVERSAL ROBOTS, Kawasaki, STÄUBLI, YASKAWA, mecademic, DENSO, ABB, KUKA, FANUC, MITSUBISHI, NACHI, DOOSAN, OMRON, TOSHIBA MACHINE, OTC, YAMAHA, AUBO, TM, EPSON, rethink robotics

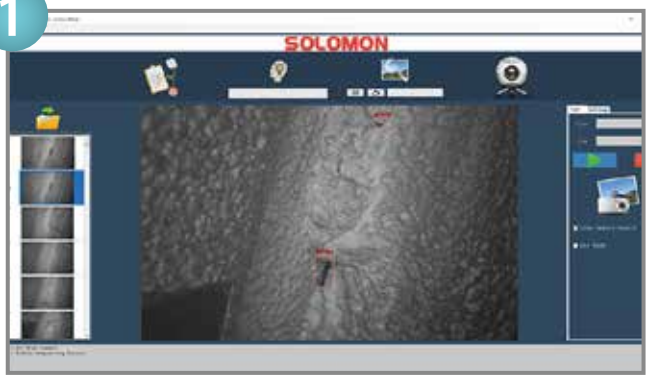
Rockwell Automation, MITSUBISHI, SIEMENS, OMRON

The Solomon AI engine acts as the brain of the robot, guiding it with human-like sensibility and recognition capabilities. Through the use of Solomon solutions, users can enable robots to perform complex movements and tasks that would otherwise require multiple systems to execute.

Solmotion offers users a comprehensive platform for neural network training to meet automation goals. It only takes a few minutes to complete an AI training module, and no programming is required. Solmotion uses a simple drag-and-drop user interface to equip robots with advanced hand-eye coordination with unprecedented efficiency.

Key Functions

1



AI Deep Learning

Neural networks are used to teach the robot to identify and examine object features. Unlike traditional rule-based AOI, AI-based inspection offers more flexibility. With Solmotion, users can use the 3D cloud points to guide the robot to carry out inspection tasks on a wide array of products, determine the quality of parts, and recognize defects.

Applications:
Quality control, anomaly identification, defect elimination, inspection, repairing, sorting

2

Fixtureless Path Generation

Products can be randomly placed on the production line without precision fixtures or positioning mechanisms. Through visual recognition of partial features, Solmotion can locate an object and understand its orientation to produce real-time position coordinates, which are sent back to the robot for processing. Pathways can be generated offline, reducing the need for manual intervention. Location-based positioning also increases capacity for product variation, ideal for complex products and HMLV production scenarios.

Applications: Various machine tending applications

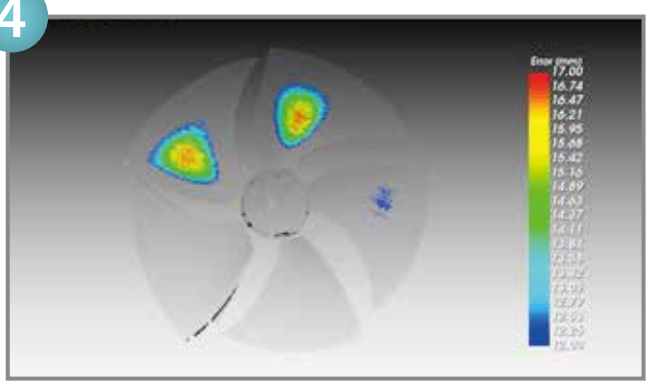
3

Intelligent Path Planning

With Solmotion, robots can plan and adjust their path based on real-time data, from movement and speed to obstacle detection and collision avoidance. Highly flexible and easy to navigate, Solmotion makes use of edge path computing to straighten or fix the angle of the robot according to the scenario.

Applications: Cutting, gluing, edge trimming, painting

4



3D Defect Inspection

Solmotion VGR can compare real-time 3D point cloud data with the standard CAD model to help identify product inconsistencies. A report will be generated analyzing deviations in height, width, and volume, which is then used to automatically modify the pathway and guide the robot to repair any defects.

Applications:
Product inspection, matching, trimming, repairing, milling, 3D printing

Solmotion

No more fixtures or molds. Smart, fast, and convenient.

Applicable Industries

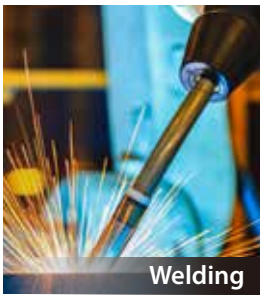
Aerospace Industry

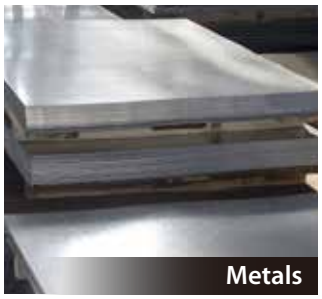
Footwear

Foundry

Shipbuilding

Shipbuilding


Welding


Metals

A pioneer in AI and vision systems, Solomon's smart solutions consistently demonstrate strong deployment rates across a range of industries and applications around the globe. An award-winning solution, Solmotion is capable of handling parts as small as 0.5cm to heavy machinery, providing easy-to-adopt automation opportunities to maximize operational efficiency.

Key Features

- Supports CAD/CAM software (remote programming)
- User-friendly path planning
- Simplified graphical user interface
- Project management & program backup
- Intelligent object recognition and path planning
- Easy integration with major robot and PLC brands
- Automatic & manual point cloud data editing
- Obstacle detection & collision avoidance

Product Specifications

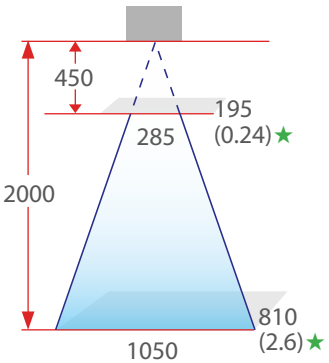
Specifications

Module Name	SLM 3DSCP-0231C	SLM 3DSCP-0501C
Pixels	2.3 M	5 M
Camera Resolution	1920x1200	2590x2048
Field of View ★★	285x195~1050x810 mm	295x220~1230x950 mm
Working Distance ★★	450~2000 mm	
Spatial Resolution ★	0.24~2.6 mm	0.15~1.8 mm
Scanning Time (Minimum)	Minimum : 0.3 Sec	Minimum : 0.8 Sec
Scanning Technology	Structured Light Projection	
Projector Light Source	LED	
Interface	USB 3.0	
Dimensions (L-W-H)	363x202x120 mm (L-W-H)	
External Power Adapter	AC 100~240 V / 50~60 Hz	
Weight	3 kg	
Operating Temperature	0 - 40 °C	

★★ Can be customized
★ Based on theoretical data

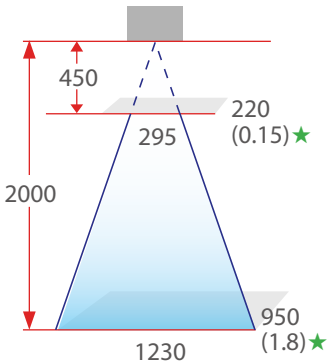
3D Scanner Field of View (FOV)

SLM 3DSCP-0231C



★ Resolution
0.24 ~ 2.6 mm

SLM 3DSCP-0501C



★ Resolution
0.15 ~ 1.8 mm

AccuPick

reddot winner 2020
best of the best interface design

Vision Systems DESIGN 2019 Innovators Awards GOLD

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Software Requirements: Windows 10 x64
(RAM: minimum 16GB, 32GB recommended)

Hardware Requirements: GPU: NVIDIA GTX 1070 or higher
(≥8GB VRAM recommended)

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