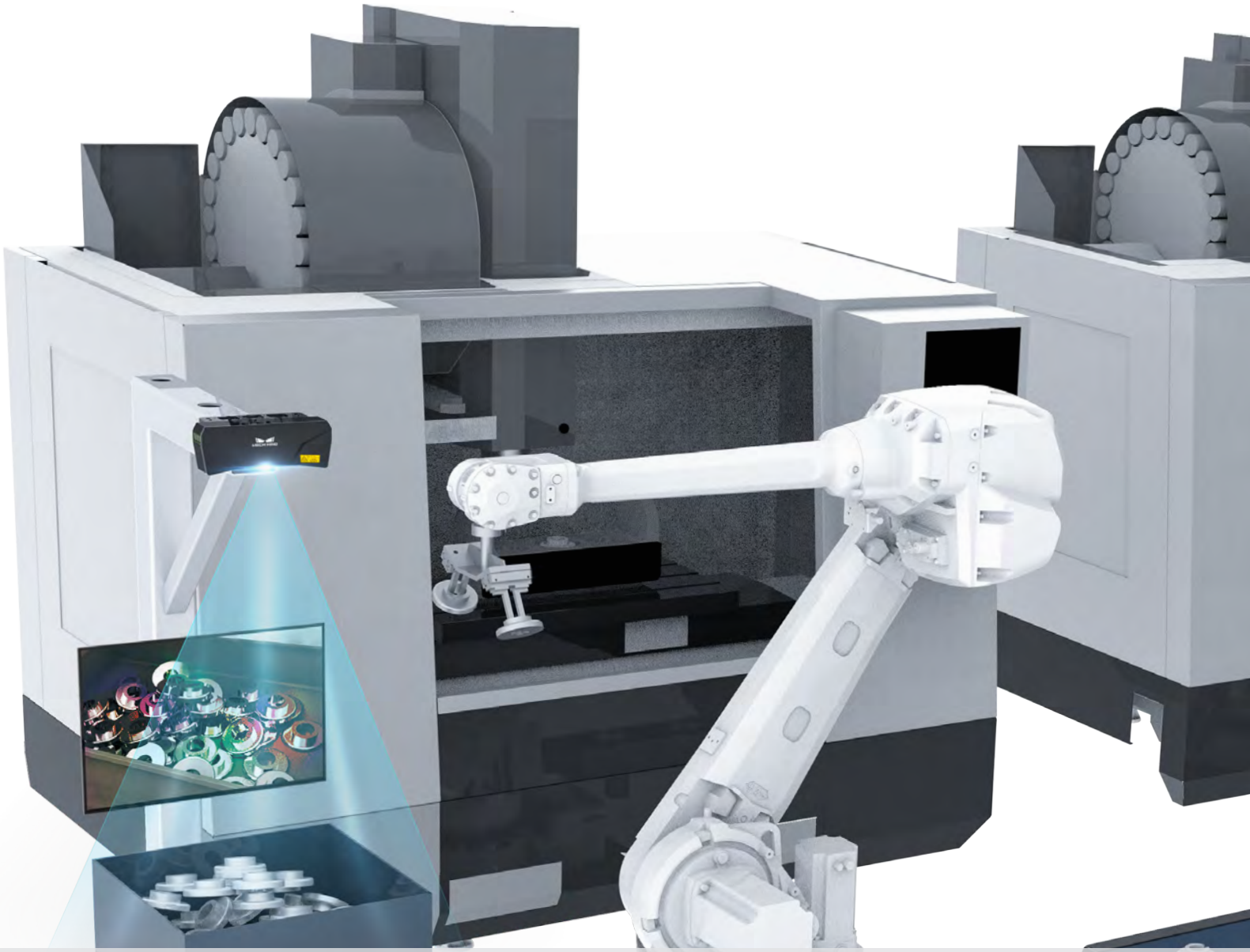
3D Vision & AI for Robots and More

Mech-Mind Robotics Product Catalog

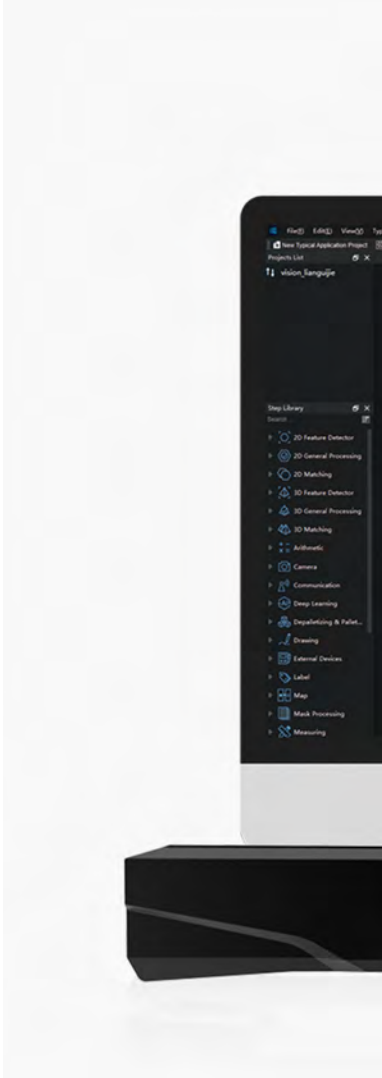


Mech-Eye Industrial 3D Camera
Mech-Vision Graphical Machine Vision Software
Mech-DLK Deep Learning Software
Mech-Viz Intelligent Robot Programming Environment

Mech-Mind
Pioneer in AI+3D Field

Aiming to drive the ubiquity of intelligent robots, Mech-Mind has made an unparalleled commitment to R&D and its product portfolio including 3D cameras, machine vision algorithms and software, an offline deep learning tool, and an intelligent robot programming environment.
Our products can be applied to typical scenarios such as order picking, locating, assembly, industrial inspection/measurement, etc.

- **High Intelligence:** Enabled by powerful AI algorithms, our solutions can handle a broad range of objects and deal with various complex situations.
- **Stability and Reliability:** Mech-Eye Industrial 3D Camera has been tested continuously for more than 10000 hours. The camera is dust and water proof with IP65 enclosures standards. It can operate long hours in harsh environments. Mech-Eye has obtained CE, FCC, VCCI, and RoHS certifications.
- **Competitive Price:** The price is only half of the same type of typical products.
- **Easy Integration:** Our products can be adapted to various mainstream brands' robots and support integrating with various systems.
- **Easy to Deploy and Use:** The plug-and-play solutions save a lot of deployment time. The fully visualized, code-free programming interface dramatically lowers the threshold for operators to deploy.
- **Thousands of Use Cases**: Our solutions have been successfully deployed in hundreds of leading companies in China, the United States, South Korea, Japan, Germany, Spain and other countries.
Previous applications cover palletizing, depalletizing, piece picking, machine tending, gluing, locating, assembling, detecting, etc.




MECH MIND
MECH MIND
MECH MIND


MECH MIND

AI+3D+Industrial Robot Solution

Products Portfolio

Mech-Eye Industrial 3D Camera

Mech-Eye Industrial 3D Camera can generate high-quality 3D data for a broad range of objects.

Ambient light resistance, high precision, high speed, and small sizes. Can be well suited in different scenarios.

Produce high-quality 3D data

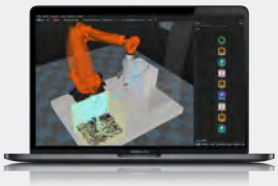
Mech-Vision
Graphical Machine Vision Software

Support code-free depalletizing, machine tending, bin picking, gluing/spraying, precise locating, defect detection, size measurement, etc.

Built-in advanced algorithms such as 3D vision and deep learning can meet various complex practical needs.

Mech-DLK enables integrators to train deep learning models locally.

Complete visual functions such as recognition, locating, and measurement under complex conditions.



Mech-Viz
Intelligent Robot Programming Environment

The visualized and code-free programming interface enables one-click simulation.

Built-in intelligent algorithms such as path planning, collision detection, grasping strategy, etc. It can be adapted to various mainstream robot brands worldwide.

AI enabled industrial automation for robotics

Support and Services

With a team of more than 700 experts, we provide integrators with technical support and attentive services including delivery, staff training, demos, conference assistance, etc.

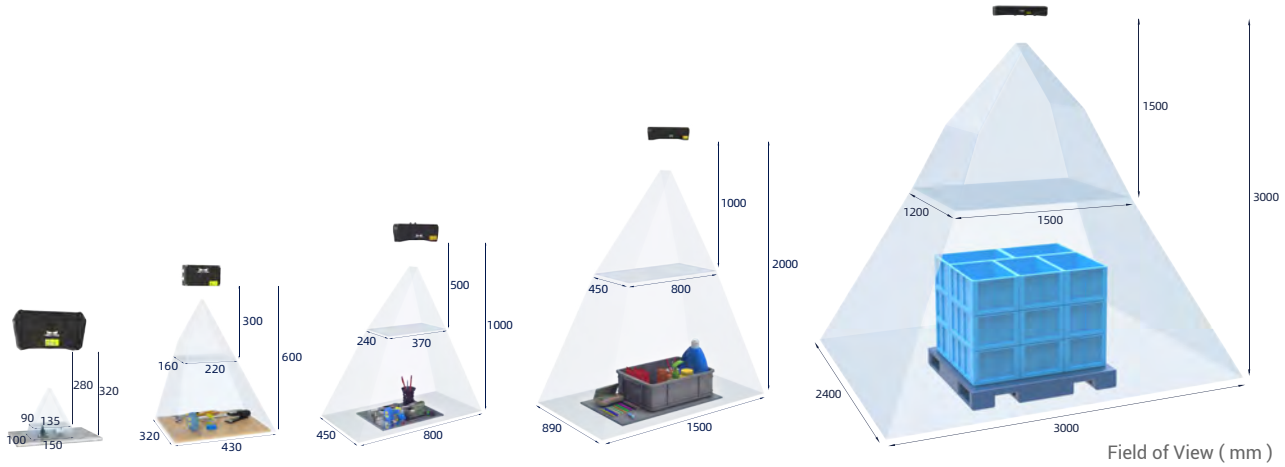
Fully assist our business partners to enhance competitiveness and seize opportunities.

Mech-Eye Industrial 3D Camera

A Perfect Combination of Excellent Performance and High Cost Effectiveness

Mech-Eye Industrial 3D Camera can generate high-quality 3D data for a broad range of objects. Our cameras can be well suited in various complex scenarios and meet the customers' needs such as ambient light resistance, high precision, high speed, and small size, etc.

Mech-Eye Industrial 3D Camera			
 **Mech-Eye UHP-140**	Short Distance	- Micron-level accuracy - Robust anti-reflection performance - Innovative image fusion algorithm - High-quality imaging of shiny parts	Designed for inspection and gauge (positon, gap, flatness, etc.) in the automotive industry and more.
 **Mech-Eye NANO**	Short Distance	-Ultra-small size and ultra-high accuracy - Ambient light resistance - Ideal for on-arm applications	Designed for high-precision and space-critical robotic applications, including high precision localization, assembly, etc.
 **Mech-Eye PRO S**	Middle Distance	- High accuracy - Fast scanning - Compact in size - High-quality 3D images of various objects	Designed for random bin picking, high-precision localization and assembly, screw driving, academic research applications, and more.
 **Mech-Eye PRO M**	Middle Distance	- High accuracy - Fast scanning - High-quality 3D images of various objects	Designed for random bin picking, high-precision localization and assembly, screw driving, academic research applications, and more.
 **Mech-Eye LSR**	Long Distance	- High accuracy - Large FOV - Fast scanning - Ambient light resistance - High-quality 3D images of shiny objects	Designed for large FOV applications, including loading and unloading large parts, localoization and assembly, gluing, spraying, welding, etc. Suitable for factory-floor applications with ambient light interference.



Field of View (mm)

Mech-Eye UHP-140	Mech-Eye NANO	Mech-Eye PRO S	Mech-Eye PRO M	Mech-Eye LSR L

Mech-Eye Industrial 3D Camera

A Perfect Combination of Excellent Performance and High Cost Effectiveness

Specification	UHP-140	PRO S	PRO M	LSR L
				
Opitimal Scanning Range (mm)	300 ± 20	500 - 1000	1000 - 2000	1500 - 3000
Near FOV (mm)	135 × 90 @ 0.28 m	370 × 240 @ 0.5 m	800 × 450 @ 1.0 m	1500 × 1200 @ 1.5 m
Far FOV (mm)	150 × 100 @ 0.32 m	800 × 450 @ 1.0 m	1500 × 890 @ 2.0 m	3000 × 2400 @ 3.0 m
Resolution	2048 × 1536	1920 × 1200	1920 × 1200	2048 × 1536（Depth Resolution）
				4000 × 3000/2000 × 1500（RGB）
Megapixels (MP)	3.0	2.3	2.3	3.0
*Point Repeatability Z (σ)	2.6 μm @ 0.3 m	0.05 mm @ 1.0 m	0.2 mm @ 2.0 m	0.5 mm @ 3.0 m
	**Region: 0.09 μm @ 0.3 m			
***VDI/VDE Accuracy	0.03 mm @ 0.3 m	0.1 mm @ 1.0 m	0.2 mm @ 2.0 m	1.0 mm @ 3.0 m
Typical Capture Time (s)	0.6 - 0.9	0.3 - 0.6	0.3 - 0.6	0.5 - 0.9
Baseline (mm)	80	180	270	380
Dimensions (mm)	260 × 65 × 142	265 × 57 × 100	353 × 57 × 100	459 × 77 × 86
Weight (kg)	1.9	1.6	1.9	2.9
Operating Temperature (℃)	0 - 45			-10 - 45
Communication Interface	Ethernet			
Image Sensor	Sony CMOS for High-end Machine Vision			
Power Supply	24V DC			
Safety and EMC	CE/FCC/VCCI			
Protection Class	IP65			
Cooling	Passive			

Specification	NANO	PRO XS	LOG S	LOG M	DEEP
					
Opitimal Scanning Range (mm)	300 - 600	300 - 600	500 - 1000	800 - 2000	1200 - 3500
Near FOV (mm)	220 × 160 @ 0.3 m	220 × 160 @ 0.3 m	360 × 250 @ 0.5 m	520 × 390 @ 0.8 m	970 × 1160 @ 1.2 m
Far FOV (mm)	430 × 320 @ 0.6 m	430 × 320 @ 0.6 m	710 × 490 @ 1.0 m	1410 × 960 @ 2.0 m	2830 × 3320 @ 3.5 m
Resolution	1280 × 1024	1280 × 1024	1280 × 1024	1280 × 1024	2048 × 1536
Megapixels (MP)	1.3	1.3	1.3	1.3	3.0
*Point Repeatability Z (σ)	0.1 mm @ 0.5 m	0.1 mm @ 0.5 m	0.1 mm @ 1.0 m	0.3 mm @ 2.0 m	1.0 mm @ 3.0 m
***VDI/VDE Accuracy	0.1 mm @ 0.5 m	0.1 mm @ 0.5 m	0.2 mm @ 1.0 m	0.3 mm @ 2.0 m	3.0 mm @ 3.0 m
Typical Capture Time (s)	0.6 - 1.1	0.7 - 1.1	0.3 - 0.5	0.3 - 0.5	0.7 - 1.1
Baseline (mm)	68	93	150	280	400
Dimensions (mm)	145 × 51 × 85	160 × 52 × 87	270 × 72 × 130	387 × 72 × 130	481 × 98 × 145
Weight (kg)	0.7	0.8	2.2	2.4	4.3
Operating Temperature (℃)	0 - 45				
Communication Interface	Ethernet				
Image Sensor	Sony CMOS for High-end Machine Vision				
Power Supply	24V DC				
Safety and EMC	CE/FCC/VCCI				
Protection Class	IP65				
Cooling	Passive				

*The standard deviation of the single point Z value for 100 measurements, The measurement target is a ceramic plate.

**The standard deviation of the difference of the average Z value in two local regions for 100 measurements, The measurement target is a ceramic plate.

***Refer to VDI/VDE 2634 Part II.

Mech-Eye Industrial 3D Camera

A Perfect Combination of Excellent Performance and High Cost Effectiveness

Mech-Eye LSR : The New-Generation Industrial 3D Camera

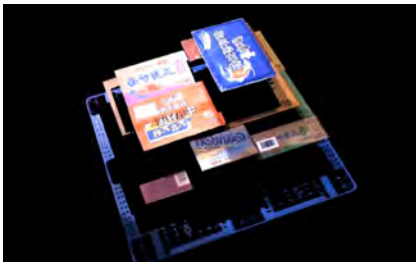
Under the typical light (>15000lx) in real factories and warehouses, Mech-Eye LSR is able to generate complete, accurate and precise point cloud data for objects such as cartons, sacks and workpieces.

Track Links

Gearbox Housings

Auto Seat Side Panel

Crankshafts

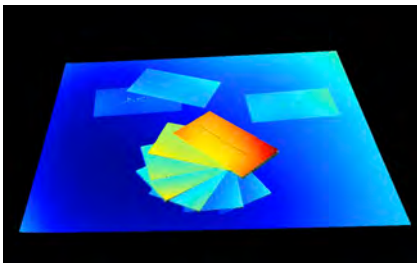


Colored Cartons

Colored Sacks

Mech-Eye PRO Industrial 3D Camera

High precision and small size. Dust and water proof with IP65 enclosures standards. Able to generate complete, accurate and precise point cloud data for objects such as metal parts, plastics, woods, etc.



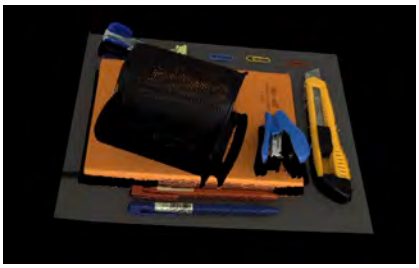
Business Cards (color rendered by height)

Metal Parts

Dark Objects

Reflective Objects

Colored Goods



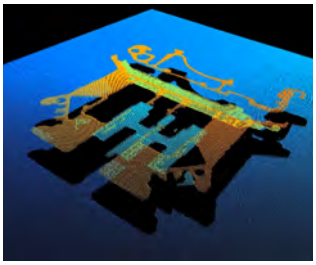
Multicolored Office Supplies

Mech-Eye Industrial 3D Camera

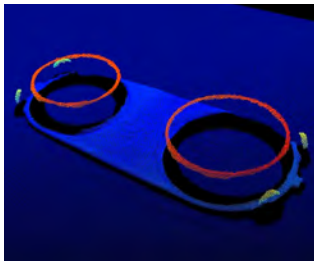
A Perfect Combination of Excellent Performance and High Cost Effectiveness

Mech-Eye NANO Palm-Sized Industrial 3D Camera

Small size with high precision and flexibility.
Suitable to be installed on the robot arm. Can produce high-quality 3D data for various objects.



Precision Component

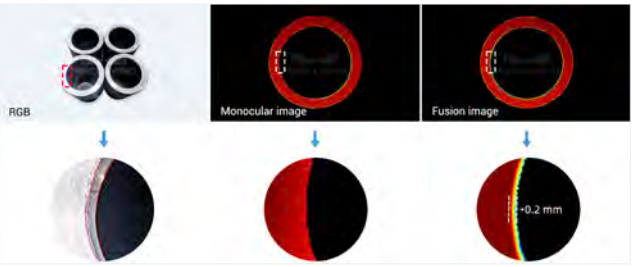


Parts of Merely 0.68 mm Thickness

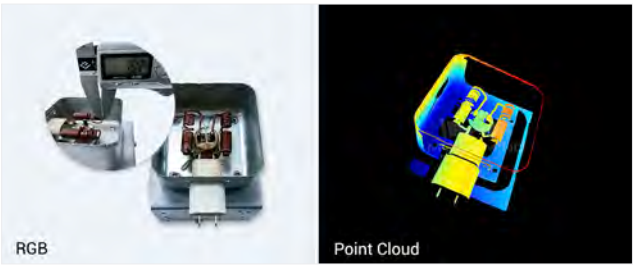
Various Small Workpieces

Mech-Eye UHP-140 Industrial 3D Camera with Micron-Level Accuracy

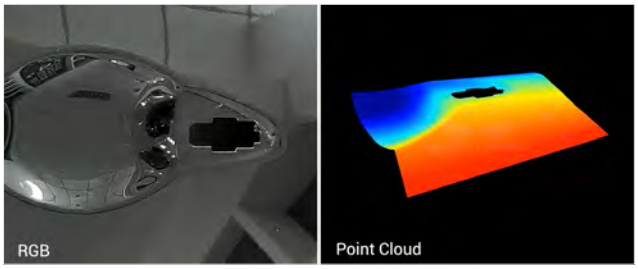
Micron-level accuracy with robust anti-reflection performance. Mech-Eye UHP-140, coupled with the advanced image fusion and anti-reflection 3D reconstruction algorithms, can effectively reduce blind spots and generate complete, detail-rich, and accurate point cloud data for reflective and shiny shaped parts with tiny details.



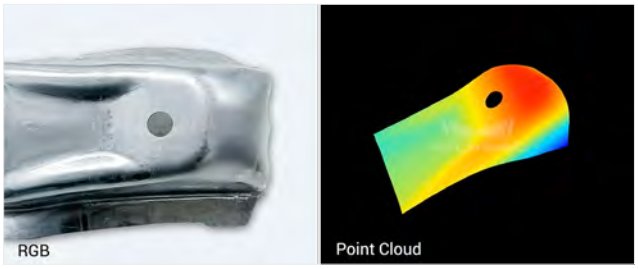
Round positioning hole with chamfer
Mech-Eye UHP-140 @ 0.3 m, point cloud rendered by height



Reflective enameled copper wire with a diameter of about 1.5 mm
Mech-Eye UHP-140 @ 0.3 m, point cloud rendered by height



High brightness dented lacquered auto door; the handle position is easy to scatter light
Mech-Eye UHP-140 @ 0.3 m, point cloud rendered by height



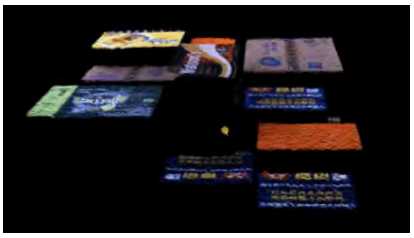
Reflective dented sheet metal part
Mech-Eye UHP-140 @ 0.3 m, point cloud rendered by height

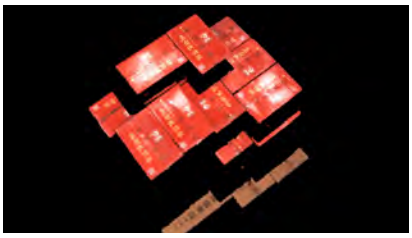
Mech-Eye Industrial 3D Camera

A Perfect Combination of Excellent Performance and High Cost Effectiveness

Mech-Eye Industrial 3D Camera can produce high-quality 3D data for a broad range of objects such as cartons, sacks, metal parts, express parcels, etc.

Tightly-Packed Cartons with Patterns and Tapes

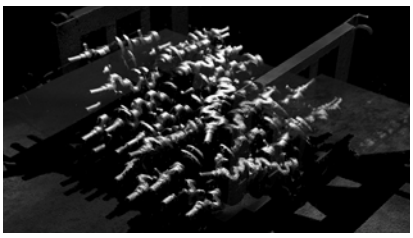
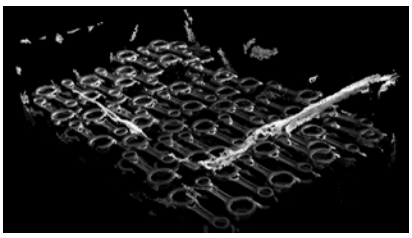




Tightly-Packed Sacks with Patterns



Randomly-Placed Metal Parts (e.g. Rotors, Crankshafts, Engine Rods)

Various Common Goods



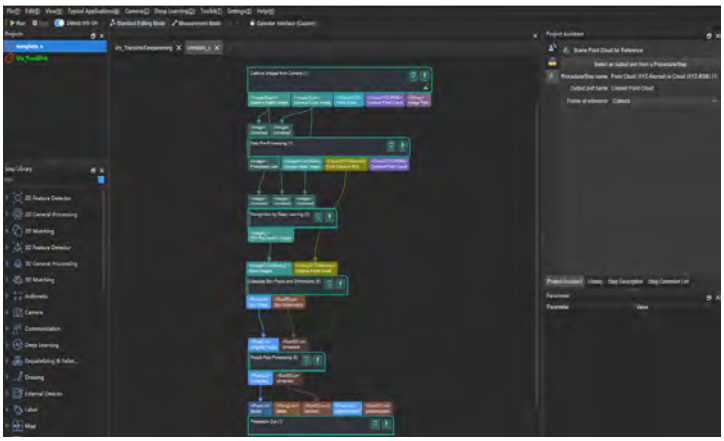
Randomly-Placed Real Express Parcels



Mech-Vision

Graphical Machine Vision Software

Mech-Vision is the new generation machine vision software, which can complete depalletizing, machine tending, registration-free order picking, gluing/spraying, precise locating, defect detection, size measurement, etc. through a code-free graphical interface. The built-in advanced algorithm modules such as 3D vision and deep learning can meet complex and diverse practical needs.

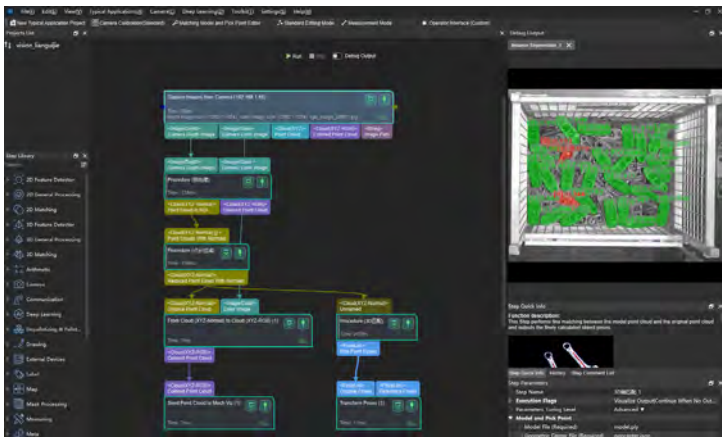


Code-free Graphical Interface, Easy to Use

Code-free graphical interface, concise UI design, and clear-cut functional partitions.

Professional programming skills are not required for users to realize visual engineering construction.

The software enables integrators to develop models autonomously.

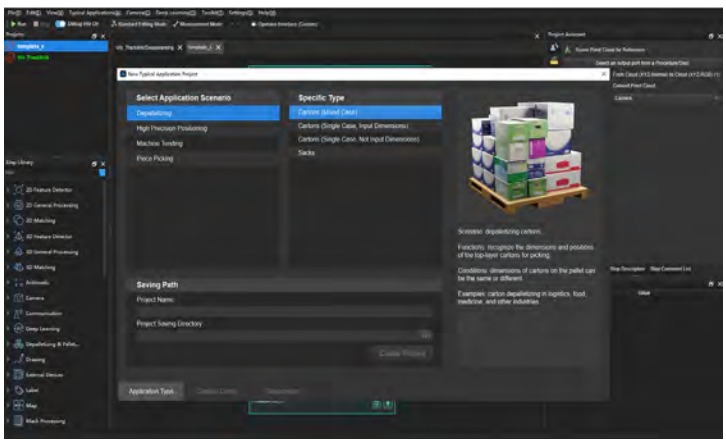


Built-in Advanced Algorithm Modules

Built-in advanced algorithm modules such as deep learning can meet complex and diverse practical needs.

Handle situations such as randomly-placed objects, considerably reflective or dark objects.

Can complete visual functions such as recognition, positioning, and measurement under complex conditions.



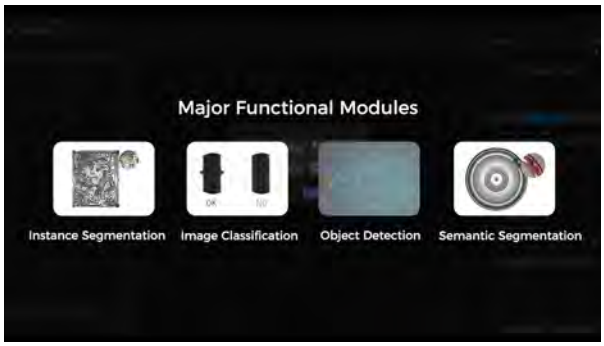
Various Built-in Typical Application Plug-ins

With integrated various application plug-ins such as random feeding, carton depalletizing, express parcel feeding, registration-free goods grasping, high-precision positioning, guided gluing, etc, users can easily deploy multiple typical applications of intelligent robots.

Mech-DLK

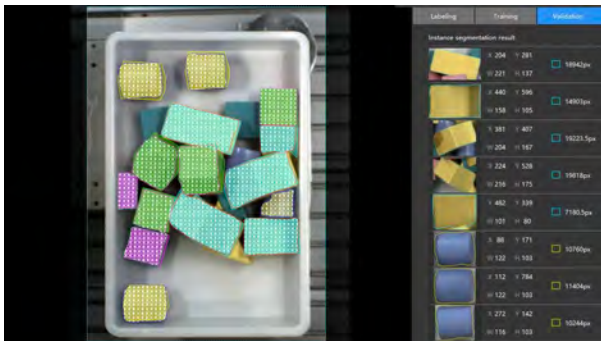
Deep Learning Software

Mech-DLK is a newly launched deep learning autonomous training tool, which integrates the entire process of data collection, screening, importing, labeling, model training, verification, and deployment of deep learning model training. The software is user-friendly, which improves training efficiency while ensuring data security throughout the process.



All-in-one Solution

It makes Mech-DLK well suited for dealing with complex materials and components in mobile, electronics, and automotive industries.



Consistently Reliable & Validated Results

Its highly consistent inspections archives images that can be reviewed offline, enabling end-users to understand and quickly rectify anomalous results.

Efficient Training

Mech-DLK enables users to train deep-learning models for all kinds of parts with ease. The high-precision deep learning algorithms guarantee superb accuracy with fewer parameters required. The advanced data augmentation enables users to train a model with smaller image sets. And with the built-in finetune function that drastically increases training efficiency by optimizing the existing models, users don't have to train a model from scratch.

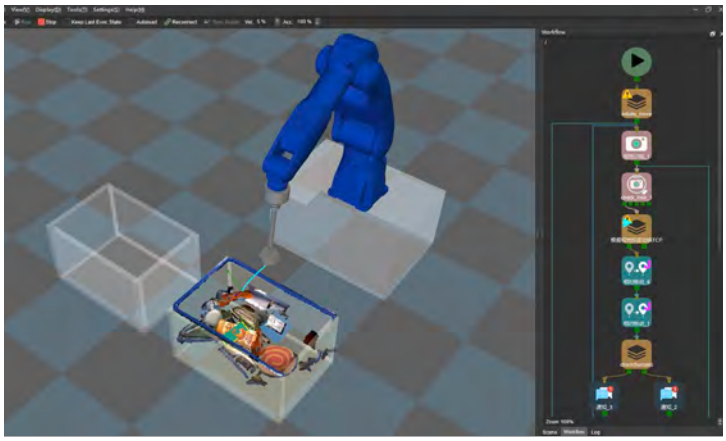
Easy Deployment

SDKs in multiple programming languages (C, C++, C#, etc.) made easy. Users can utilize Mech-Vision machine vision software for rapid deployment.

Mech-Viz

Intelligent Robot Programming Environment

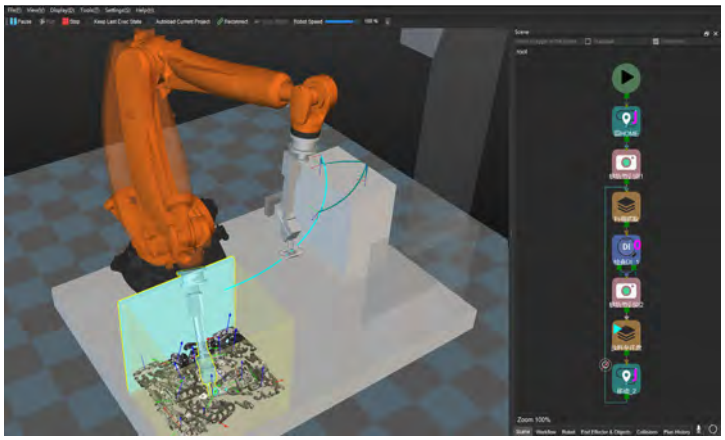
Equipped with a visualized and code-free programming interface, the new generation intelligent robot programming environment can realize one-click simulation. Intelligent algorithms such as path planning, collision detection and picking planning are built in.
The environment can be adapted to various mainstream robot brands in China and abroad.



Process-Oriented Interface, One-Click Simulation, Easy to Operate

Visualized and code-free programming interface can realize one-click simulation.

Users without code programming experience can operate the robots.



Built-in Intelligent Algorithms

Intelligent algorithms such as path planning, collision detection and picking planning are built-in to improve stability.

Adapted to Various Mainstream Robot Brands

The programming environment can be adapted to various mainstream robot brands.

The adapation to a new brand robot only needs 3-5 days.

Typical Use Cases

A Large Pharmaceutical Factory

Vision-Guided Case Depalletizing

The robot picks the corresponding number of cartons according to the order requirements and places them in the designated location.

- There are more than 500 kinds of cartons on-site.
- Cartons with cable ties, tapes, patterns,and texts can be well handled.
- During the process of depalletizing, the vision-guided robots can calculate the number of cartons to be unloaded simultaneously.

A Large Steel Plant

Vision-Guided Depalletizing of Sacks

The robot grabs the corresponding number of sacks from the pallet one by one according to the order requirements and places them on the conveyor line.

- Deformed sacks or sacks with wrinkles and patterns on the surface can all be well handled.
- Support any pallet pattern.
- It can be adapted to a variety of robots such as four-axis, six-axis, truss, etc.

A Large Delivery Company

Vision-Guided Mixed Cage Trolley Palletizing

The vision-guided robot grabs randomly-placed express parcels one by one from the chute and places them in a designated location for code scanning. The package will then be sent to the crossbelt sorter.

- High processing speed.
- Support a variety of different express parcels (including soft bags, various cartons, foam envelopes, etc.);
- Support tightly packed or randomly placed parcels.
- It can work together with logistic equipment such as barcode scanner, WMS system, and cross-belt sorter.

A Large Cosmetics E-Commerce

Vision-Guided Order Picking

The robot grabs the corresponding quantity of goods from the bin according to the order and places them in the designated position.

- Support hundreds of different SKUs.
- Randomly-placed and tightly-packed goods, goods with express bills /films/intricate patterns and goods with pure black surfaces can all be well handled.
- Seamless integration with logistic equipment such as the WMS system and AGV.

Typical Use Cases

A Large Machinery Factory

Vision-Guided Machine Tending of Track Links

The vision-guided robot grabs randomly-placed metal parts one by one and distinguishes the front and back sides. The robots place the right-side-up parts on the worktable. And those right-side-downs are to be processed through the turning mechanism, then loaded on the worktable afterward.

- More than ten kinds of metal parts are on site.
- Randomly-placed workpieces and workpieces with similar front and black sides can be well handled.
- Path planning, collision detection, and other AI algorithms guide robots avoid collision, improving stability.
- Mech-Eye 3D LSR can work well under ambient light interference.

A Large Bus Factory

Vision-Guided Cabin Doors Gluing

The vision-guided robot recognizes randomly-placed workpieces (cabin doors), and execute gluing according to the required trajectory.

- Adaptable to dozens of different workpieces (there're more than 20 kinds of cabin doors on site).
- Support workpieces randomly placed on the conveyor belt.
- A wide range of cabin door gluing can be done with high precision (door size is about 2 m x 1.5 m), and the accuracy at 2.5 m is <1 mm.
- Randomly-placed objects and considerably reflective or dark workpieces can be well handled.

A Large Automotive OEMs

Vision-Guided Wheels Assembly

The vision-guided robot recognizes and picks randomly-placed wheels, locates the assembly position in motion, precisely and assembles the workpiece.

- Adaptable to workpieces of various sizes.
- Randomly-placed objects, or considerably reflective or dark workpieces can be well handled.
- Assembly can operate stably and precisely, while the production line is up and running.

A Large Steel Plant

Vision-Guided Rebar Locating (Labelling)

The vision-guided robot recognizes the cross section of the bundled steel bar and locates the most protruding steel bar section and excute abeling.

- High-precision and high-efficiency labeling can be performed on various rebar bundles (diameter 8-30 mm).
- Identify a proper position to make firm labeling, avoiding external force causing the label to fall off.
- Single mark and double mark are free to switch, and there is a re-shooting function to confirm dropped cards.



Aiming to drive the ubiquity of industrial robots, Mech-Mind was founded in 2016, based in Beijing (Product Center) and Shanghai (Sales and Deployment) with branch offices in Munich, Tokyo, Shenzhen, Hangzhou, Guangzhou, Changsha, Qingdao, and Jinan.

Fast Growth

Mech-Mind has launched a full infrastructure and products portfolio and exhibited at 2020 CIIF in Shanghai and iREX2019 in Tokyo. Mech-Mind has been selected as 2019 Intel AI 100 Best Innovation Incentive Program and Microsoft Scaleup Member Enterprise. We have also received multiple rounds of funding from Sequoia Capital China, Intel, etc.

World-Class Team

We currently have more than 700 members, including engineers who graduated from Tsinghua University, Beihang University, Zhejiang University, Harbin Institute of Technology, Carnegie Mellon University, Technical University of Munich, Delft University of Technology, California Institute of Technology, The University of Tokyo, and other top universities in China and abroad. We have deep technical accumulation in 3D sensing, vision and robotics algorithms, robotics software, and industry application solutions. Mech-Mind has dozens of patent and software copyright applications that are filed or under review.

Recognition from Industry-Leading Enterprises

We have already deployed solutions for automotive plants, home appliance plants, steel plants, food plants, logistic warehouses, pharmacies, and banks. The applications include depalletizing, palletizing, bin-picking, machine tending, assembly, gluing, and locating, etc. We have successfully deployed over 2000 solutions in for clients and partners from China, Japan, South Korea, Singapore, Germany, Italy, Switzerland, the United States, Turkey, Thailand, and other countries.

Compatible with Most Mainstream Robot Brands Globally

ABB KUKA YASKAWA FANUC Kawasaki NACHI DENSO UNIVERSAL ROBOTS DOBOT
STÄUBLI EFORT GREE ROKAE PEITIAN ROBOTICS TM ROBOT ESTUN ROBOTICS TURIN ELITE ROBOTS
AUBO DELTA QJAR HAN'S ROBOT HYUNDAI JAKA SIASUN

Customers and Partners

SIEMENS Honeywell TOYOTA SANY LOTTE GREE intel
Lenovo TSINGTAO YUTONG Haier Midea SDS Continental DHL BOSCH WEICHAI
brose FANUC ABB Kawasaki KUKA YASKAWA DENSO NACHI UNIVERSAL ROBOTS Microsoft ScaleUp

3D VISION & AI FOR ROBOTS AND MORE

Mech-Mind Robotics Technologies Ltd.

Offices: Beijing | Shanghai | Shenzhen | Qingdao | Changsha | Jinan | Zhengzhou | Guangzhou | Hangzhou | Munich | Tokyo
Website: www.mech-mind.com
E-mail: info@mech-mind.net