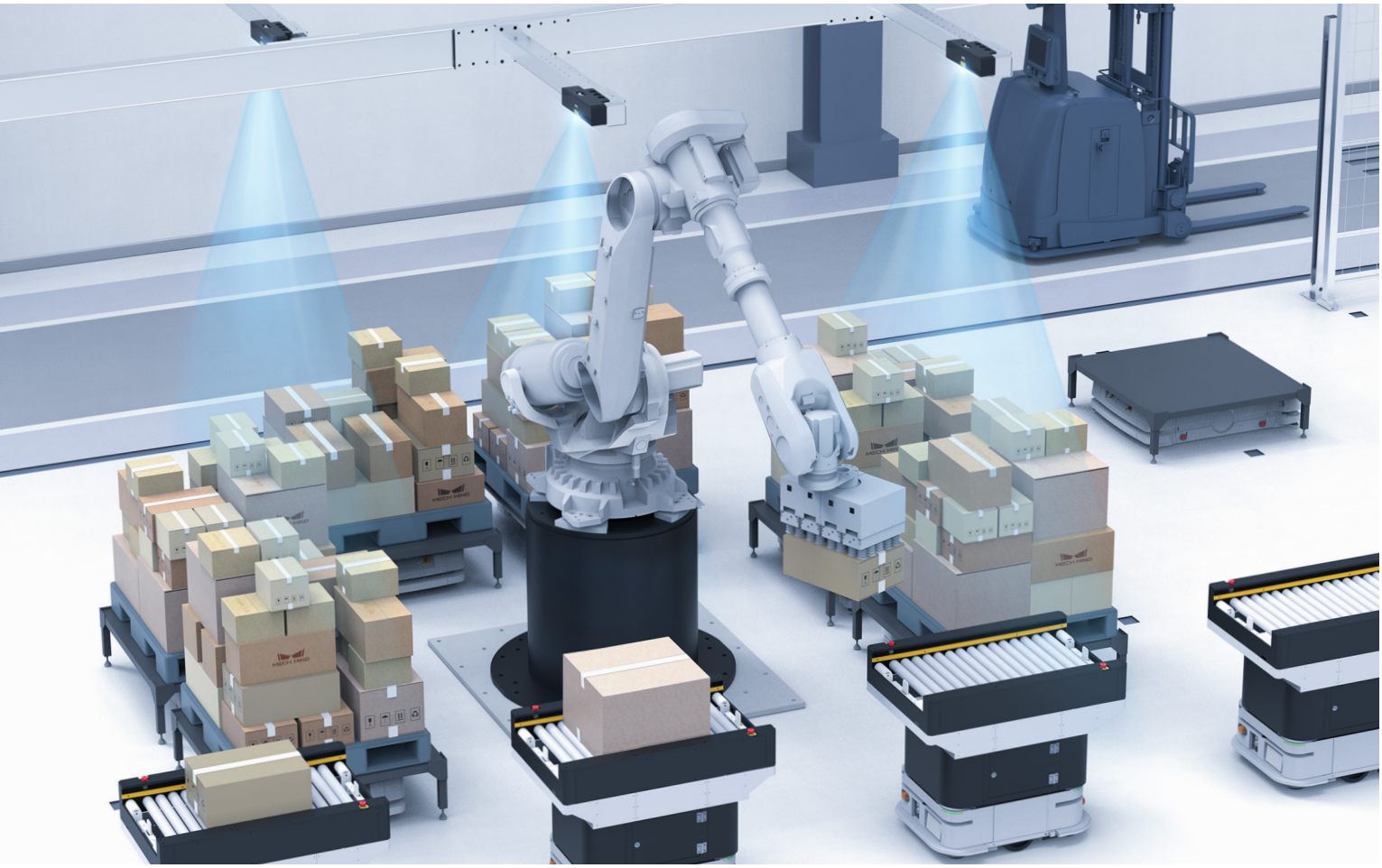


Mech-Mind Robotics

AI + 3D Vision Applications in Logistics

4,000+ cameras successfully deployed for world-leading companies in logistics

We Help Integrators WIN
with best-in-class AI + 3D vision tools and services.

Advanced Techs | Proven | Versatile | Fast and Easy | No Black-Box | Industry-Ready | Open | Best Services

Mech-Mind
AI + 3D Vision Pioneer in Logistics

AI-driven robotics is undoubtedly revolutionizing traditional logistics processes and supply chain management. Powered by **AI** and **3D vision**, robots can efficiently handle thousands of items of different sizes, shapes and random positions. With these advancements, logistics companies can minimize delays, optimize workflow, improve delivery accuracy, and cut operational costs.

Leveraging 3D vision and AI technologies, Mech-Mind empowers customers and system integrators to automate demanding vision tasks in logistics, such as depalletizing, piece picking, and parcel induction. Mech-Mind has successfully deployed **4,000+ cameras** in retail, third-party logistics (3PL), e-commerce, and warehousing.

Mech-Mind provides global system integrators with proven, versatile and easy-to-use industrial 3D cameras and software to tackle challenging automation tasks. It also offers global on-site and remote services to help its partners handle complex projects at every step.

01

Depalletizing

02

Piece Picking

03

Parcel Induction

Mech-Mind AI + 3D Vision Solution

Vision-Guided Depalletizing

Vision-guided robots depalletize single-SKU pallets or pallets loaded with cases/sacks/totes of mixed weights and sizes.

Capabilities

- **Universal pallets and patterns**

  Works with typical pallets (e.g., 1.2 m × 1.2 m × 1.8 m).

  Manages tall pallets (as tall as 2.3 m).

  No need to stack cases/sacks/totes in a defined pattern.

- **Handle edge cases and unlimited SKUs**

  Handles wrinkled, unsealed, and damaged objects.

  Handles objects with different colors and highly reflective tape.

  Recognizes thousands of cases, bags and totes.

- **High-speed depalletizing**

  Industry-leading pick rates ensure higher output.

  The advanced multi-pick strategy allows accurate picking of multiple cases in one grasp.

- **Reliable unloading**

  Collision detection and path planning algorithms guarantee collision-free operation.

Recommended Cameras

- Mech-Eye DEEP

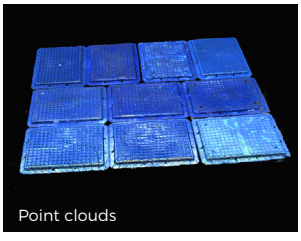
Industries

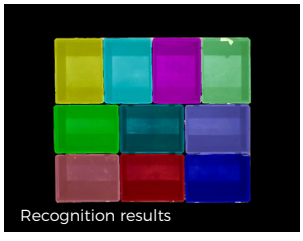
- Warehousing, e-commerce, grocery, pharmaceutical, food & beverage, etc.

Point Clouds and Recognition Results

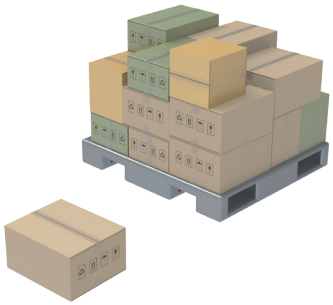
Tightly stacked cases

Tightly packed totes



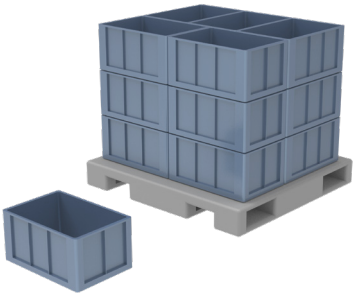


With Mech-Eye industrial 3D cameras, you can depalletize:



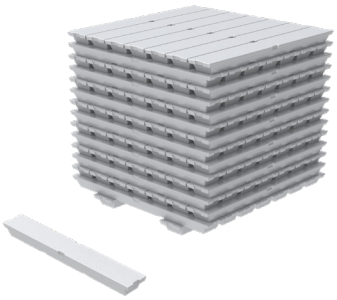
Cases/cartons

Sacks

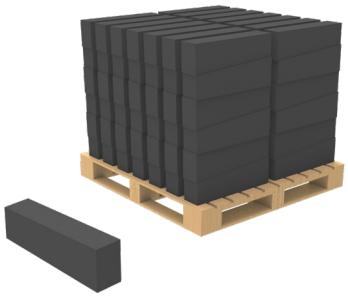


Totes

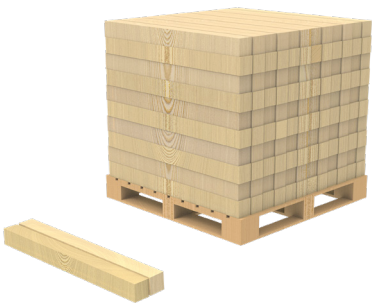
Kegs/barrels



Aluminium ingots

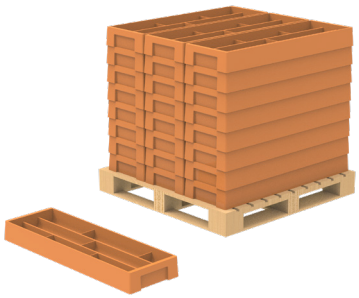


Refractory bricks



Planks

Carton boards



Core trays

The Mech-Eye industrial 3D camera delivers extremely clear and detailed 3D point clouds, which enables accurate recognition and effortless depalletizing of items with diverse patterns. Driven by AI algorithms, the vision system distinguishes between different textures and surfaces to accurately recognize objects with multiple materials.

Say goodbye to depalletizing challenges - Mech-Eye empowers you to streamline your operations and unlock efficiency in handling different products.

Case Study

Vision-Guided Sack Depalletizing

Large manufacturer

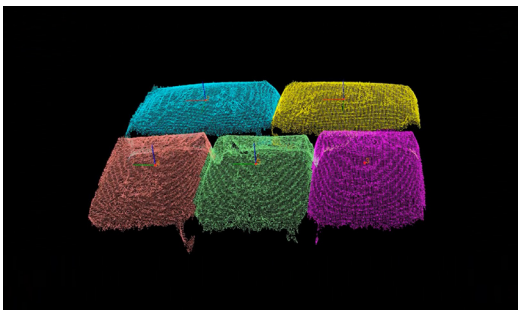
The Challenge

The vision-guided robot is required to handle large pallets (e.g., 1.4 m × 1.2 m × 1.95 m) with deformable and densely piled sacks.

The Mech-Mind Solution

- Mech-Eye DEEP, installed above the workstation, covers large pallets.
- Imaging of **the whole layer** with only **one exposure**.
- The vision system identifies the poses and positions of **sacks with reflective, wrinkled, and patterned surfaces**.
- The system calculates optimal picking points, allowing for accurate picking.
- The vision-guided robot works with bag-breaking machines to ensure a smoother workflow.

Point clouds



Recognition results

The Result

- Recognition success rates: **≥ 99.9%**.
- Improved efficiency and productivity.

Case Study

Vision-Guided Case Depalletizing

Large liquor company

The Challenge

The industrial camera is required to generate clear 3D point clouds of cases with tapes and patterns. New SKUs and cases with patterns and reflective surfaces make accurate imaging and recognition more difficult.

The Mech-Mind Solution

- The Mech-Eye DEEP takes images and the vision system recognizes cases of various sizes and patterns.
- The system finds ideal picking points and maps out the optimum depalletizing strategy based on the case sizes.
- The robot is guided to depalletize cases in rows and columns.
- The **collision detection** and **path planning** algorithms ensure robots to pick and place cases without causing interruption or production line shutdown.

Point clouds

Recognition results

The Result

- Recognition success rates: **≥ 99.9%**
- Consistent product flow.
- Higher efficiency and productivity.

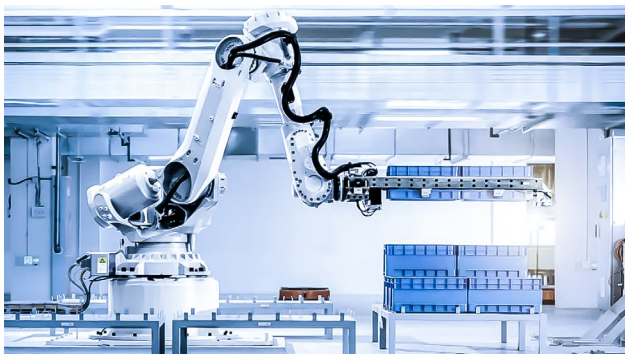
Case Study

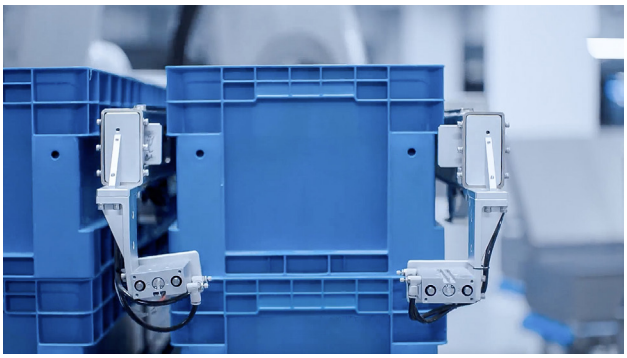
Vision-Guided Tote Depalletizing

Large food factory

The Challenge

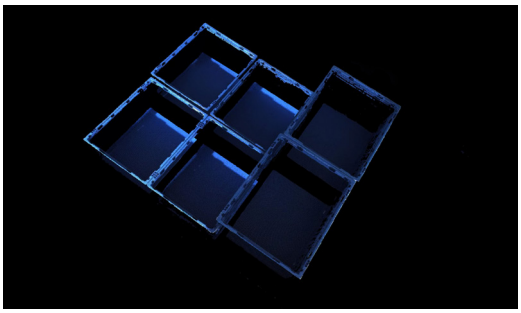
Robots are required to depalletize and palletize totes in a designated stacking pattern with higher accuracy and efficiency than manual operation.



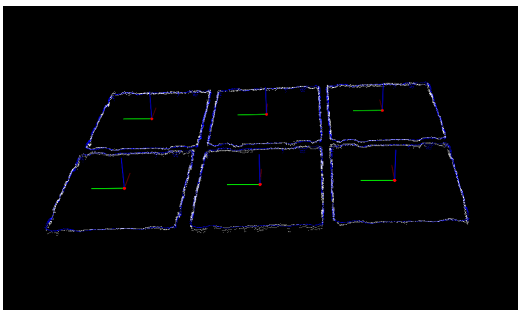


The Mech-Mind Solution

- Mech-Eye industrial 3D camera generates high-quality 3D point clouds of tightly stacked totes.
- The vision system recognizes the poses and positions of totes, and then guides the robot to pick and place totes in designated areas.
- The Mech-Eye industrial 3D camera, with the **large FOV**, handles both depalletizing and palletizing workstations.
- Robots are guided by the system to navigate through stacking patterns and remove totes with the grippers.
- The collision detection and path planning algorithms allow stable robotic operation in compact spaces.



Point clouds



Recognition results

The Result

- Cycle time (imaging + data processing): **< 0.5 s**.
- **24/7** stable operation.
- Doubled production capability.
- Production costs cut by **40%**.

Case Study

Vision-Guided Tire Handling

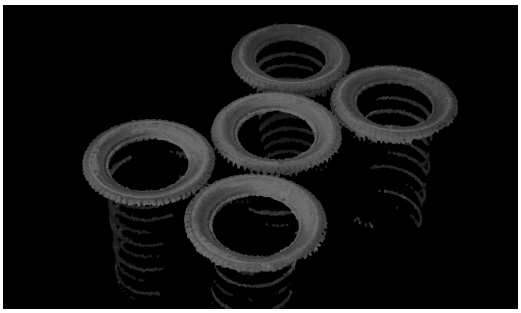
Large tire warehouse in Japan

The Challenge

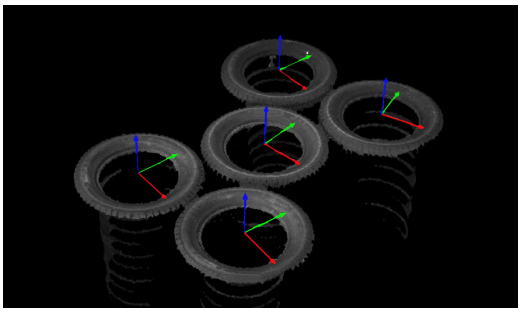
Dark tires with deep grooves and strong light interference impact the quality of 3D point clouds. The compact factory layout may cause risky collisions between robots and objects.

The Mech-Mind Solution

- Mech-Eye LSR L (**FOV: 3000 × 2400 mm @ 3.0 m**) covers large pallets.
- The camera creates clear and detailed 3D point clouds even under strong light **(> 30,000 lx)**.
- The collision detection and path planning algorithms ensure collision-free operation at the compact workstation.
- The vision software supports various tire specs and quickly adapts to new specs.



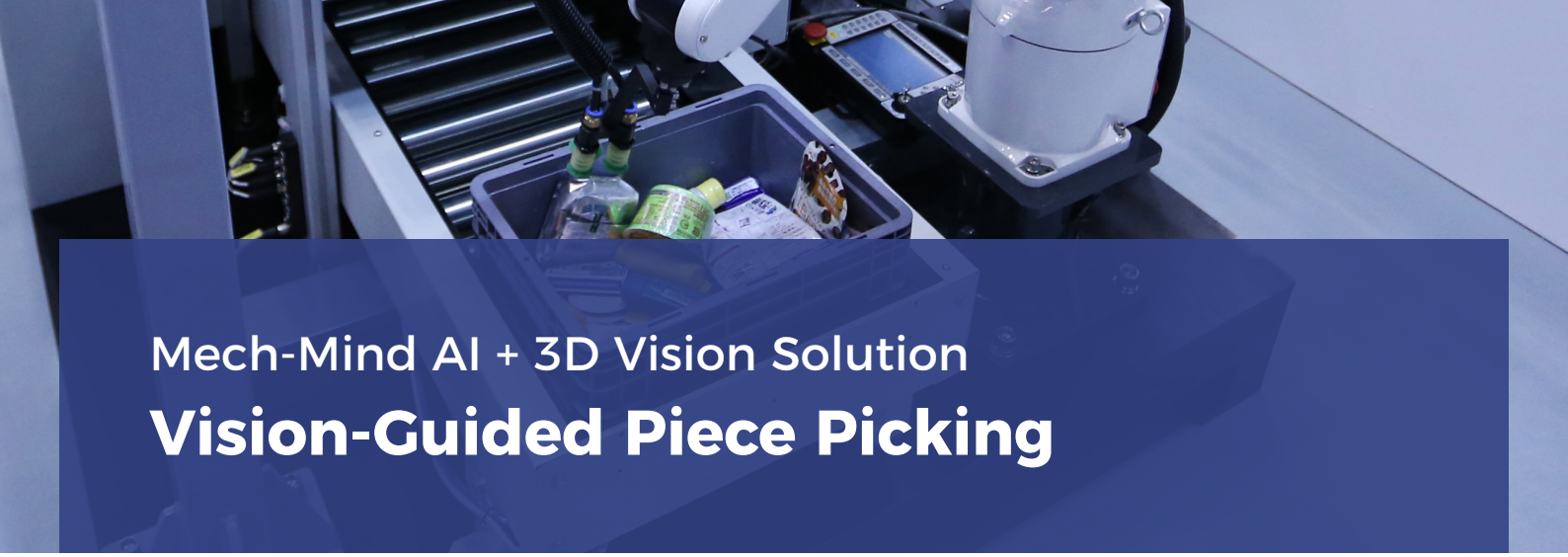
Point clouds



Recognition results

The Result

- **24/7** collision-free operation.
- Doubled productivity.
- Increased efficiency: **1,600** tires/hour processed at each workstation.



Mech-Mind AI + 3D Vision Solution

Vision-Guided Piece Picking

Vision-guided robots pick random items up and place them at a defined place (e.g., on conveyors for scanning, sorting, etc.) accurately and quickly without damage.

Capabilities

- **Handle a vast range of items at high speeds**

  Sees dark, reflective and multi-colored items.

  Handles various materials, like cardboard and plastic-wrapped items.

  Distinguishes items randomly arranged or densely stacked.

- **Multi-suction cup end effector**

  Vision-guided robots decide how to best pick each item using the multi-suction cup end effector, ensuring accurate picking and gentle placing.

- **No pre-registration of new SKUs**

  No pre-registration of new SKUs meets the challenges of high-SKU counts and changing inventories.

- **Easy integration**

  Seamless integration with OCR system ensures high-speed order fulfillment.

Recommended Cameras

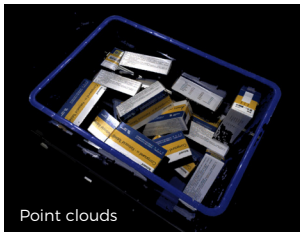
- Mech-Eye LOG

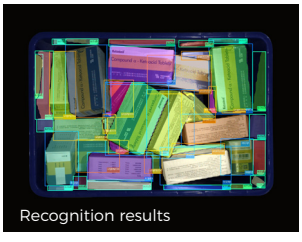
Industries

- Grocery, health & beauty, e-commerce, apparel, etc.

Point Clouds and Recognition Results

Medical cartons





Multicolored goods

Case Study

Vision-Guided Piece Picking

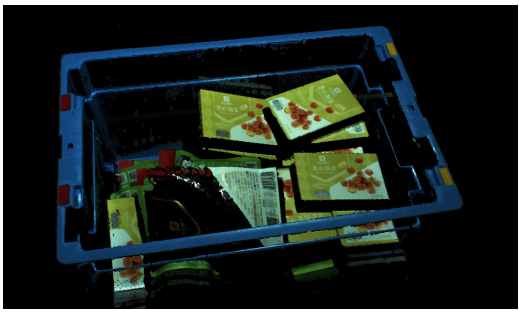
Leading food company

The Challenge

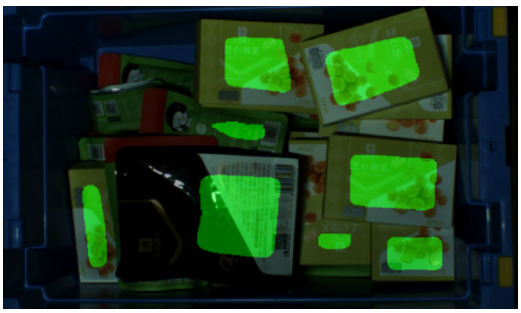
Vision-guided robots quickly pick items from mixed-SKU inventory bins and place them into order containers. The vision-enhanced robots are required to handle thousands of SKUs per day.

The Mech-Mind Solution

- The Mech-Eye industrial 3D camera generates high-quality point clouds of objects with various shapes (**boxes, bags, bottles, etc.**) and materials (**plastic, paper**, **etc.**).
- **No previous registration of new SKUs**. Quickly adapts to changing packaging.
- With the **multi-suction cup end effector**, the robot picks a wide range of SKUs with high accuracy, stability, and speed.
- With **advanced AI algorithms**, even some challenging items (e.g., objects near the bin wall or stacked in corners) are picked and placed accurately.
- Works with **the WMS, code scanner** and **pick-to-light (PTL) system** for efficient sorting.



Point clouds



Recognition results

The Result

- Doubled sorting efficiency.
- **24/7** stable operation.

Mech-Mind AI + 3D Vision Solution

Vision-Guided Parcel Induction

Vision-guided robots quickly pick parcels (poly bags, boxes, envelopes, etc.) from the chute/conveyor belt and place them onto induction platform or stack them into trolley cages.

Capabilities

- **Handle a variety of packages and parcels at a high speed**

  Handles foam boxes, poly bags, jiffy packs, bubble mailers, envelopes, etc.

  Handles items randomly piled or densely stacked.

  Handles out-of-spec parcels at high speeds.

- **Handle parcels without previous registration**

  No pre-registration of new parcels, saving time while improving efficiency.

- **Accurate picking and reliable placing**

  Advanced AI algorithms support the robust 3D vision system to ensure effective picking and placing.

- **Easy integration**

  Works with the crossbelt sorter and AGV to seamlessly integrate into existing facilities.

Recommended Cameras

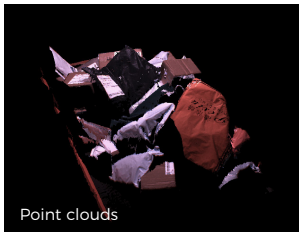
- Mech-Eye LOG

Industries

- 3PL, e-commerce, etc.

Point Clouds and Recognition Results

Randomly piled express parcels



Case Study

Vision-Guided Parcel Induction

Large distribution center

The Challenge

Vision-guided robots can quickly pick various parcels from a mixed batch and place them onto conveyor belts.

The Mech-Mind Solution

- The Mech-Eye industrial 3D camera generates high-quality point clouds of randomly piled parcels (**boxes**, **pouches, envelopes, etc.**), ensuring accurate picking.
- **No previous registration of new items.** Quickly adapts to new parcels.
- Works with the six-sided barcode scanner to handle abnormal parcels (**damaged, deformed, etc.**).
- Works with **the AGV and crossbelt sorter** for efficient induction.

Point clouds

Recognition results

The Result

- Higher distribution efficiency: tens of thousands of parcels processed per day.
- Stable automated parcel induction.
- Reduced costs.

More Cases

Scan QR code
to watch videos

Vision-Guided Case Depalletizing

- Installed on the linear slide to flexibly take images.
- Handles **cases with tapes, labels, and reflective surfaces**.
- Works with the AGV, WMS, and conveyor belt.

Vision-Guided Tote Palletizing and Depalletizing

- Supports pallets as tall as **2.3 m**.
- Works with **unsealed, thin-walled, and tightly stacked totes.**
- (De)palletizes totes at a single workstation.

Vision-Guided Sack Depalletizing

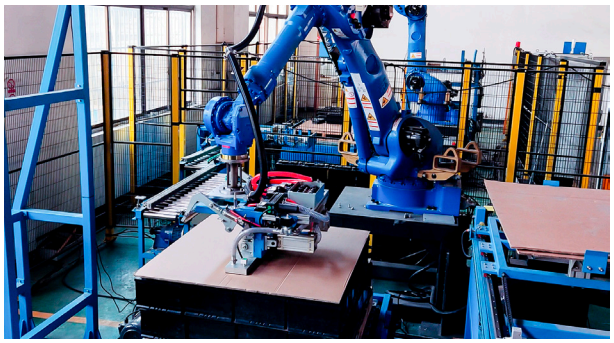
- Adapts to sacks of various sizes.
- Handles **wrinkled, deformable, and densely piled sacks**.
- Seamlessly works with bag-breaking machines.

Vision-Guided Depalletizing of Magnesium Ingots

- Supports **wrinkled, deformable, and densely piled sacks.**
- Handles size deviation and workpiece deformation.
- Adjusts the suction cup end effector and plans the optimal picking trajectory.

More Cases

Scan QR code to watch videos

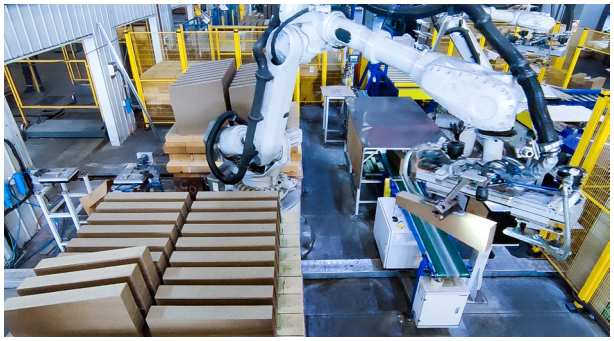


Vision-Guided Depalletizing of Lead-Acid Batteries

- Handles **dark and complex-shaped batteries**.
- Identifies orientations of vent plugs.
- Accurately recognizes pallets and in-between layers.

Vision-Guided Depalletizing of Aluminium Ingots

- Handles **reflective, deformable, and densely piled ingots**.
- Identifies face-and-back orientations of aluminium ingots.
- Supports various stacking patterns.



Vision-Guided Depalletizing of Refractory Bricks

- Handles **bricks with stains and coatings**.
- Adapts to various stacking patterns.
- Ensures stable robotic operation without collisions.

Vision-Guided Plank Depalletizing

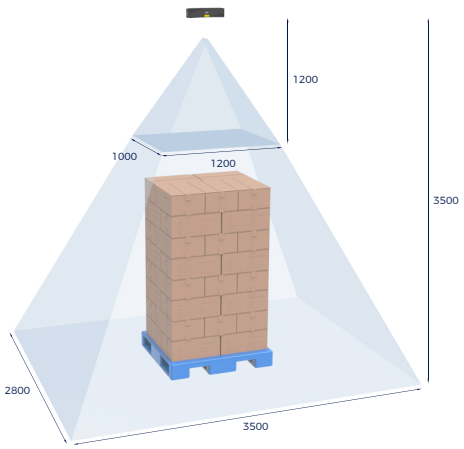
- Adapts to planks of various sizes and weight.
- Handles **damaged, deformable, and densely stacked planks**.
- Supports multiple pallet stacking patterns.

Mech-Eye Industrial 3D Cameras

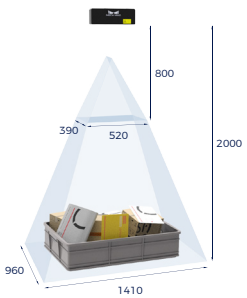
- Detailed and accurate 3D point clouds
- Ambient light resistance
- Short capture time
- IP65 water and dust resistance
- Rugged aluminum alloy housing
- MTBF (Mean Time Between Failures): ≥ 40,000 hours

Specification	DEEP 	LOG M 	LOG S 
Recommended working distance	1200–3500 mm	800–2000 mm	500–1000 mm
Near FOV	1200 × 1000 mm @ 1.2 m	520 × 390 mm @ 0.8 m	360 × 250 mm @ 0.5 m
Far FOV	3500 × 2800 mm @ 3.5 m	1410 × 960 mm @ 2.0 m	710 × 490 mm @ 1.0 m
Resolution	Depth map: 2048 × 1536 RGB: 2000 × 1500	1280 × 1024	1280 × 1024
Megapixels	/	1.3 MP	1.3 MP
Point repeatability Z (σ)[1]	1.0 mm @ 3.0 m	0.3 mm @ 2.0 m	0.1 mm @ 1.0 m
VDI/VDE accuracy[2]	3.0 mm @ 3.0 m	0.3 mm @ 2.0 m	0.2 mm @ 1.0 m
Typical capture time	0.5–0.9 s	0.3–0.5 s	0.3–0.5 s
Baseline	300 mm	280 mm	150 mm
Dimensions	366 × 77 × 92 mm	387 × 72 × 130 mm	270 × 72 × 130 mm
Weight	2.4 kg	2.4 kg	2.2 kg
Light source	Red laser (638 nm, Class 2)	White LED (RG2)	
Image sensor	Sony CMOS for high-end machine vision	Other high-performance CMOS for high-end machine vision	
Operating temperature	-10–45° C	0–45° C	
Communication interface	Gigabit Ethernet		
Input	24V DC, 3.75 A		
Power supply	CE/FCC/VCCI/KC/ISED/NRTL	CE/FCC/VCCI	
IP rating	IP65		
Cooling	Passive		

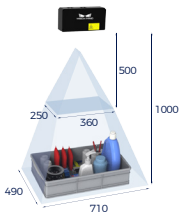
Mech-Eye DEEP



Mech-Eye LOG M



Mech-Eye LOG S



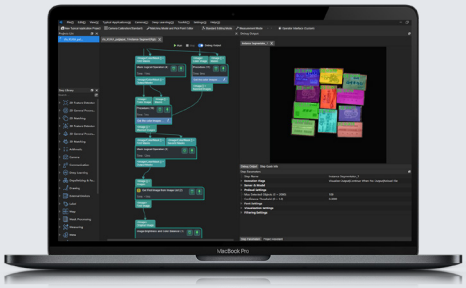
Field of view (mm)

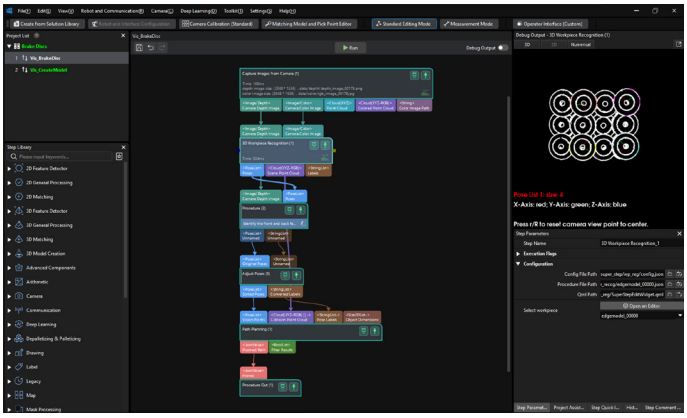
[1] One standard deviation of 100 Z-value measurements of the same point. The measurement target was a ceramic plate.
[2] According to VDI/VDE 2634 Part II.

Mech-Vision

Machine Vision Software

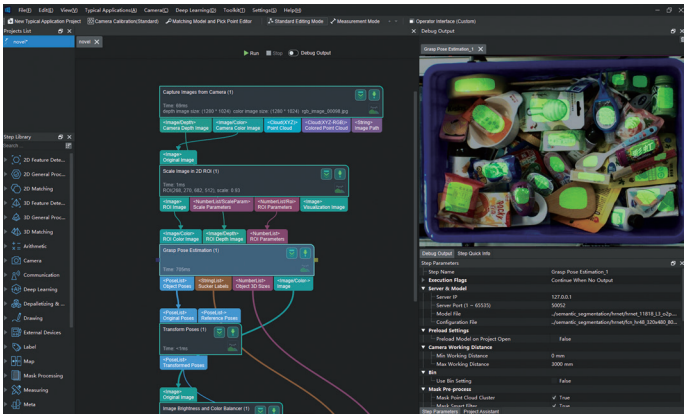
Mech-Vision is an industry-leading machine vision software. It is designed to quickly build vision applications, whether simple or complex. With Mech-Vision, users can manage a wide range of vision tasks, including identification, localization, inspection & measurement, etc.





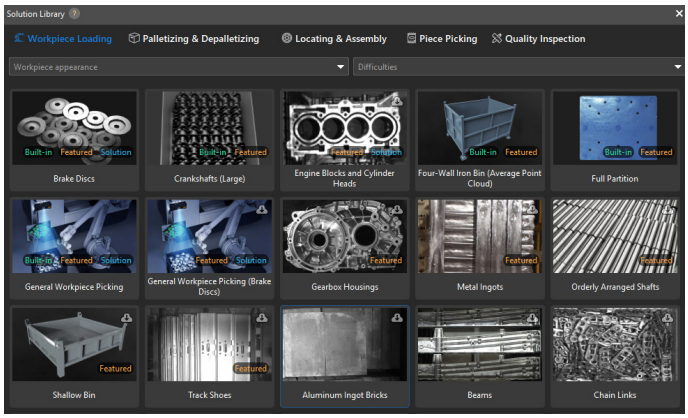
Build your vision applications efficiently

- Intuitive solution-oriented graphical user interface
- Drag-and-drop programming simplifies setup without writing a line of code
- Visualized configuration



Manage complex vision applications with extensive tools

- Powerful algorithms: 2D/3D matching, 2D/3D deep learning, 2D/2.5D measurement, etc.
- Integrated machine vision tools: matching model, pick point editor, automatic calibration, caliper, etc.
- The **3D Workpiece Recognition** tool delivers recognition results in 1 sec, enabling easier and faster deployment of various loading and handling applications



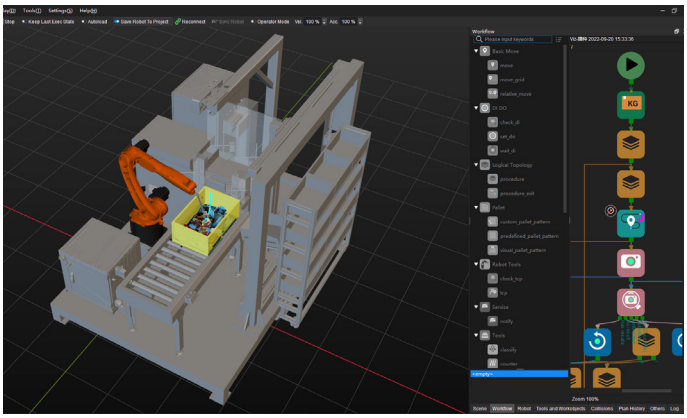
Develop vision applications easily and flexibly

- **Robust Solution Library:** get faster application deployment by adapting an existing project after simple modifications
- **Production Interface** for easy production status monitoring and data reporting
- Multiple languages: English, Japanese, Chinese, and Korean

Mech-Viz

Robot Programming Software

Mech-Viz is a software product for efficiently implementing robotic applications without writing a line of code. Mech-Viz enables robots to manage demanding automation tasks with excellent stability, extraordinary flexibility, and outstanding consistency.



Intuitive Robot Programming

- Intuitive graphical user interface
- Code-free programming environment
- One-click simulation of robot path

Powerful Algorithms for Reliable Robotic Operation

- Motion planning and collision detection
- Multi-pick depalletizing algorithms
- Picking strategies: multiple pick points, rotational symmetry, etc.

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

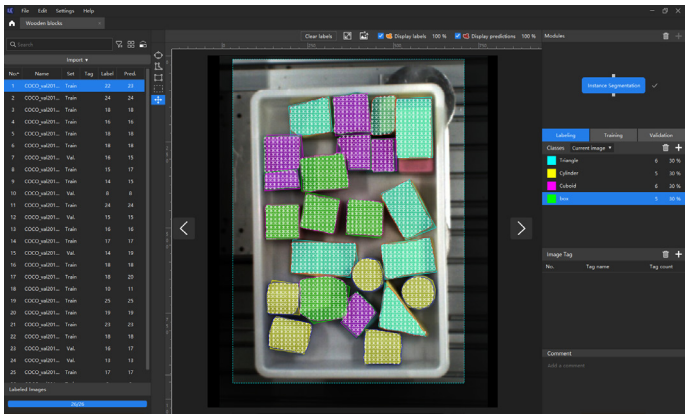
Flexible and Easy Implementation

- Support for almost all major-brand robots
- Streamlines configuration and redeployment with robot path reporting and tracking capabilities
- Multiple languages: English, Japanese, Chinese, and Korean

Mech-DLK

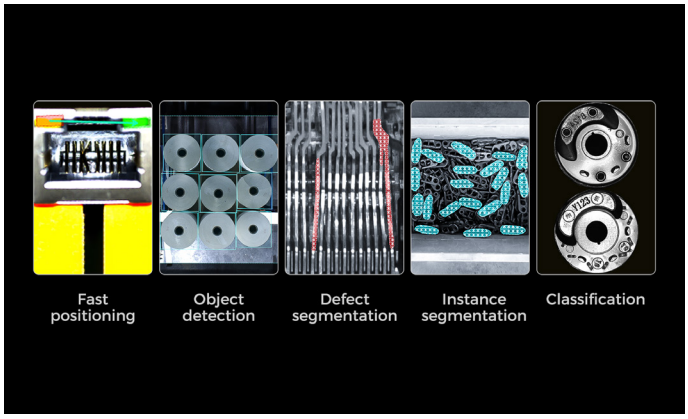
Deep Learning Software

Mech-DLK is a versatile deep learning software solving complex machine vision tasks. It enables users to rapidly train models and easily solve demanding vision applications, including overlapping object recognition and classification, complex defect detection, character reading, etc.



Train models efficiently without writing a line of code

- Intuitive code-free user interface
- Visualized model validation
- Advanced data augmentation: train models with smaller image sets
- **Finetune** function: leverage pre-trained models to expedite training, rather than train a model from scratch

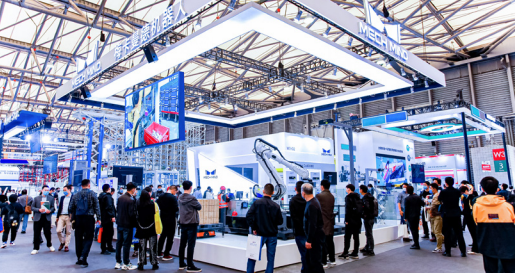


Manage complex machine vision tasks with speed and accuracy

- Manages complex vision applications with powerful algorithms such as fast positioning, defect segmentation, and instance segmentation
- **Smart Labeling Tool** and **Template Tool** simplify the labeling process, saving time and effort

Integrate your vision tasks into your production environment easily

- Multi-language SDKs: C, C++, C#, and Python
- Easy integration with Mech-Vision for quick deployment



About Mech-Mind

Mech-Mind is an industry-leading company focusing on industrial 3D sensors and software suites for intelligent robotics.

By combining 3D vision with AI technology, Mech-Mind brings automation to the next level and empowers partners and system integrators to manage the most challenging automation tasks, including bin picking, depalletizing & palletizing, picking & placing, and more.

One of the Highest-Funded AI + Robotics Companies

Founded in 2016, Mech-Mind has closed its Series C+ with total funding of **> USD 200 million**. Backed by Intel and other global top investors, Mech-Mind has been one of the highest-funded AI + robotics companies all over the world.

World-Class Team with Deep Technical Knowledge

Mech-Mind assembles a world-class team of **700+ amazing individuals**. Our global team with highly qualified experts provides deep technical knowledge in **3D sensing, vision and robotics algorithms, robotics software, and intelligent robotic solutions**.

Create Success Together with Partners and Integrators

Excellent usability, approved quality, high flexibility, comprehensive service, and competitive price, that's what we stand for and how we help our customers and partners to exceed in their business. Our mature solutions empower system integrators and partners to solve the most demanding applications and bring automation to the next level.

10,000+ Cameras Deployed

Mech-Mind partnered with industry-leading companies and has deployed applications in **50+** regions. By delivering cutting-edge technology and reliable solutions, Mech-Mind has created visible ROI for global customers across diverse industries, including **automotive, construction machinery, logistics, home appliances, food and beverage, etc.**

10,000+ cameras	> $200 million	700+	50+
installed worldwide	total funding	employees	regions

Customers and Partners

Honeywell LOTTE DHL Continental Lenovo DEMATIC DAIKIN arçelik HIGHLY
GMCC Midea Haier GREE intel SIEMENS BOSCH TOYOTA TESLA
NISSAN BYD NIO GEELY ABB YASKAWA KUKA Kawasaki FANUC DENSO NACHI MITSUBISHI ELECTRIC
UNIVERSAL ROBOTS DOBOT FOXCONN SDS brose WEICHAI CAT SKF LiuGong XCMG ZOOMLION

Compatible with Major Robot Brands

ABB KUKA YASKAWA FANUC Kawasaki NACHI DENSO UNIVERSAL ROBOTS STÄUBLI EFORT
MITSUBISHI ELECTRIC GREE ROKAE a2 TM ROBOT TURIN AUBO ROBOTICS DELTA QJAR QKM
DOOSAN EPSON HAN'S ROBOT ESTUN ROBOTICS HYUNDAI HEAVY INDUSTRIES CO.,LTD COMAU JAKA SIASUN DOBOT ELITE ROBOTS fruitcore robotics

3D VISION & AI FOR ROBOTS AND MORE

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