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MI.RA/ Depalletizer

Flexible AI based solution
for depalletizing



COMAU

<mi_ra>

A customized solution starts with a watchful eye

Discover MI.RA, Machine Inspection and Recognition Archetypes: Comau's flexible vision systems portfolio empowered by artificial intelligence.

Reconfigurable performance to face the future

Delivering the flexibility and innovation to meet the demands of the most challenging production scenarios, Comau's MI.RA portfolio guarantees modular, scalable, stable and customizable solutions that reduce operating expenses while increasing throughput and performance.

Thanks to decades of experience in systems integration, Comau's advanced MI.RA archetypes also ensure a seamless interface with the best hardware available on the market.



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Flexibility and performance for depalletization tasks

MI.RA/Depalletizer fully automates single-SKU and mixed SKU depalletizing tasks. Leveraging on the combination of Artificial Intelligence, 3D cameras and point cloud analysis algorithms, MI.RA/ Depalletizer succeed in handling Stock Keeping Units of unknown shape, material and texture while ensuring performance and reliability.

Moreover, the usage of advanced software solutions gives the system absolute flexibility in terms of pallet logistics, robotic technologies and grasping strategy, keeping at minimum the need for offline programming.

Being robot and hardware agnostic, MI.RA/ Depalletizer is able to adapt to customer needs in order to provide the optimal depalletizing setup. Furthermore, the integration with the MIRA platform ensures tracking and report of performance.



The latest solution for Depalletizing

MI.RA/Depalletizer represents a turnkey solution that ensures ease of use, efficiency and cost savings. It manages pallets more than 2 meters in height and it picks boxes with 6DOF flexibility, while providing a high throughput.

- Fast configuration: an AI based solution enables the adoption of pre-trained networks for ulterior fine tuning reducing commissioning time
- Top in class performance: up to 800 SKUs/hour depending from the setup
- Flexible: applicable for different SKU types, pallet layout and grasping strategy
- User-friendly interface: optimized UX and easy-to-use system configuration
- Powerful inline system: seamless integration with the production line robots and PLC
- IoT ready: optional plug in for traceability and performance monitoring
- Wide range of FOV available
- No need of box sizes information nor previous palletizing configuration

Software features

- AI based solution ensures flexibility in terms of SKU types
- Comau proprietary software
- 6DOF picking (adjustable for 4DOF robots)
- Flexible in terms of pallet layout
- Repeatable performances and optimal grasp

CALIBRATION

- FOV calculation tool
- Calibration plate generation
- Automatic or manual calibration
- Stationary camera mounting

JOB CONFIGURATION

- Easy to configure
- Remote-assistance ready
- Exhaustive results collection for reporting and fine tuning

ONLINE

- Adapts to changes in lighting condition
- Exhaustive results collection for reporting

The screenshot displays the 'Job Definition' configuration screen. At the top, it shows 'COMAU <mi_ra>', 'DB STATUS' (green), and 'FTP STATUS' (grey). The user is logged in as 'Super U SuperU'. The main area features a camera feed of a pallet with boxes, overlaid with a red bounding box. To the right, the 'Job Definition' panel includes a table with columns 'ID' and 'NAME', and a 'Max Elapsed Time' set to 5000. Below this, 'Acquisition parameters' are visible, including 'Exposure' and 'Gain'. A 'Payload Definition' section shows 'N_OF_RESULT=5' and coordinates 'X=9', 'Y=29', 'Z=49', 'RX=69'. At the bottom, a 'Matching Feedback' table is shown.

ID	NAME
1 32	GripperSi...

Detector Id	Value Name	Value
32	N_OF_RESULT	7
32	X	-2.67327,-3...

The screenshot displays the 'Detector Definition' configuration screen. At the top, it shows 'COMAU <mi_ra>', 'DB STATUS' (green), and 'FTP STATUS' (grey). The user is logged in as 'Super U SuperU'. The main area features a camera feed of a pallet with boxes, overlaid with a red bounding box. To the right, the 'Detector Definition' panel includes a 'Name' field set to 'GripperSimmetrico', 'Limits' section with 'Time(ms): 4000' and 'Confidence Thresholds: 0.50', 'Algorithm' set to 'Paper Box Sku', 'Prioritization' set to 'Z Max Prioritization', 'EndPoint URI' set to '2//127.0.0.1:5000/', 'End Point Path' set to 'predict', and 'Minimum Z (mm)' set to 0. There are checkboxes for 'Symmetrical gripper' (checked) and 'Single pose estimation' (unchecked). A 'Matching Feedback' table is also present.

Detector Id	Value Name	Value
32	N_OF_RESULT	7
32	X	-2.67327,-3...

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Handling the complexity of large-scale depalletizing operations with intelligent advanced robotics and powerful vision systems

From the picking of products to the packs that will contain them, MI.RA/Depalletizer automates the entire depalletization process, optimizing operational logistics as well as your bottom line.

The newest solution is based on 3D vision, and machine learning algorithms to reliably detect and depalletize boxes and containers. It estimates the position of never seen boxes with dynamic perception of the environment.

APPLICATION SECTORS

- Logistics
- Consumer packaged goods
- Retail
- Healthcare



Specifications

PICKING	
SKU/h	800
Success Rate	99%
Repeatability	1 mm
SKU Dimension	> 150 mm x 200 mm
Collision avoidance	Collision-free picking

LOGGING	
Image Storage	Yes
Point Cloud Storage	Yes
Picking Poses Storage	Yes
Perfromance Graph	Yes

SET UP	
Pallet Dimmensions	Up to 1.2 x 1 x 2.1 m
Pallet Layout	Agnostic
Payload	Customizable

ACQUISITION	
Image Resolution	Up to 2064 x 1544
Camera Mounting	Pedestal
Ambient Light Suppression	Yes

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