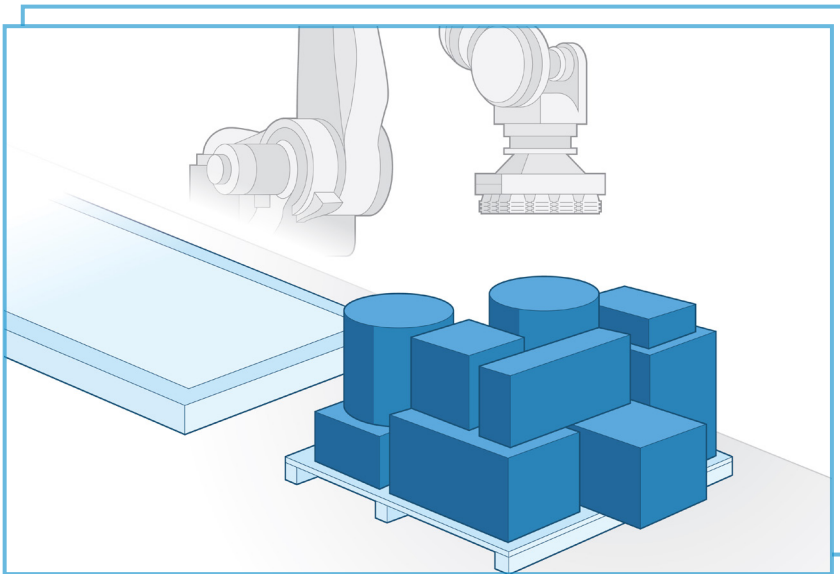


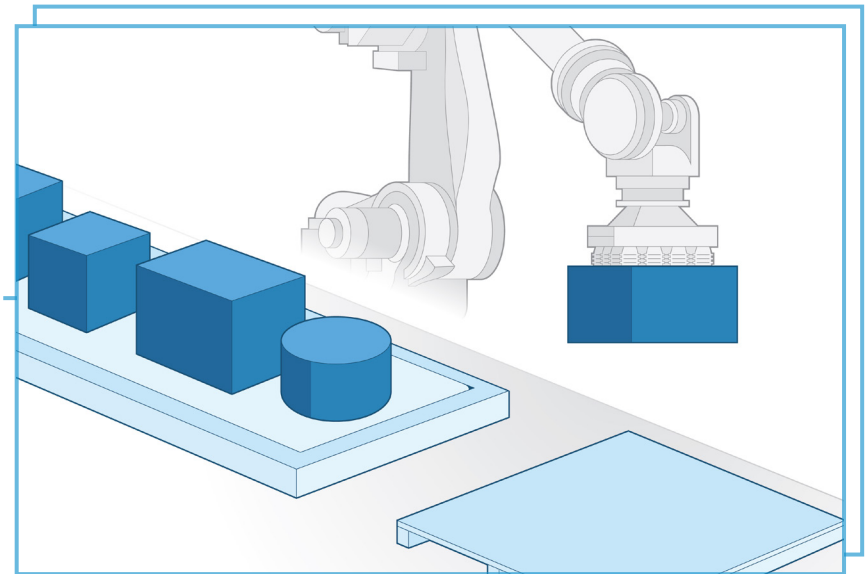
# PickOne Software Module:



## Mixed Depalletizing



BEFORE



AFTER

### About this Model

This software module extends the power of **PickOne** for applications involving picking cases, cartons, trays, and bags from mixed SKU pallets.

### Benefits

- Enhance operational decision making when used with **Yonder**
- Increase operator safety eliminating repetitive stress injuries
- Reduce per unit handling cost
- Promote associates to more value-added work
- Reduce turnover by improving job satisfaction

# How it works



## Step 01

When items are presented to the robot picking station in a tote, the **PickOne Perception Kit** images the items.



## Step 02

The **PickOne** software analyses the 2-D, 3-D, and AI data to identify each pickable item in the scene and assigns each one an associated confidence level.



## Step 03

**PickOne** sends the robot controller an array of pick locations and poses for each pickable item via the **PickOne API**.

If no items in the scene have a high enough confidence, **PickOne** generates a **Yonder** request so that a Crew Chief can handle this exception by simply selecting an item in the scene to be picked.

In seconds, **Yonder** updates **PickOne**, and **PickOne** sends the data to the robot.



## Step 04

In parallel, **Yonder** stores the Crew Chief's responses allowing the machine-learning algorithms to make the system smarter as it works. This ensures even higher performance over time.



# Details

## Mixed Depalletizing

### Features

- **By-Layer Picking** — Fully depopulates the top layer of the pallet before going to the next layer, which prevents toppling.
- **Empty Pallet Detection** — Confirms an empty pallet so that the system can replace the empty pallet with a full one.
- **Slip Sheet Detection** — Detects a slip sheet and signals the robot to remove it.
- **Dual-Pallet Picking** — Supports a single robot picking from two pick locations.
- **Double Detection** — Prevents a double induction by imaging the place zone to confirm that only a single case was placed. It returns dimensions, orientation, location on the belt, and single/double detection.
- **Offset Picking** — If the item to be picked is smaller than the robot end effector, an offset is automatically calculated to prevent damage to adjacent items and prevent double picks.
- **PackML State Machine** — PackML is the industry standard for measuring the performance of a system.
- **Depalletizing Base AI Model** — PickOne has developed AI models to speed up the deployment of systems. Based on the product mix, the appropriate AI model will be selected for the application.

### Supported Capabilities

- **Slip Sheet Handling** — If the robot is equipped with a weight sensor, the sample depalletizing program correlates the weight data and pick data to handle slip sheets.

- **On-Gripper Object Height Detection** — If the system is equipped with an external displacement sensor, the sample depalletizing program correlates the pick data with this sensor data to determine the height of the object for gentle placement on the conveyor.

### Specifications

- Supported item types: boxes, overwrapped trays, cartons, and bags
- Supported edge cases: homogeneous layers of flat, black cases; cases with alternating color on the flaps; banded cases; cases with highly reflective tape, cases with gaps
- Industry leading pick command processing speeds: 350ms - 480ms typical
- Typical pick rates of 350-700 picks per hour
- Supports millions of SKUs
- Supported Sensors: Intel RealSense L515, Zivid
- Supported Robot Controllers: Fanuc, Yaskawa

### What's Included

#### PickOne Software Module for Mixed Depalletizing, Perpetual License (P/N 1002-001-0007-01)

- PickOne Software Module for Mixed Depalletizing
- PickOne Base AI Model
- PickOne PackML State Machine for Designated Robot Controller
- Sample PickOne Depalletizing Program for Designated Robot Controller



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