4D Vision for
Robotic Automation
Technology Guide

Apera AI's 4D Vision can be used with major robot brands.

Apera AI
4D Vision for Robotic Automation

What if robots could see and handle objects with human-like capability and perception?

That's how Apera AI is helping make our customers' factories more flexible and productive. We're opening new avenues for robotic automation.

Apera AI is focused on the development of artificial intelligence for robotic vision. AI can make robots faster and enable them to work with objects of all shapes and materials. And we can do it without the cost, complexity and customization of current vision solutions.

Key facts

8,000,000+
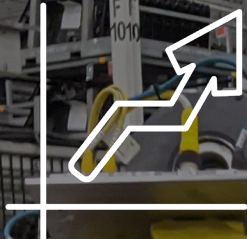Intelligent pick and places in the field.

Tier 1
Automotive suppliers like Magna International and Flex-N-Gate use Apera AI systems.

0.3 seconds (3 Hz)
Industry-leading total vision cycle time

Factories need more automation.

To counter high inflation

To ease labor shortages

To localize manufacturing

AI-powered vision makes automation easier.

Standardized
Scalable with no custom programming or vision expertise needed. Copy workcells at multiple sites.

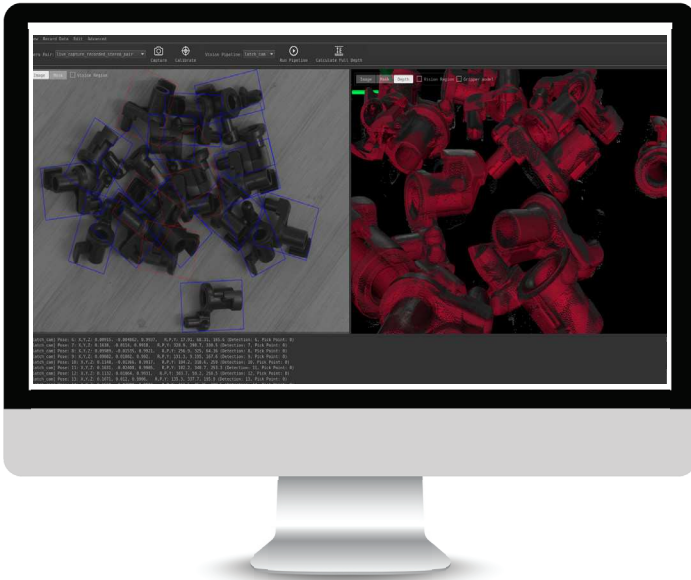**Predictable results**
You will know whether the design will work before you spend on hardware.

Lighting
Operates under ambient light and changes won't affect performance.

Enter Apera Vue Software

Apera Vue is computer vision software that guides robots as they move and handle objects. Vue is embedded in the robot's controller, enabling it to take the best path in and out of a movement, and to grasp and precisely place objects.
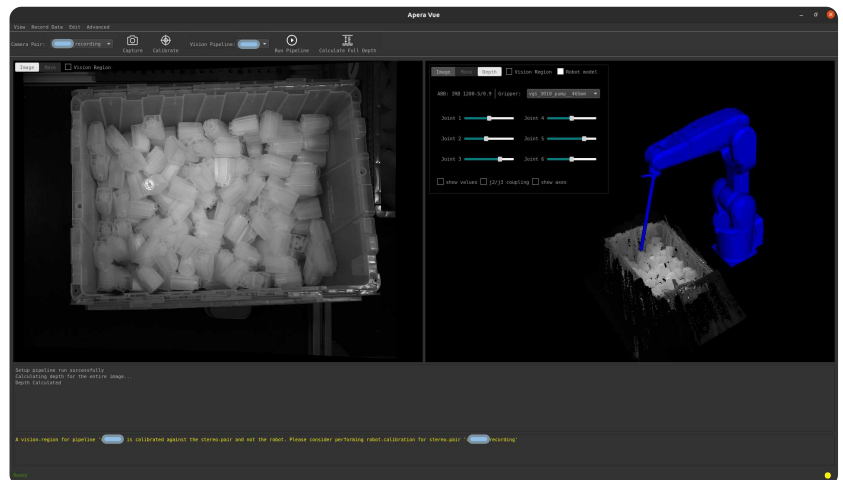
How does Vue help you?

Automate more things
The speed and dexterity Vue provides robots opens new applications.

Higher productivity
See higher ROI from faster performance with less interventions.

Flexible
Deploy to many workcells performing different tasks with no custom code.

Reduce risk with simulation

Before any hardware is purchased, Apera Vue can simulate the interaction and performance of the robot, gripper, bin and objects. This digital twin of your application reduces risk in your investment.

4D Vision™ System

Choose your own robot
Vue software works with many robot brands, so choose your favorite.
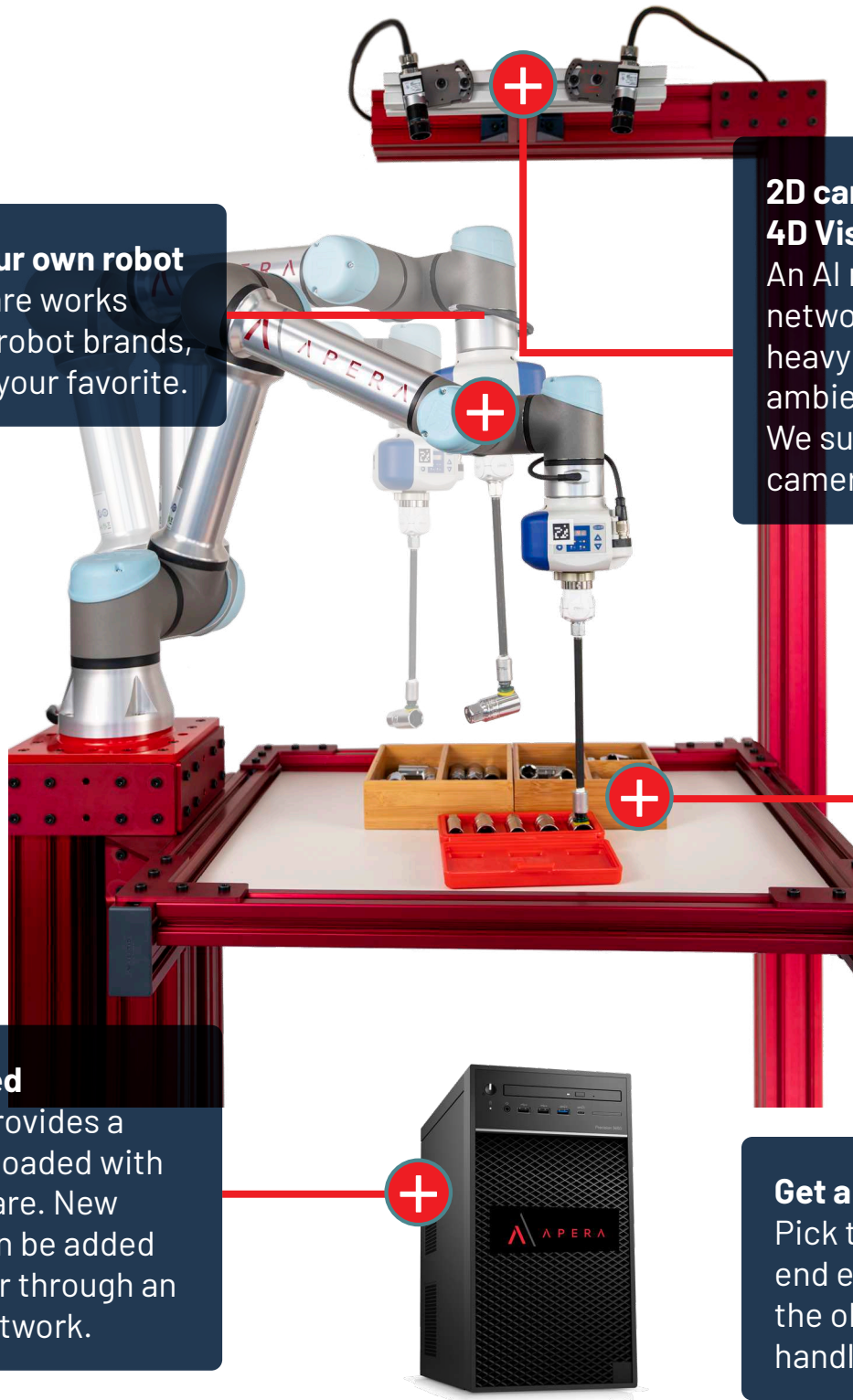
2D cameras + AI = 4D Vision
An AI neural network does the heavy lifting under ambient light. We supply the cameras.

Fully loaded
Apera AI provides a computer loaded with Vue software. New objects can be added remotely or through an internal network.

Get a grip
Pick the right end effector for the objects being handled.

Applications

Speed

Total vision cycle time as low as 0.3 seconds. Achieve 2,000 picks per hour / 1.8s total robot cycle time.

Difficult objects

Shiny, clear or highly similar objects, even when disordered and randomized.

Accuracy

Submillimeter precision and accuracy in handling objects of any complex geometry.
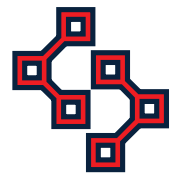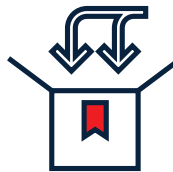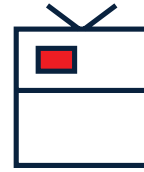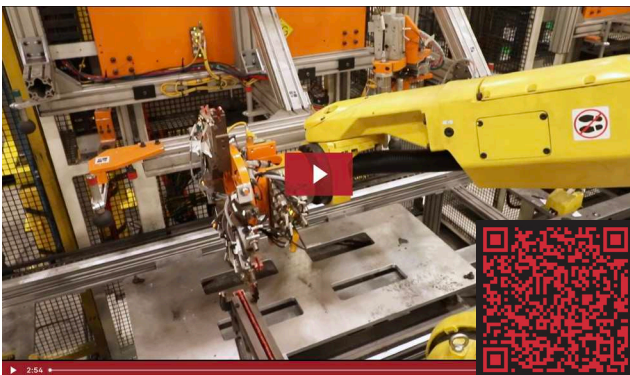
Assembly

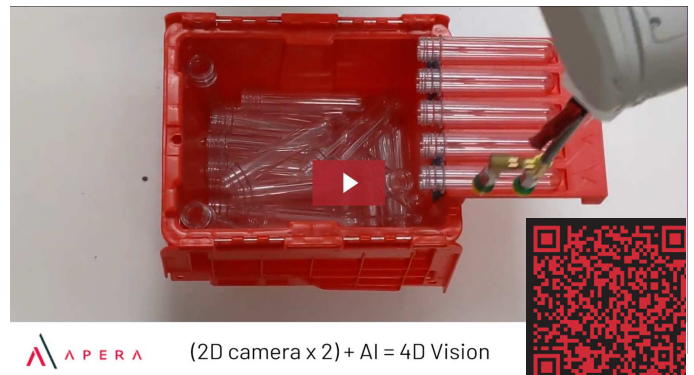**Bin picking**

Palletizing

Sorting

Kitting

Packaging

Flex-N-Gate used Apera Vue with a Fanuc robot to improve clip placing assembly. See the video >>

Apera Vue can rapidly identify and handle clear objects. This example uses an ABB robot. See the video >>

4D Vision technology

2D cameras + AI = 4D Vision. By applying AI and machine learning using 2D cameras, Apera Vue software provides capabilities beyond those of 3D vision systems.

The principal advantage is speed. 4D Vision is built on the ability to identify the "most pickable" object, and has industry-leading vision cycle times.

4D Vision systems operate under ambient light, even when conditions change. The technology can handle objects that have shiny, reflective or glossy finishes, such as Class A automotive parts.

This technology also understands difficult geometries and surface features such as artwork.

Nested parts, such as stamped metal, can be identified and handled. Products can be oriented for packaging with labels correctly oriented. Examples include pharmaceutical secondary packaging and consumer packaged goods.
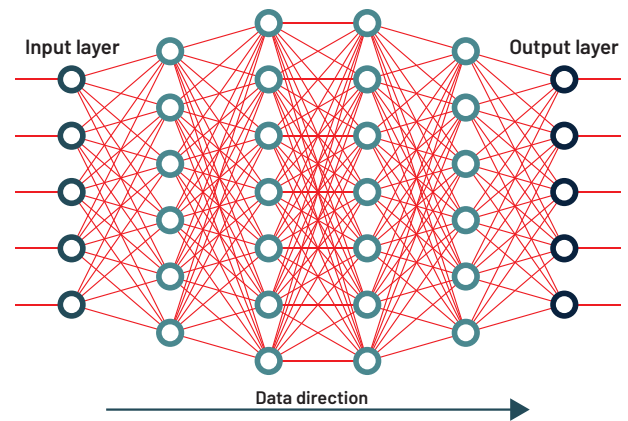
Apera AI's neural networks start with an object's CAD model and are taught to understand how to handle the object in thousands of orientations. Each layer of calculations refines the robot's capability to perform the task.

Nested metal parts longer than two meters.

Clear or translucent medical devices and drug packaging.

Consumer packaged goods with orientation that considers label.

Take the next step

Let's talk about making your factory more flexible and productive.

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