VISION SOFTWARE
POWER AND FLEXIBILITY FOR VISION APPLICATIONS
Cognex®, the world’s most trusted machine vision and industrial barcode reading company.

With over 1.5 million systems installed in facilities around the world and over thirty-six years of experience, Cognex is focused on industrial machine vision and image-based barcode reading technology. Deployed by the world’s top manufacturers, suppliers and machine builders, Cognex products ensure that manufactured items meet the stringent quality requirements of each industry.

Cognex solutions help customers improve manufacturing quality and performance by eliminating defects, verifying assembly and tracking information at every stage of the production process. Smarter automation using Cognex vision and barcode reading systems means fewer production errors, which equates to lower manufacturing costs and higher customer satisfaction. With the widest range of solutions and largest network of global vision experts, Cognex is the best choice to help you Build Your Vision.™

Visit www.cognex.com
Cognex vision software provides the power and flexibility to solve your most challenging machine vision applications in a PC environment. In addition to a programmatic interface, VisionPro and Cognex Designer offer an easy-to-use graphical interface to develop even the highest speed applications—all on the camera of your choice. With VisionPro ViDi, customers now have a combination of the best traditional and new deep learning vision libraries.

**Fast and flexible application development**

Whether you need vision for inspection or for robotic guidance, Cognex vision software stands apart from the competition with proven tools available in prototyping environments to support all modes of development. These tools, found only in the Cognex vision tool library, have made Cognex the industry’s benchmark for vision performance.

**Proven, reliable vision tools**

A robust library of industry-leading pattern matching, alignment, inspection, ID, and OCR vision tools solve all of your vision application needs.

**Total hardware independence**

With a wide range of camera types and acquisition technology, users have the flexibility to select the camera and frame grabber that’s right for their application.
VISIONPRO

PC-BASED VISION SOFTWARE FOR THE MOST CHALLENGING VISION APPLICATIONS

Cognex VisionPro offers a development environment powerful enough to tackle any vision challenge. Extensive tool prototyping allows you to visually define and tune your application. VisionPro’s seamless integrated programming interface enables the deployment of highly-customizable applications on your PC platform.

Fast and flexible application development with QuickBuild

The VisionPro QuickBuild prototyping environment combines the power and flexibility of programming with the ease of development of a graphical interface. Configure acquisition, select and optimize vision tools, and make pass/fail decisions—all without the need for programming. Modular tool blocks also allow the user to easily create and reuse components, simplifying and shortening the development process.

Programming flexibility

VisionPro provides a .NET programming interface that allows programmatic access to all tools for the efficient development of customized vision solutions.

Key benefits

- Intuitive drag-and-drop graphical interface easily chains tools together.
- Modular design blocks simplify and shorten the development cycle.
- Supports Microsoft Windows® operating system, which combines the simplicity of graphical prototyping with the power and flexibility of programming.
- Access VisionPro ViDi, breakthrough deep learning-based image analysis, via API.

QuickBuild workflow

1. Acquire images
2. Optimize vision tools
3. Customize application
4. Make pass/fail decisions
5. Communicate and control
6. Deploy
VISIONPRO ViDi

DEEP LEARNING-BASED SOFTWARE FOR COMPLEX COSMETIC INSPECTION, LOCATION, CLASSIFICATION, AND CHARACTER RECOGNITION

VisionPro ViDi is a best-in-class, deep learning-based image analysis software designed specifically for factory automation. It solves complex applications that are too complicated and time-consuming to program and maintain with traditional machine vision rules-based algorithms. VisionPro ViDi simplifies the development of highly variable vision applications.

A breakthrough in complex inspection, part location, classification, and OCR

Deep learning-based software tolerates deviation and unpredictable defects and is ideal for:
- Defect detection
- Texture and material classification
- Assembly verification and deformed part location
- Character reading, including distorted print

Human-like, powerful, and fast

VisionPro ViDi combines the specificity and flexibility of human visual inspection with the reliability, repeatability, and power of a computerized system—all in an easy-to-use interface.

Optimized for factory automation

Cognex ViDi’s deep learning-based algorithms are optimized for real-world industrial image analysis, requiring vastly smaller image sets and shorter training and validation periods. Non-vision experts can train applications and solve inspections in minutes. VisionPro ViDi delivers fast, accurate results and saves images for process control.
COGNEX DESIGNER
DEVELOPMENT ENVIRONMENT FOR VISIONPRO

Cognex Designer makes it easy to develop, deploy, and maintain vision applications without the need for programming. Build powerful interfaces simply by dropping components onto the page. Cognex Designer offers the full set of VisionPro and ViDi vision tools in a convenient drag-and-drop format that speeds application setup and reduces development time.

Build complete vision applications in four simple steps
1. Configure the application with interactive edit controls
2. Create a professional HMI with the built-in user interface
3. Connect to factory devices
4. Install on an industrial PC or vision controller

COGNEX VISION LIBRARY
HIGH-PERFORMANCE C++ CLASS LIBRARY

Cognex Vision Library (CVL) provides the ultimate in development flexibility. High-performance C++ libraries integrate with Cognex vision technologies. CVL properties and options enable the highest level of customization and configurability.
VISION TOOLS

THE INDUSTRY’S LEADING VISION TOOLSET

From inspection to robotic guidance, Cognex vision software offers the most proven and reliable vision tools.

**PatMax**

The industry standard for part and feature location

![Trained image](image1)

![Confusing background](image2)

![Out of focus](image3)

![Rotation and scale changes](image4)

![Oclusions](image5)

**ViDi Deep Learning**

A best-in-class, deep learning-based image analysis software for factory automation

![Locate](image6)

![Analyze](image7)

![Classify](image8)

![Read](image9)

**LineMax**

Advanced line finding under low contrast and noisy conditions

![Noisy background](image10)

![Low contrast](image11)

**Identification and Verification**

Achieve optimum ID reading and character verification

![IDMax](image12)

![OCVMax](image13)

![Degraded DataMatrix codes](image14)

![Vertical shift dot-matrix font](image15)
You can get the world’s top vision software package with its robust tools at the BASE, PLUS, or MAX level. Choose the tool package that suits your development needs.

<table>
<thead>
<tr>
<th>Feature</th>
<th>BASE</th>
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<tbody>
<tr>
<td>Advanced Alignment (PatMax, PatMax Redline, LineMax)</td>
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<tr>
<td>Advanced ID Capabilities (OCVMax, Symbol Verification)</td>
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<td>Advanced Image Formation (SurfaceFX)</td>
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Cognex vision accessories easily integrate with VisionPro, Cognex Designer, and Cognex Vision Library and include a wide selection of industrial cameras, frame grabbers, and I/O cards to meet your system requirements. Cognex offers a variety of industrial cameras in area scan and line scan formats, ranging from value solutions to high-performance hardware.

**Cognex Industrial Cameras (CIC)**
Cognex Industrial Cameras are designed to easily integrate with Cognex vision software. These small, lightweight cameras in signature Cognex black and yellow show that your system has the leading machine vision technology inside.

**GigE Vision Frame Grabber**
Compatible with high-speed and high-resolution cameras from many manufacturers.

**CC24 I/O Card**
I/O cards connect to factory devices using industrial protocols.
THE MOST INDUSTRY EXPERIENCE

Semiconductor
- Wafer and die alignment
- Wafer and IC package ID
- Semiconductor and PCBA inspection
- Fiducial alignment

Consumer Electronics
- Pre-assembly component check
- Robot guidance and alignment
- Touch panel assembly and alignment
- Barcode reading

Medical
- Medical device ID and traceability
- Weld and adhesive inspection
- Surface defect detection
- Optical character recognition

Pharmaceutical
- Package and tablet inspections
- Safety seal presence and verification
- 1D, 2D, date and lot code reading
- Label presence and verification

Automotive
- Part inspection
- Part orientation and presence detection
- Part and assembly inspections
- DPM code reading
Customers get more than software when they purchase from Cognex. They get a company focused exclusively on machine vision, with the most comprehensive application experience. Add direct, high-quality worldwide service and support, and it’s easy to see why Cognex is the machine vision company that industries rely on.

Technical Support  
Product Training  
Hardware Programs  
Product Lifecycle

When it comes to protecting your machine vision investment, Cognex understands that responsive, expert service is an expectation all customers should have. Cognex serves an international customer base from offices located throughout the Americas, Europe, and Asia and through a global network of highly-trained partners, system integrators, and distributors.

From development to deployment, Cognex is there to help you get your vision systems up and running as fast as possible. Whether you’re considering machine vision for the first time or are already an expert user, Cognex global services provide the expertise to help your organization succeed.

cognex.com/support/Cognex-services
BUILD YOUR VISION

2D VISION
Cognex machine vision systems are unmatched in their ability to inspect, identify and guide parts. They are easy to deploy and provide reliable, repeatable performance for the most challenging applications.

www.cognex.com/machine-vision

3D VISION
Cognex In-Sight laser profilers and 3D vision systems provide ultimate ease of use, power and flexibility to achieve reliable and accurate measurement results for the most challenging 3D applications.

www.cognex.com/3D-laser-profilers

DEEP LEARNING
Deep learning-based vision algorithms now tackle applications too challenging for traditional machine vision using a small set of representative images.

www.cognex.com/deep-learning

BARCODE READERS
Cognex industrial barcode readers and mobile terminals with patented algorithms provide the highest read rates for 1D, 2D and DPM codes regardless of the barcode symbology, size, quality, printing method or surface.

www.cognex.com/BarcodeReaders