OEVIS®

OPTO ENGINEERING® VISION SOFTWARE

OEVIS® is a cutting-edge environment for rapidly developing machine vision applications without the need for programming. It is tailored for system integrators, machine vision specialists and automation engineers who seek a versatile and user-friendly vision software solution.

KEY ADVANTAGES

- **Ease of Use**
  Intuitive, flowchart-based development with no programming required

- **All-in-One**
  Develop and execute with the same license. Effortlessly configure any GenIcam camera.

- **Easy integration**
  Supports diverse hardware and communication protocols

- **Comprehensive Support**
  Access extensive resources, example programs, support and training

- **Advanced Capabilities**
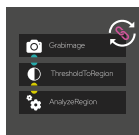 Handle complex inspections with multiple cameras and multi-threading

30-DAY FREE DEMO LICENSE
CONTACT US

FUNCTIONALITIES

FLOW-BASED PROGRAMMING

Fast-use, intuitive graphical development method with automatic linking of computer vision and logic tools.

MACRO, LOOPS & CONDITIONS

Create complex programs, including loops, conditions and subprograms without writing any code.

DEBUGGING

Run one single tool at a time for troubleshooting or checking whether the program is correct or not.

EASY FACTORY INTEGRATION

Support a variety of communication protocols used in factory automation such as Modbus, Ethernet/IP, OPCUA and many more.

MULTITHREADING ADD-ON

Parallel execution of algorithms and analysis cycles. Synchronous or asynchronous acquisition from multiple cameras and simultaneous image processing.

HMI DESIGN

Easily create beautiful and customized user interfaces within the same application software used to create your vision project. Moreover, unlock limitless customization thanks to the seamless integration of custom built .NET HMIs.

CUSTOM .NET TOOLS

Develop your customized algorithms in .NET and seamlessly import them as OEVIS tools. OEVIS® takes care of the rest, from image data to hardware I/O.

REST API

Seamless communication with web services, remote and local servers.

WIDE SELECTION OF TOOLS FOR COMPUTER VISION

IMAGE PROCESSING, SEGMENTATION AND DEFECT DETECTION

OEVIS® features many algorithms for surface and completeness inspection, including blob analysis, erosion, dilation, opening and closing, segmentation tools, standard, relative, dynamic, color thresholding, image unwrapping and many more.
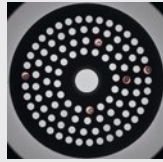
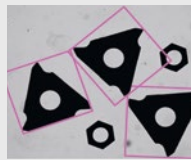*Identification of machining debris within holes through blob extraction.*
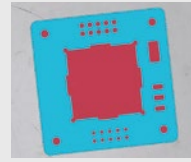
Completeness inspection of PCBs via thresholding and morphological algorithms.

TEMPLATE MATCHING

OEVIS® matching algorithms robustly and accurately identify objects even under challenging conditions such as rotation, local deformation, varying textures, and changes in scale.

Identify objects based on template matching algorithms.

Template matching to identity food can position and rotation.

CALIBRATION, CORRECTION OF DISTORTION, ROBOT GUIDANCE

OEVIS® high-performance algorithms for distortion correction meet the requirements of telecentric optics, eliminating perspective distortion. Furthermore, OEVIS® integrates precise hand-eye calibration algorithms for vision-guided robotic applications, such as pick-and-place.

Distortion correction for telecentric optics.
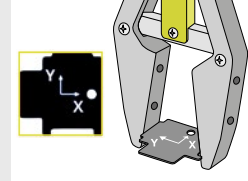
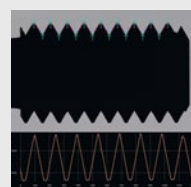*Calibration for robot guidance.*

1D-2D EDGE DETECTION AND METROLOGY

OEVIS® efficiently finds edges using many different algorithms and contour analysis techniques. OEVIS® state-of-the art algorithms measure with subpixel accuracy diameters, lengths, concentricity, radiuses, and angles of complex parts.

High precision measurement of complex parts.

Edge detection and extraction of profile data from threads.

BARCODE, 2D DATACODE AND OPTICAL CHARACTER RECOGNITION (OCR)

OEVIS® ensures fast reading of barcodes and Data codes like ECC200, QR, PDF417 and more. Its OCR delivers accurate character recognition, irrespective of orientation or font, leveraging deep learning frameworks like Tesseract and PaddleOCR that boost performance especially under poor lighting or complex layouts.

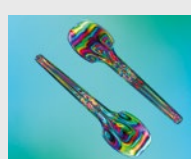*Datamatrix reading on pharmaceutical products.*

Read dot prints on complex background.

POLARIZATION ANALYSIS

OEVIS® features many algorithms to analyze images acquired with polarized cameras, including AoLP/DoLP mapping, simulation of polarization states and so on.

*False-color image in HSV space showing the angle of polarization of plastic parts.*

0°, 45°, 90° and 135° angle of polarization of plastic parts.

DATA CLASSIFICATION & MACHINE LEARNING

OEVIS® features machine learning models (MLP, SVM, KNN) and clustering functions (KMeans, DBSCAN) for complex image analysis tasks such as distinguishing between different textures or cluster objects with irregular shapes.
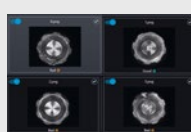
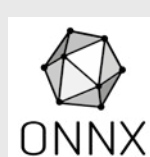*Parts classified based on their proximity to labeled examples.*

*Visualization of a typical data clustering distribution.*

DEEP LEARNING

OEVIS® lets you run your own Deep Learning models thanks to its native support to ONNX open-source format. For example you can train a neural network in PyTorch, export it to ONNX and then deploy it in OEVIS® using ONNX Runtime.

Native support to ONNX (Open Neural Network Exchange) deep learning models.
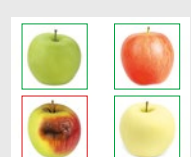
Anomaly detection: identify outliers which significantly differ from the majority of the data.

SIMPLIFIED WORKFLOW

OEVIS® is conveniently organized into four sections that guide you in the development of your vision application.

1 - SYSTEM

- Connect & configure third-party automation hardware via multiple supported communication protocols.
- Manage multiple users access with specific permissions.

Wide range of supported standards, communication protocols and hardware.

- Profinet[1]
- Ethercat[1]
- Ethernet/IP[1]
- Modbus TCP[1]
- ADAM Advantech I/O
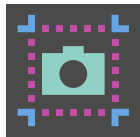- Modbus Client TCP / RTU[2]
- Modbus Server TCP / RTU[2]

- OPC UA Client[2]
- Serial RS232 / RS485[2]
- TCP/IP[2]
- WebSocket[2]
- HTTP[2]
- MQTT Client[2]

- Advantech PC
- AdLink PC
- IMAGO Technologies PC
- Neousys PC

CAN'T FIND YOUR HARDWARE? CONTACT US.

[1] via CIFX Hilscher cards   [2] native support

2 - ACQUIRE

- Acquire from multiple cameras.
- Preview the live streaming images.
- Directly set all the GenICam parameters of each connected device.

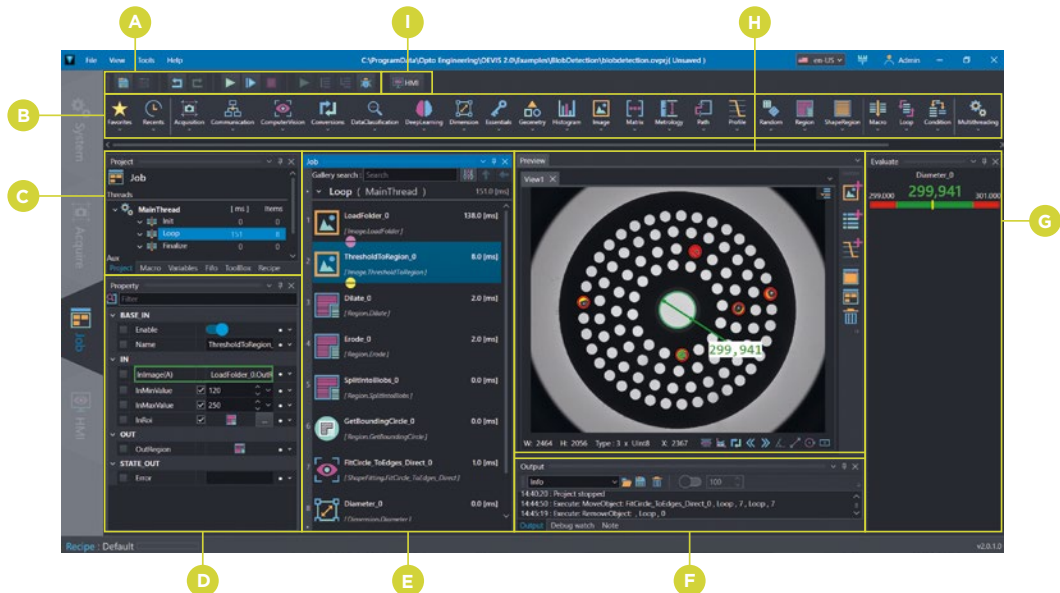**Supports any GenICam GenTL camera.**

GEN‹i›CAM

3 - JOB

- Create your vision project using various tools.
- Design from scratch a beautiful front end.
- All the windows can be conveniently moved according to the user preferences.

A - EXECUTION PANEL

Save, run in a loop or once, stop and debug your project. Select whether to run only the main thread or multiple threads simultaneously.

B - JOB TOOL BAR

Tools are the bricks of an OEVIS® project. Each tool is composed by an action that is performed when the tool is run and a list of properties that customize its behavior.

C - PROJECT EXPLORER

View Project parts (init, loop and finalize), manage Macros, create global Variables and Fifo queues, view and search tools and create Recipes, where you can save values to be published on the HMI.

D - PROPERTY INSPECTOR

Display and set all the tools properties, including name, input & output values. Parameters followed by the "(A)" symbol automatically link to the first compatible value in the execution flow (if existing).

E - JOB PANEL & SEARCH BAR

This panel shows the list of selected tools. The connection between tools is shown by half-circles located at the top (inputs) or at the bottom (outputs) of each tool. Different colors identify connections between different tools.

F - DEBUG TOOLBOX

Display the event log, keep track of the property value of the selected tools when the program is running and test the connection to a Modbus server.

G - EVALUATE

Visually display dimensional values or any other numerical property to quickly verify if it falls within a predefined range.

H - VISUALIZER

Preview the results of image analysis and display edges or other properties via drag & drop functionality from the property panel. Add multiple views, display data tables and much more.

I - HMI DESIGN

Design and customize your application's front end with a built-it advanced graphic editor.

Click on the HMI button to activate several controls to design your application's front end interface.
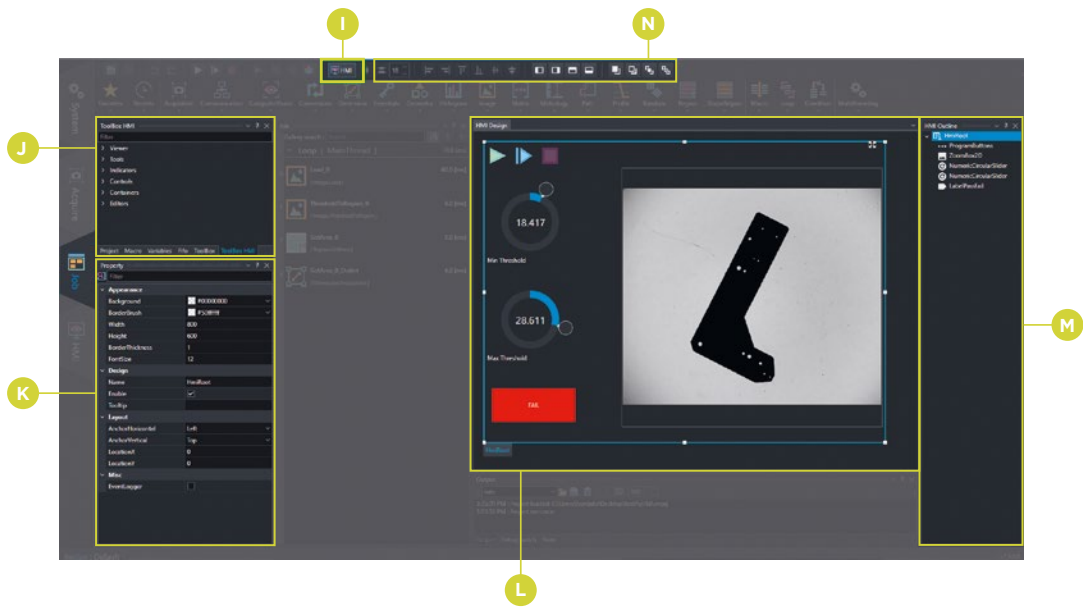
J — HMI TOOL BOX

Add a wide variety of items including charts, visual indicators of any type, toggle switches, control buttons, text and your logo. Simply drag & drop them onto the HMI canvas.

K — HMI PROPERTY AND LINKING

Deeply customize the HMI by editing the layout, appearance and behavior of the controls. To link the property of a tool to an HMI control, simply select the control, highlight the tool that you want to link and drag the tool's property onto the control label.

L — HMI DESIGN CANVAS

The design canvas is where all control items are displayed. You can resize, move or transfer into different containers any item by dragging it with the mouse.

M — HMI OUTLINE

View all the HMI items that you have added displayed in a tree and organized according to their hierarchy.
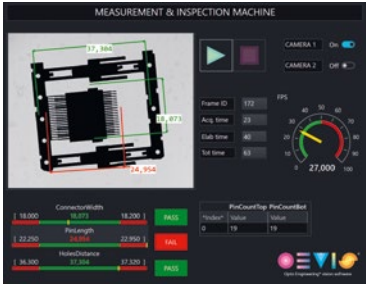
N — HMI TOOL BAR

Quickly edit the layout of controls including alignment, spacing, order of appearance and easily dock the selected control to the left/right/top/bottom/ side of its parent container.

4 - HMI EXECUTION

Results of the processing are displayed to the end user in beautiful and intuitive front ends.

MACHINE VISION LIBRARIES

Opto Engineering® graphical environments are powerful, flexible, easy to use, and are designed to quickly develop and run new vision applications without the need to write program code.

TCLIB Suite
Software library & stand-alone tools
for the optimization of telecentric setups

- State-of-the-art algorithms for distortion calibration.
- Ensure the best focus and alignment with fast and intuitive stand-alone tools to achieve the best measurement results.

360LIB Suite
Software library & stand-alone tools
for the optimization of 360° optics setups

- State-of-the-art algorithms for unwrapping and correction of decentering.
- Achieve the best results for OCR/OCV/barcode reading with 360° view optics.