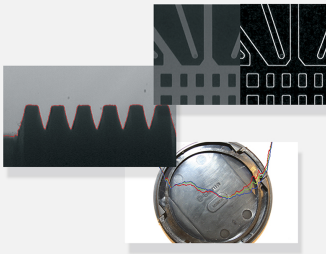# EasyImage

Image processing library

At a Glance

- Set of optimized fundamental image processing and analysis functions
- Convolution and morphology
- Geometric transformations
- Histogram computation and analysis
- Noise estimation and reduction
- HDR (High Dynamic Range) image fusion

Benefits

Open eVision Studio: Evaluation, prototyping and development tool

Open eVision Studio is the evaluation, prototyping and development tool of Open eVision. Its intuitive graphical user interface allows you to call and immediately see the result of any of eVision's 2D image processing functions. A scripting functionality generates the corresponding code, which can then be copied and pasted into your application.

Open eVision Studio is free (when using Open eVision 2.0 and above) and does not require any license.

Just click on DOWNLOAD OPEN EVISION STUDIO and install Open eVision. Sample images, manuals and sample programs are included.

EasyImage Description

- EasyImage includes operations usually performed as pre-processing steps to improve the image quality and obtain a good contrast between the background and the objects to be inspected.
- EasyImage supports gray-level and color images. Selected morphology functions are also optimized for binary (1-bit per pixel) and bi-level images.
- EasyImage includes numerous image processing functions, such as enhancement and restoration by linear or non-linear filtering, arithmetic and logic operations, geometric transformations for image registration, histogram analysis for thresholding, projection, ...

Flexible Masks

- Flexible Masks provide a powerful way of restricting the processing to freely selected parts of the image.
- They are supported by selected image analysis functions.

EasyImage includes the following functions:

- Gain / Offset change: Normalization, Uniformization, Lookup table mapping
- Thresholding: Automatic thresholding, Min residue, max entropy, isodata, Manual thresholding; Single threshold (absolute and relative), Double threshold, Histogram-based threshold
- Arithmetic operations: Addition, Subtraction, Multiplication, Division, Copy, Invert, Module, Shift

- HDR (High Dynamic Range) image fusion

- Logical and bitwise operations: AND, OR, XOR, NOT

- Pixel comparison, Minimum, maximum

- Histogram equalization

- Linear filtering: Edge detection (Laplacian, Gradient, Prewitt, Sobel, Roberts filters), Sharpening, Smoothing (Gaussian and uniform filters). Custom kernel filtering: Kernel creation and management functions.

- Non-linear filtering: Morphological operators (Erosion, Dilation, Opening, Closing, Thinning, Thickening, Top-hat filter, Hit-and-miss transform, Morphological distance), Median filter

- Geometric transformations: Image registration (alignment), Horizontal and vertical mirroring, Translation, scaling and rotation with optional interpolation, LUT-based (un)warping

- Vector operations, Projection, Profile sampling (line segment, path, contour) and analysis

- Statistics: Measurement of Area, Binary moments, Weighted moments, Gravity center, Pixel count and pixel statistics, Minimum and maximum gray-level value, Average, variance and standard deviation

- Histogram computation and analysis

- Image focusing

- Noise estimation and reduction: Spatial noise reduction (Convolution, Median filters), Temporal noise reduction (Recursive average, Moving average, Average), Noise estimation (Root-mean-square noise, Signal-to-noise ratio)

- Elimination of the interlaced images artifacts by rebuilding or re-aligning fields

- Feature point detectors: Harris corner detector, Canny edge detector

- Other operations: Overlay, Scalar gradient

Choose the most suitable Licensing System

- Open eVision Dongle-based Licenses: Dongle-based Licenses offer the flexibility to be transferred from a PC to another. To purchase a Dongle-based License, select one of the Euresys dongles (USB or Parallel) plus the license(s) to be stored on this dongle. Licenses are delivered as activation codes, which are stored on the dongles.

- Open eVision Software-based Licenses: Software-based licenses do not require any dongle, they are linked to the PC on which they have been activated. Licenses are delivered as activation codes and can be managed online.

Applications

Machine Vision for the General Manufacturing Industries

- Image enhancement
- Presence / Absence check
- Surface analysis

Life Sciences & Medical

- Noise reduction for Xray imaging

Specifications

Software

Host PC Operating System	• Open eVision is a set of 32-bit and 64-bit libraries that require a processor compatible with the SSE2 instruction set. • Deep Learning Bundle is only available in the 64-bit Open eVision library. • Open eVision can be used on the following operating systems: − Windows 10 (32- and 64-bits) − Windows 8 (32- and 64-bits) − Windows 7 (32- and 64-bits) • Since Open eVision 2.6, discontinued support of: − Windows Vista 32-bits Service Pack 1 − Windows XP 32-bits Service Pack 3 − Windows Embedded Standard 2009 32-bits • The Open eVision installer does not allow installation on virtual machines. • Minimum requirements: − RAM: 8 GB − Display size: 800 x 600. 1280 x 1024 recommended. − Color depth: 16 bits. 32 bits recommended. − Between 100 MB and 2 GB free hard disk space for libraries, depending on selected options.
APIs	• Supported Integrated Development Environments and Programming Languages: − Microsoft Visual Studio 2008® SP1 (C++, C#, VB .NET, C++/CLI) − Microsoft Visual Studio 2010® (C++, C#, VB .NET, C++/CLI) − Microsoft Visual Studio 2012® (C++, C#, VB .NET, C++/CLI) − Microsoft Visual Studio 2013® (C++, C#, VB .NET, C++/CLI) − Microsoft Visual Studio 2015® (C++, C#, VB .NET, C++/CLI) − Microsoft Visual Studio 2017® (C++, C#, VB .NET, C++/CLI) • Since Open eVision 2.5.1, discontinued support of: − Borland C++ Builder 6.0 update 4 (C++) − CodeGear Delphi 2009 (Object Pascal) − CodeGear C++ Builder 2009 (C++) − Microsoft Visual Studio 6.0 SP6 (C++, Basic) − ActiveX API • Since Open eVision 2.4.1, discontinued support of: − Embarcadero RAD Studio XE4 and XE5 (C++, Object Pascal, 32 bits only)

Ordering Information

Product code - Description	• 4001 - EasyImage for USB dongle • 4051 - EasyImage for PAR dongle • 4101 - EasyImage for board licensing • 4151 - Open EasyImage for USB dongle • 4201 - Open EasyImage for PAR dongle • 4251 - Open EasyImage for soft-based licensing
Optional accessories	• 6512 - eVision/Open eVision USB Dongle (empty) • 6513 - eVision/Open eVision Parallel Dongle (empty)

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