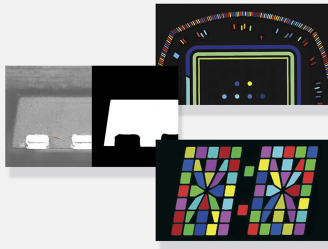# EasyObject

Blob analysis library

At a Glance

- Image segmentation based on the gray scale of connected objects
- Object labeling
- Geometric feature extraction
- Flexible Masks
- High performance, especially for large images and images with numerous objects

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.

EasyObject Description

The EasyObject library handles image segmentation, i.e. the decomposition of images into separate objects, also called blobs.

Once the objects have been constructed, they can be handled as independent entities. Various geometric parameters or features, such as area, width, or ellipse of inertia, can be computed for each object.

Objects of interest can be selected by means of their position or of their computed features.

EasyObject also supports the inspection of holes in defined objects. Holes are managed as the objects themselves, benefiting from the same geometrical features. EasyObject manages the relationship between objects and holes, defining parent objects for holes.

Flexible Masks

EasyObject supports the restriction of the blob analysis to complex- or disconnected-shape regions of the image thanks to the Flexible Masks that are available for the encoding functions. EasyImage can also generate Flexible Masks from an encoded image.

Functions

- Image Encoding:

- ‾ Construction of the runs: Segmentation using Grayscale single threshold, Grayscale double threshold, Color single threshold, Color range threshold, Reference image, Image range, Labeled Image or Binary Image
- ‾ Pixel aggregation
- ‾ Object construction: aggregation of the runs into objects
- ‾ Hole construction: aggregation of the runs into holes
- ‾ Continuous mode for web inspection applications using line-scan cameras
- Object feature extraction (geometric parameters computation)
- Object selection and sorting according to any feature value

Object/blob features available

- Position: Limit (top, bottom, left, right), Gravity center (X and Y), Weighted gravity center (X and Y)
- Extent: Area (pixel count), Feret box (center X and Y, height, width with distinct orientation angles at22, 45, 68 degrees), Bounding box (center X and Y, height, width), Minimum enclosing rectangle (angle, center X and Y, height, width)
- Starting point of the object contour (X and Y)
- Longest run
- Run count
- Object number (index)
- Statistics: Pixel gray-level value (average, deviation, variance, min and max)
- Ellipse of Inertia: Eccentricity of the ellipse of inertia, Ellipse, Second order geometric moments
- Convex hull

Graphic representation

The objects can be drawn onto the source image. The following blob features have a pre-set graphical representation:

- Objects
- Diagonals
- Bounding box
- Convex hull
- Ellipse
- Feret Box
- Feret box with an angle of 22°
- Feret box with an angle of 45°
- Feret box with an angle of 68°
- Gravity center
- Minimum enclosing rectangle
- Weighted gravity center

Neo, a New, Flexible Licensing System

- Neo is the new Licensing System of Euresys. It is reliable, state-of-the-art, and is available now under Windows.
- Neo allows you to choose where to activate your license, either on a Neo Dongle or in a Neo Software Container. You buy a license, you decide later.
- Neo Dongles offer a sturdy hardware and provide the flexibility to be transferred from a PC to another.
- Neo Software Containers do not need any dedicated hardware, and instead are linked to the PC on which they have been activated.
- Neo ships with its own, dedicated, Neo License Manager, which comes in two flavours: An intuitive, easy to use, Graphical User Interface and a Command Line Interface that allows for easy automation of Neo licensing procedures.

Applications

Machine Vision for the General Manufacturing Industries
- Presence / Absence check
- Surface analysis
- Object positioning for pick and place machines

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	• 4002 - EasyObject for USB dongle • 4052 - EasyObject for PAR dongle • 4102 - EasyObject for board licensing • 4152 - Open EasyObject for USB dongle • 4202 - Open EasyObject for PAR dongle • 4252 - Open EasyObject for soft-based licensing • 4302 - Open eVision EasyObject
Optional accessories	• 6512 - eVision/Open eVision USB Dongle (empty) • 6513 - eVision/Open eVision Parallel Dongle (empty) • 6514 - Neo USB Dongle (empty)

EMEA

Euresys SA

Liège Science Park - Rue du Bois Saint-Jean, 20
4102 Seraing - Belgium

Phone: +32 4 367 72 88
Email: sales.europe@euresys.com

EMEA

Sensor to Image GmbH

Lechtorstrasse 20 -
86956 Schongau - Germany

Phone: +49 8861 2369 0
Email: sales.europe@euresys.com

AMERICA

Euresys Inc.

27132-A Paseo Espada - Suite 421
San Juan Capistrano, CA 92675 - United States

Phone: +1 949 743 0612
Email: sales.americas@euresys.com

ASIA

Euresys Pte. Ltd.

750A Chai Chee Road - #07-15 Viva Business Park
Singapore 469001 - Singapore

Phone: +65 6445 4800
Email: sales.asia@euresys.com

CHINA

Euresys Shanghai Liaison Office

Unit 802, Tower B, Greenland The Center - No.500 Yunjin Road, Xuhui District
200232 Shanghai - China
Euresys上海联络处
上海市徐汇区云锦路500号绿地汇中心B座802室
200232

Phone: +86 21 33686220
Email: sales.china@euresys.com

JAPAN

Euresys Japan K.K.

Expert Office Shinyokohama - Nisso Dai 18 Building, Shinyokohama 3-7-18, Kohoku
Yokohama 222-0033 - Japan
〒222−0033
神奈川県横浜市港北区新横浜3−7−18　日総第18ビル　エキスパートオフィス新横浜

Phone: +81 45 594 7259
Email: sales.japan@euresys.com

More at www.euresys.com