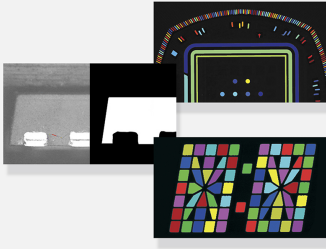


EasyObject

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 functions. A scripting function 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 can be downloaded to evaluate the performance of Open eVision.

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 at 22, 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

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

Presence / Absence check

EasyImage gray-scale analysis functions are used for simple presence/absence checks

Surface analysis

EasyImage is used to reveal the surface defects, and the blob analysis functions of EasyObject is able to segment and measure them.

Object positioning for pick and place

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. • Open eVision can be used on the following operating systems: – Windows 10, 8 and 7 (32- and 64-bits) – Windows Vista 32-bits Service Pack 1 – Windows XP 32-bits Service Pack 3 – Windows Server 2008 32-bits – Windows Server 2008 R2 64-bits – Windows Server 2003 32-bit Service Pack 1 – Windows Embedded Standard 2009 32-bits • The Open eVision installer does not allow installation on virtual machines. • Minimum requirements: – Display size: 800 x 600. 1280 x 1024 recommended. – Color depth: 16 bits. 32 bits recommended. – Between 20 MB and 300 MB free hard disk space for libraries, depending on selected options. – Between 60 MB and 400 MB free hard disk space for development tools, depending on selected options.
APIs	Supported Integrated Development Environments and Programming Languages: • Microsoft Visual Studio 6.0 SP6 (C++, Basic) • Microsoft Visual Studio .NET 2003 SP1 (C++) • Microsoft Visual Studio 2005 SP1 (C++, C#, VB .NET, C++/CLI) • 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) • Borland C++ Builder 6.0 update 4 (C++) • CodeGear C++ Builder 2009 (C++) • CodeGear Delphi 2009 (Object Pascal) • Embarcadero RAD Studio XE4 (C++, Object Pascal) • Embarcadero RAD Studio XE5 (C++, Object Pascal)

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
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