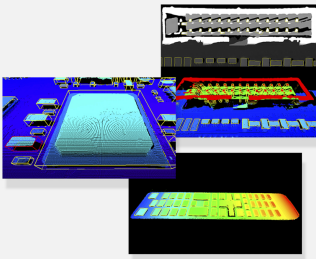




Easy3DObject

3D object extraction and measurement library



At a Glance

- Detection of 3D objects in point clouds or ZMaps
- Metric detection criteria
- Compatible with arbitrary regions
- Computation of precise 3D measurements, like size, orientation, area, volume...
- Automatic extraction of object local support plane
- 2D and 3D graphical display of the results
- Full-featured interactive demo application

Benefits

New in Open eVision 24.02

EasyFind : Significant speed increase, without any loss of accuracy.

EasyImage

- New Gabor filtering function to help with texture analysis and edge detection.
- New inverse circle warp function, providing conversion between polar and cartesian coordinates.

Easy: Improved off-screen rendering on all platforms.

Admin: Simplified version upgrade procedure with version numbers removed from filenames.

Easy3DObject Description

Easy3DObject is a library able to automatically extract and measure 3D objects from a Point Cloud or ZMap. Easy3D is required when using any Open eVision's 3D library and is provided when purchasing Easy3DLaserLine, Easy3DObject, Easy3DMatch or the 3D Bundle.

Detection of 3D objects in point cloud and ZMap

Easy3DObject uses an innovative algorithm to detect objects in Point Clouds or ZMaps. It is able to efficiently extract small and large objects, whatever their shape.

New in Open eVision 23.12

Import of standard datasets into Deep Learning Studio

- Import of COCO Json dataset for EasyLocate or EasySegment Supervised
- Import of YOLO TXT annotations for EasyLocate
- Import of Pascal VOC XML annotations for EasyLocate

EasySpotDetector (Beta release, contact us for more information)

- A single API and license for the alignment of region of interest, surface defect detection (particles, scratches,...) and classification with a custom trained Deep Learning classifier.
- Realtime processing for inline surface inspection

Metric detection criteria

The 3D object detection algorithm uses several geometric criteria to focus only on the required objects. These criteria are the size (length, width and height), the angle (orientation and tilt), the aspect ratio, the area and the volume of the objects. These parameters are expressed in real-world coordinate units. Using these criteria, the user can limit the extraction to the objects relevant to the inspection.

Compatible with arbitrary regions

The arbitrary region feature of eVision (ERegion) can be used with Easy3DObject to refine the domain of extraction. Rectangles, circles, ellipses, polygons or any arbitrary regions are available as an optional parameter to the extraction.

Compute precise 3D measurements, such as size, orientation, area, volume...

For each object detected, Easy3DObject computes 3D geometric measurements. All measurements are expressed in real-world units (such as millimeters or microns). These values include the length, width and height of the object, the orientation and tilt angles, the area and the volume. These measurements can then be used to perform 3D inspection, for example by comparing the results with reference values.

Automatic extraction of object local supporting plane

For each object detected, Easy3DObject extracts the local supporting plane. It is then used as the reference for various calculations like height, top position or volume. Using only the area surrounding the object in this process makes Easy3DObject a powerful tool for the inspection of products with curved or non-flat support.

2D and 3D graphical display of the results

The resulting object list can be displayed in 2D and 3D graphical contexts. On an image, the objects can be shown with their bounding rectangle, average position or extracted pixels. On a 3D Viewer, the objects are displayed with their bounding boxes, planes or top positions. Display attributes like color or opacity are customizable.

Full featured interactive demo application

A demo application for Easy3DObject is provided with complete source code. Using that application, the user will be able to learn and experiment with all the features of the Easy3DObject library. Additionally, code snippets can be generated and integrated into their applications.

Neo Licensing System

- Neo is the new Licensing System of Euresys. It is reliable, state-of-the-art, and is now available to store Open eVision and eGrabber licenses.
- Neo allows you to choose where to activate your licenses, 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 computer to another.
- Neo Software Containers do not need any dedicated hardware, and instead are linked to the computer 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.

Developed with the support of the DG06 Technology Development Department

All Open eVision libraries are available for Windows and Linux

- Microsoft Windows 11, 10, 8.1, 7 for x86-64 (64-bit) processor architecture
- Linux for x86-64 (64-bit) and ARMv8-A (64-bit) processor architectures with a glibc version greater or equal to 2.18

Applications

Machine Vision for the Electronic Manufacturing Industry

- PCB inspection
- LED inspection
- Connector inspection

Machine Vision for the General Manufacturing Industries

- Checking dimensional accuracy
- Assembly inspection
- Object positioning for pick and place machines

Machine Vision for the Food Inspection Industry

- Food inspection and sorting

Specifications

Software

Host PC Operating System	<ul style="list-style-type: none">• Open eVision is a set of 64-bit libraries that require an Intel compatible processor with the SSE4 instruction set or an ARMv8-A compatible processor.• Open eVision can be used on the following operating systems:<ul style="list-style-type: none">– Microsoft Windows 11, 10, 8.1, 7 for x86-64 (64-bit) processor architecture– Linux for x86-64 (64-bit) and ARMv8-A (64-bit) processor architectures with a glibc version greater or equal to 2.18• Remote connections<ul style="list-style-type: none">– Remote connections are allowed using remote desktop, TeamViewer or any other similar software.• Virtual machines<ul style="list-style-type: none">– Virtual machines are supported. Microsoft Hyper-V, Oracle VirtualBox and libvirt hypervisors have been successfully tested.– Only the Neo Licensing System is compatible with virtualization.• Minimum requirements:<ul style="list-style-type: none">– 2 GB RAM to run an Open eVision application– 8 GB RAM to compile an Open eVision application– Between 100 MB and 2 GB free hard disk space for libraries, depending on selected options.
APIs	<ul style="list-style-type: none">• Supported Integrated Development Environments and Programming Languages:<ul style="list-style-type: none">– Microsoft Visual Studio 2017 (C++, C#, VB .NET, C++/CLI)– Microsoft Visual Studio 2019 (C++, C#, VB .NET, C++/CLI)– Microsoft Visual Studio 2022 (C++, C#, VB .NET, C++/CLI)– QtCreator 4.15 with Qt 5.12

Ordering Information

Product code - Description	<ul style="list-style-type: none">• 4183 - Open Easy3DObject for USB dongle• 4233 - Open Easy3DObject for PAR dongle• 4333 - Open eVision Easy3DObject
Optional accessories	<ul style="list-style-type: none">• 6512 - eVision/Open eVision USB Dongle (empty)• 6513 - eVision/Open eVision Parallel Dongle (empty)• 6514 - Neo USB Dongle (empty)

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