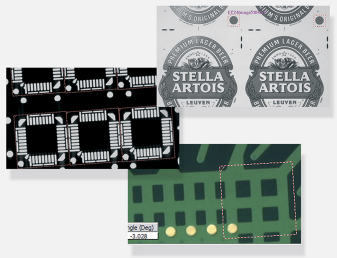
EasyMatch

Pattern matching library



At a Glance

- Pattern matching using normalized correlation
- Sub-pixel accuracy
- Rotation and scaling support
- Detection of multiple pattern occurrences
- Support of gray scale and color images
- Support of "don't care" areas

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.

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's2D 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.

EasyMatch Description

EasyMatch is a gray-level and color pattern matching library. It lets you train the system on a reference pattern and afterwards locate its occurrences in other images.

This tool is very convenient when the position of a given part is unknown in the field of view, or if the presence of parts must be controlled. The library works by using normalized correlation method, i.e. measuring discrepancies between the pattern and the target image.

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

Multiple pattern occurrences

EasyMatch is able to find several occurrences of a pattern, up to a user-defined number.

Standard, offset-normalized, gain-normalized and fully-normalized correlation

The correlation is computed on grey scale or color images. To cope with pattern lighting variations, pattern images are normalized. EasyMatch provides four normalization modes, depending on whether a grey-scale gain and/or offset compensation are used.

Normal, inverse or mixed contrast

Because of particular lighting effects, an object can appear with inverted contrast (white on black instead of black on white or conversely). Depending on the application, it can be useful to keep inverted instances or to disregard them. Three contrast modes are available: consider positive occurrences only, negative occurrences only or both.

Translation, rotation and isotropic/anisotropic scaling

To find the best matches between the pattern and target image, the target is allowed to translate horizontally and vertically. Additionally, it can be allowed to rotate and/or to change its scale in the X and Y directions simultaneously or independently. The rotation angle and scale factors vary in a user-specified interval. All degrees of freedom can be combined at will.

Variable accuracy, up to sub-pixel level

The accuracy with which the pattern is measured can be chosen (the less accurate, the faster). A one tenth-of-a-pixel accuracy can be achieved.

Don't care pixels

When the pattern cannot be inscribed in a rectangular ROI, the surrounding of the pattern can be ignored by setting the pixels values below a threshold level. These pixels will not take part in the matching process. The same feature can be used if parts of the template change from sample to sample.

Gray-level and color images

EasyMatch works with 8-bit gray-scale images as well as 24-bit RGB images.

Non-square pixels

When images are acquired with non-square pixels, rotated objects appear skewed. Taking the pixel aspect ratio into account can compensate for this effect.

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.

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 Alignment
- Pick and place machines
- Wire bonding and Die bonding
- PCB inspection
- LED inspection

Machine Vision for the General Manufacturing Industries

- Presence / Absence check

Specifications

Software

Host PC Operating System	• 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: – 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 – Remote connections are allowed using remote desktop, TeamViewer or any other similar software. • Virtual machines – 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: – 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	• Supported Integrated Development Environments and Programming Languages: – 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	• 4003 - EasyMatch for USB dongle • 4053 - EasyMatch for PAR dongle • 4103 - EasyMatch for board licensing • 4153 - Open EasyMatch for USB dongle • 4203 - Open EasyMatch for PAR dongle • 4303 - Open eVision EasyMatch

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

Email: sales.europe@euresys.com

EMEA

Sensor to Image GmbH

Lechtorstrasse 20
86956 Schongau - Germany

Email: sales.europe@euresys.com

AMERICA

Euresys Inc.

316 Prado Way
Greenville, SC 29607 - United States

Email: sales.americas@euresys.com

ASIA

Euresys Pte. Ltd.

750A Chai Chee Road - #07-15 ESR BizPark @ Chai Chee
Singapore 469001 - Singapore

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

Email: sales.china@euresys.com

CHINA

Euresys Shenzhen Liaison Office

Room 1202 - Chinese Overseas Scholars Venture Building
518057 Shenzen - China
Euresys深圳联络处
深圳南山区留学生创业大厦1期1202
518057

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

Email: sales.japan@euresys.com

More at www.euresys.com