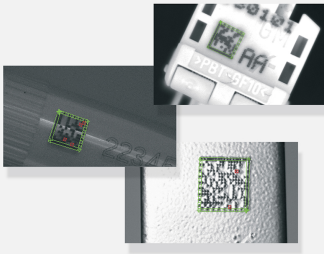# EasyMatrixCode

2D Data Matrix code reading library

At a Glance

- Automatic detection of the code in the image
- Decodes ECC200, ECC000, ECC050, ECC080, ECC100 and ECC140 codes
- Computes quality indicators as per ANSI/AIM, ISO/IEC 15415, ISO/IEC TR 29158 and SEMI T10-0701 standards
- Very fast operation
- Impressive robustness to noise, blur and distortion
- Support of GS1 Data Matrix codes
- Efficient reading of codes in grid layout
- Multiple codes reading

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'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.

EasyMatrixCode Description

Data Matrix codes are widely used for parcel tracking and part identification in the semiconductor, pharmaceutical and mechanical industries.

EasyMatrixCode is a fully automatic reader of 2D Data Matrix codes. It recognizes symbols of any size, contrast, location and orientation in a single operation. Error detection and correction algorithms are used to provide a reliable reading.

EasyMatrixCode is fully compatible with the ANSI/AIM BC11-1997 standard. EasyMatrixCode2 now supports the Data Matrix Rectangular Extension (ISO/IEC 21471,DMRE).

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

Automatic recognition

As an automatic library, a learning phase is not required, but it is optional. Some characteristics of the matrix code may be set manually in order to restrict the search and accelerate the process. These characteristics are: the family of the matrix code, the number of cells, the cells color, whether flipping is allowed or not.

Impressive robustness to noise, blur and distortion

EasyMatrixCode can be used in the most demanding situation. It has been designed to fulfill the most difficult application cases such as:

- Bad illumination conditions: non-uniform contrast, under- or over-exposed images

- Bad images resulting from printing or optical defects: blurred Data Matrix codes, anisotropic and non-uniform scaling, noisy images, skewed images

- Hard-to-detect codes: small-size codes, codes on a textured background, resulting from dot peening, laser marking, ink jet printing or electro-chemical etching on various materials.

Print quality verification

EasyMatrixCode inspects the quality of the Data Matrix code and computes the indicators as defined by the ANSI/AIM, ISO/IEC 15415, ISO/IEC TR 29158 and SEMI T10-0701 standards.

ECodeReader: More codes in one scan

ECodeReader simplifies the process of reading multiple codes and types within the same image by integrating EasyMatrixCode2, EasyBarCode2 and EasyQRCode into a single, simple, and unified interface.

In some applications, reading multiple code types is a requirement. Doing so, required until now, the use of multiple Code Readers (i.e. one per code type).

ECodeReader simplifies that process by integrating the power of EasyMatrixCode2, EasyBarCode2 and EasyQRCode into a single, simple, and unified interface.

With ECodeReader, you can thus read Barcodes, Data Matrix codes and QR codes with a single method call.

Note: ECodeReader requires the EasyMatrixCode, EasyBarCode and EasyQRCode licenses.

Grid reading

EasyMatrixCode2 supports the definition of a grid to improve reading regularly positioned Data Matrix Codes. When possible, using a grid substantially improves both the reliability and reading speed.

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
- Mark inspection

Machine Vision for the General Manufacturing Industries
- Product identification for traceability
- Code quality verification for label printing machines

Machine Vision for the Printing Industry
- Label and packaging inspection: Inspection of the quality of the printing of characters and codes

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	• 4007 - EasyMatrixCode for USB dongle
	• 4057 - EasyMatrixCode for PAR dongle
	• 4107 - EasyMatrixCode for board licensing
	• 4157 - Open EasyMatrixCode for USB dongle
	• 4207 - Open EasyMatrixCode for PAR dongle
	• 4307 - Open eVision EasyMatrixCode
Optional accessories	• 6512 - eVision/Open eVision USB Dongle (empty)
	• 6513 - eVision/Open eVision Parallel Dongle (empty)
	• 6514 - Neo USB Dongle (empty)

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EasyMatrixCode - 2024-03-23 06:04