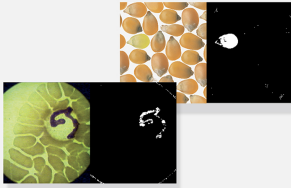# EasyColor

Color image analysis library

At a Glance

- Fast conversion of images between 11 color spaces
- Color segmentation: to identify objects based on their color
- Color verification: to verify the color of 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.

EasyColor Description

EasyColor includes a set of optimized color systems transformation functions and color analysis functions.

The color systems supported are RGB, XYZ, L*a*b*, L*u*v*, YUV, YIQ, ISH, LSH, VSH, LCH and YSH.

EasyColor provides efficient means to convert images between these systems and to transform color images into gray level images and vice versa.

Operation Principles

- Although the RGB (red, green, blue) representation of color images is well suited for color reproduction (it is used by monitors and cameras), many other representations have been designed for various purposes. More particularly, the ""Intensity/Saturation/Hue"" color systems are well suited for machine vision applications. EasyColor supports several of them. They separate the achromatic (black and white) component (Intensity) from the chromatic components (Saturation and Hue) which are used to describe colors. This allows a more intuitive interpretation of colors and is very useful to segment colors while eliminating lighting effects. It is thus required, when doing color image processing, to convert the RGB images coming from the camera to another color space, such as LSH, ISH or YSH. EasyColor provides a set of optimized color space conversion functions.
- Also included in EasyColor are traditional color image processing functions (such as Bayer pattern conversion and color balance correction), as well as powerful color analysis functions, which allow the user to detect and classify color objects and defects. For example, color image segmentation allows you to decompose a color image in different regions by assigning a class to every pixel. Color image segmentation can be used in conjunction with EasyObject to perform blob analysis on the segmented regions. It is also possible to filter pixels by selecting ranges of values for each component, for example, selecting ""olive green"" pixels based on their hue only, with a loose discrimination on the intensity and saturation to eliminate surface and lighting effects.

EasyColor functions

- Color transformations: Lookup Tables (LUTs) for colorimetric systems conversion, gain / offset (color), color calibration or color balance (gamma pre-compensation, white balance)
- Merging and extraction of the color image components
- Pseudo-coloring
- Color classification for segmentation
- Handling of special color formats: YUV 422 decompression and Bayer pattern to RGB

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.

Applications

Machine Vision for the Electronic Manufacturing Industry

- PCB inspection

Machine Vision for the General Manufacturing Industries

- Color inspection
- False color rendering
- Color inspection in the pharmaceutical industry

Machine Vision for the Printing Industry

- Label and packaging inspection: Verification of the printing color

Machine Vision for the Food Inspection Industry

- Food inspection and sorting

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	• 4004 - EasyColor for USB dongle
	• 4054 - EasyColor for PAR dongle
	• 4104 - EasyColor for board licensing
	• 4154 - Open EasyColor for USB dongle
	• 4204 - Open EasyColor for PAR dongle
	• 4254 - Open EasyColor for soft-based licensing
	• 4304 - Open eVision EasyColor
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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