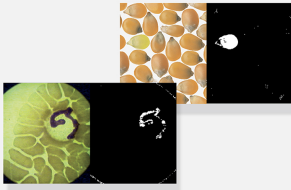


EasyColor

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 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.

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

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 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. • 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.
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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)
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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
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