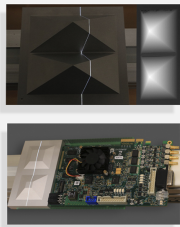


Easy3DLaserLine

3D laser line extraction and calibration library



At a Glance

- Single and Dual Laser Line Extraction into a depth map
- Convenient and powerful 3D calibration for laser triangulation setups
- Compatible with the Coaxlink Quad 3D-LLE frame grabber

Benefits

Easy3DLaserLine Description

- With Easy3DLaserLine, you will be able to implement a high-precision calibrated laser line triangulation setup.
- Easy3D is required for all 3D developments and is included in the Easy3DLaserLine license.

3D Laser Line Extraction into a depth map

Easy3D generates a depth map from a series of images that contain a laser line projected on the inspected object. Each pixel of the resulting depth map contains the position of the laser line in the image. Several extraction modes are supported as well as various filters. The software line extractor is fully compatible with the hardware implementation in the Coaxlink Quad 3D-LLE frame grabber.

Dual laser line extraction

Supported by software and hardware implementations, the dual laser line extraction process reduces the effect of occlusions. Occlusions occur when some parts of the objects are not lit by any laser. Using two lasers with different angles reduces these undefined areas. The object-based calibration included in Easy3DLaserLine allows combining the acquired data into a single calibrated point cloud.

Calibration

Some processing can be performed directly on a depth map. However, most 3D measurements need distortion-free data and metric representations, therefore calibrating the laser triangulation setup is required. Easy3D computes a calibration model applied to depth maps to transform them into calibrated 3D point clouds.

This calibration model is based on the depth map of a reference object, acquired using the laser triangulation setup that requires calibration.

Developed with the support of the DG06 Technology Development Department

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 32-bit and 64-bit libraries that require a processor compatible with the SSE2 instruction set. • The EasyDeepLearning library is only available in the 64-bit Open eVision library. • Open eVision can be used on the following operating systems: <ul style="list-style-type: none"> – 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: <ul style="list-style-type: none"> – 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: <ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> • Supported Integrated Development Environments and Programming Languages: <ul style="list-style-type: none"> – 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) – Microsoft Visual Studio 2015 (C++, C#, VB .NET, C++/CLI) – Microsoft Visual Studio 2017 (C++, C#, VB .NET, C++/CLI) • Since Open eVision 2.6, discontinued support of: <ul style="list-style-type: none"> – Microsoft Visual Studio 6.0 SP6 (C++, Basic) – 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)

Ordering Information

Product code - Description

- 4186 - Open Easy3DLaserLine for USB dongle
 - 4236 - Open Easy3DLaserLine for PAR dongle
 - 4286 - Open Easy3DLaserLine for soft-based licensing
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Optional accessories

- 6512 - eVision/Open eVision USB Dongle (empty)
 - 6513 - eVision/Open eVision Parallel Dongle (empty)
-



EMEA

Euresys SA

Liège Science Park - Avenue du Pré Aily, 14
4031 Angleur - Belgium

Phone: +32 4 367 72 88

Email: sales.europe@euresys.com

EMEA

Sensor to Image GmbH

Lechtorstrasse 20 -
86956 Schongau - Germany

Phone: +49 8861 2369 0

Email: sales.europe@euresys.com

AMERICA

Euresys Inc.

27126-B Paseo Espada - Suite 704
San Juan Capistrano, CA 92675 - United States

Phone: +1 949 743 0612

Email: sales.americas@euresys.com

ASIA

Euresys Pte. Ltd.

750A Chai Chee Road - #07-15 Viva Business Park
Singapore 469001 - Singapore

Phone: +65 6445 4800

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

Phone: +86 21 33686220

Email: sales.china@euresys.com

JAPAN

Euresys Japan K.K.

Expert Office Shinyokohama - Nisso Dai 18 Building, Shinyokohama 3-7-18
Kouhoku-Ku, Yokohama-Shi 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

Phone: +81 45 594 7259

Email: sales.japan@euresys.com

More at www.euresys.com

