

10/21/2024

Datasheet

EasySpotDetector

Advanced surface inspection for battery, paper, film or glass industries



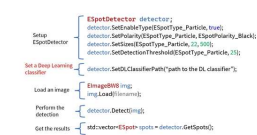
- Detection of faint defects and contamination, even in noisy images
- Fast processing for in-line inspection
- Compatible with acquisition from line-scan and 2D cameras
- Optional pre-alignment of the region of interest on part's edges
- Optional Deep Learning classification of the defects
- Simple and comprehensive C++, C# and Python API

Main benefits



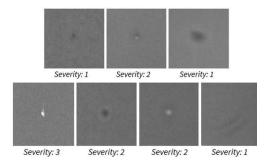
Set of parameters to control defect segmentation

A set of explicit parameters allows the user to target specific defects. The type (particle, scratch...), the aspect (lighter, darker or both), the size, the minimum contrast (strong or faint defect) of the defects can be adjusted.



Simple and comprehensive API

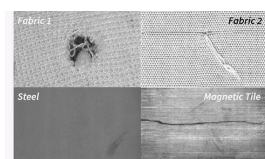
EasySpotDetector provides a single API for the alignment of the region of interest (ROI), the detection of defects on surfaces and the classification with a custom trained Deep Learning classifier.



Custom trained Deep Learning object classifier

Detected objects can be submitted to a deep learning classifier. The classifier is trained by the user, specifically for his particular application, using the user-friendly [Deep Learning Studio](#). Possible usages of the classifier are:

- Confirm or invalidate the detected candidates.
- Evaluate the severity level of the defects.
- Split the detected objects into several classes based on their aspect.



Tested on various use cases

EasySpotDetector has been successfully tested on several surface inspection applications, including: battery foil, fabric, steel, passive electronic components and natural materials e.g.: leather, wood.

Other benefits

Realtime processing for in-line surface inspection

With its two-stage approach, EasySpotDetector is faster than other Deep Learning based object segmentation processing. EasySpotDetector can process up to 200 MPixels per second on an Intel i7-10850H computer (detection only). The classification can benefit from a GPU operation but is also optimized to run on CPU thanks to OpenVINO.

Specifications

Software

Host PC Operating System

Supported 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

Minimum requirements:

8 GB RAM

Optional NVidia GPU

APIs

Supported programming languages:

The Open eVision libraries and tools support C++, Python and the programming languages compatible with the .NET Framework (C#, VB.NET)

C++ requirements: A compiler compatible with the C++ 11 standard is required to use Open eVision

Python requirements: Python 3.11 or later is required to use the Python bindings for Open eVision

.NET requirements: .NET Framework versions 4.8 or later are supported

Supported Integrated Development Environments:

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

Image processing

Input

Image source:

Any 8-bit grey scale image, no size limit

Region of interest:

Explicit or automatic selection of the region of interest (an oriented rectangle is fitted to the part's edges)

Output

A list of detected spots with their type (particle or scratch), position and size, strength, and pixel level segmentation map

Optionally, if a deep learning classifier is loaded, a class and a probability is set for each spot. The deep learning classifier is a trained EasyClassify tool.

Display functions are provided to draw the spot bounding boxes and segmented pixel

Performance

Processing speed on single core Intel i7-10850H:

Particle detection only: 200 MPixels/s

Particle and scratch: 60 MPixels/s

Requirements

Minimum defect size:

2x2 pixels

No maximum defect size

Ordering Information

Product code - Description

PC4190 Open EasySpotDetector for USB dongle

PC4340 Open eVision EasySpotDetector

Related products

PC6512 eVision/Open eVision USB Dongle (empty)

PC6513 eVision/Open eVision Parallel Dongle (empty)

PC6514 Neo USB Dongle (empty)

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