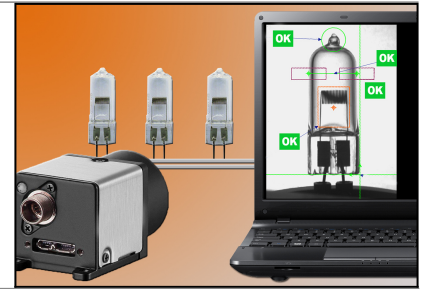


SC19 | Machine vision



NIVEAU : BASIC

Publics : Engineers from enterprises or administrations wishing to master the analyse and the design of machine vision systems

Prérequis :

Responsable(s) pédagogique(s) : Julien Villemejeane - Chargé de cours à l'Institut d'Optique

Langue de la formation : French

Capacité maximum : 12

Prix : 2560€ HT - **Durée :** 6 days - 42 h

Objectifs

- ▶ Have an overview of the design of a machine vision system
- ▶ Know the key parameters associated to this design
- ▶ Discover the building blocks of a machine vision systems
- ▶ Be able to specify, design and evaluate machine vision systems

et 19 june 2019 au 21 june 2019

Thèmes abordés

Applications of machine vision

Photometry, colorimetry, lighting

Optics

Cameras

Softwares and image processing

Design and dimensionning of a machine vision system



SC19 | Machine vision

Le programme

Photometry, colorimetry, lighting

- ▶ Human vision
- ▶ Photometry basics
- ▶ Surface properties
- ▶ Colorimetry

Geometrical and instrumental optics, cameras

- ▶ Image formation
- ▶ Different types of objectives / classical optical systems
- ▶ Instrumental optics
- ▶ Aberrations
- ▶ MTF
- ▶ Ray optics
- ▶ Cameras: main types of cameras, key parameters, interfaces

Image processing and softwares

- ▶ Preprocessing tools
- ▶ Edge detection tools
- ▶ Shape recognition tools
- ▶ Identification and verification tools
- ▶ Other tools: calibration...
- ▶ 3D Reconstruction / super-resolution

Design, dimensionning

- ▶ Requirements specification
- ▶ Material choice: lighting, optics, camera
- ▶ Software choice: processing tools
- ▶ Case study: matrix (2D) and linear (1D) vision

Labworks

- ▶ Photometry
- ▶ Lighting
- ▶ Bitelecentric optics
- ▶ 3D/super-résolution

Méthodologie et évaluation

Lectures and exercices

Interactive experimental demonstrations

Labworks