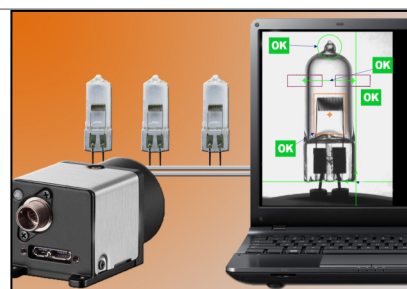


SC19 | Machine vision



NIVEAU : DÉBUTANT

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 : Français

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

Prochaines sessions

- ▶ 11 juin 2019 au 13 juin 2019 et 19 juin 2019 au 21 juin 2019 - Palaiseau

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
- ▶ Bilecentric optics
- ▶ 3D/super-résolution

Méthodologie et évaluation

Lectures and exercices

Interactive experimental demonstrations

Labworks