DRIEI
PhD Program in Electronic and Computer Engineering
University of Cagliari, Italy

Course:	Laboratory of Image Processing for Computer Vision
Instructor:	Roberto Casula (roberto.casula@unica.it)
SSD:	ING-INF/05 – Sistemi di Elaborazione delle Informazioni
Credits / hours:	1.5 credits / 12 hours
Language:	English / Italian
Scheduling:	II semester, Jun-Jul
Final Exam:	Written

Website:https://web.unica.it/unica/page/en/gianluca_marcialis_mat_laboratorio_di_elaborazione_delle_immagini_per_la_visione_computerizzata

Goal of the Course

The laboratory aims to provide the student with an introductory overview of image acquisition and processing techniques for computer vision applications. Such applications include the quality assessment and the objects detection. The illustration of the algorithms, methods and processing systems will follow a "learning-by-doing" approach, in the form of computer exercises, so that students can gain practical experience of the effects and differences between one operator and another.

Prerequisites

In order to profitably follow the seminar, it is advisable for the student to possess the fundamental constructs of programming or scripting languages (C, Python, Matlab).

Intersection with other courses at the University of Cagliari

The seminar has intersections with the Biometric technologies and behavioral security course provided for the Master's Degree Course of Computer Engineering, Cybersecurity And Artificial Intelligence.

Course Outline

1) Introduction to digital image processing (examples of fields of application, elements of visual perception) 2h

2) Acquisition (sampling and quantization) and properties of digital images (relationship between pixels, types of operations on images) 3h

3) Filters in the space and frequency domain 3h

4) Morphological operators 2h

5) Segmentation and basic elements of image recognition 2h