

Dipartimento di DIPARTIMENTO DI INGEGNERIA DELL'INFORMAZIONE
Academic year 2014/2015

2D VISION SYSTEMS [A000299]

Nessun partizionamento

Study course ELECTRONICS ENGINEERING
Regulation ELECTRONICS ENGINEERING
Curriculum comune

Lecturers: GIOVANNA SANSONI

Hours amount: 60

Period: Primo Semestre

Credits: 6

Fields: ING-INF/07

Formative aims

The aim of the course is to give students the basic elements to understand the most important aspects, applications and problems of vision system for industrial applications.

A 'learn by doing' approach is followed, to let students to directly experiment and learn the most important aspects of 2D vision systems.

Special care is dedicated to the design of the systems starting from pre-determined input requirements. The aim is to let the students to design, to develop and to metrologically validate their system.

Prerequisites

Basics of linear systems, and signal filtering techniques.

Course programme

Students will learn basic concepts in the following fields:

Virtual instrumentation for image acquisition;

The software platform for image acquisition, communication and control;

The design of vision systems for the solution of problems of measure and detection in on-line industrial applications;

The study of image processing elaboration channels widely used in industrial lines;

The study of the graphical platform for developing the elaboration software (LabView)

The topics are as follows:

VIRTUAL INSTRUMENTATION: modular instruments for image acquisition; LabView: the graphical platform.

2D VISION SYSTEMS: Camera technology; lighting systems; lenses and optics; vision hardware.

IMAGE PROCESSING TECHNIQUES: Fundamentals; enhancement operations; filtering operations; bar codes detection; character recognition; frequency transformations; edge detection, template matching, camera calibration.

Reference books

Course Material: tutorial and presentations downloadable from the e-learning site.

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