

Lecture Series on „Artificial Vision“

Prof. Gian Luca Foresti, Dr. Christian Micheloni, Dr. Claudio Piciarelli
(all University of Udine)



Abstract:

The lecture series will aim to introduce the techniques for developing advanced artificial vision based systems. From the early stages of image creation to the most advanced techniques for image interpretation the course will propose the state of the art algorithms for detecting objects and understanding their behaviours. A small amount of hours will be reserved to laboratory activities.

Lectures Organization; ICT-Lab L4.1.02:

June 11, 2012: 09:30 - 13:30; 14:30 - 17:30 | **June 12**, 2012: 09:00 - 13:00; 14:00 - 18:00 (16:00 - 18:00 Lab)

June 13, 2012: 09:00 - 13:00; 14:00 - 18:00 (09:00 - 13:00 Lab) | **June 18**, 2012: 10:00 - 13:00; 14:00 - 18:00

Outline:

- Introduction
 - Architecture of an artificial vision system
 - Low level processing (object segmentation, object detection, etc.)
Image differencing: Frame to Background, Frame by frame • Background Updating • Thresholding • Image registration: Translation, Affine, Perspective • Feature based image registration: Feature tracking, Outlier detection, Transform Computation • Stereo Vision
 - Middle level processing (object recognition, object tracking, etc.)
Space projection (Principal Component Analysis, Linear Discriminant Analysis, etc.) • Machine Learning for object recognition
 - High level processing (behaviour analysis, event detection, etc.)
Architecture for behaviour analysis • Simple & complex events • Feature extraction • Trajectory analysis • Clustering • Decision making
 - Network reconfiguration (if time allows)
Modelling of a sensor network • Resource Optimization
 - Matlab Laboratory
- Change Detection • Image Mapping • Image Registration (Mosaicing)

Registration via „ZEUS“; Course Code 700.470

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hosted by Pervasive Computing/NES



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