32077 - MVA - Machine Vision Applications

Coordinating unit: 230 - ETSETB - Barcelona School of Telecommunications Engineering
Teaching unit: 731 - OO - Department of Optics and Optometry
Academic year: 2015
Degree: DOCTORAL DEGREE IN OPTICAL ENGINEERING (Syllabus 2007). (Teaching unit Optional)
DOCTORAL DEGREE IN PHOTONICS (Syllabus 2007). (Teaching unit Optional)
ERASMUS MUNDUS MASTER'S DEGREE IN PHOTONICS ENGINEERING, NANOPHOTONICS AND
BIOPHOTONICS (Syllabus 2010). (Teaching unit Optional)
MASTER'S DEGREE IN PHOTONICS (Syllabus 2009). (Teaching unit Optional)
ECTS credits: 2,5  Teaching languages: English

Teaching staff
Coordinator: Elisabet Pérez
Others: Maria Sagrario Millán

Teaching methodology
Presencial Teaching + activities

Learning objectives of the subject
Course focused on generic computer vision methodologies for machine vision systems and applications. Special attention is paid to machine vision applications based on image processing and information content analysis. Machine vision systems have been widely exploited in industry to perform tasks such as pattern recognition, visual surveillance and creating smart environments. A general overview is provided.
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Content

**Illumination systems.**

Degree competences to which the content contributes:

**Cameras and imaging systems: optical imaging system; VIS and IR cameras; colour imaging; Multi and hyperspectral imaging; 3-D vision.**

Degree competences to which the content contributes:

**Camera calibration. Human vision system vs. Computer vision.**

Degree competences to which the content contributes:

**Optical pattern recognition based on correlation. Real time techniques.**

Degree competences to which the content contributes:


Degree competences to which the content contributes:

**Applications: 6.1 Security systems. Optical identity (ID) tags and encryption techniques.**

Degree competences to which the content contributes:

Qualification system

Evaluation will be based on three acts:
1. Computer simulation task (30%)
2. Quiz about the topic of optical pattern recognition. (30%)
3. Development of a topic proposed by the professor or the students. Written report and public defense and discussion. (40%)

Regulations for carrying out activities

The usual in University teaching
Bibliography

**Basic:**


**Complementary:**

