60935 - Digital image and video processing

Syllabus Information

Academic Year: 2019/20
Subject: 60935 - Digital image and video processing
Faculty / School: 110 -

Degree: 533 - Master's Degree in Telecommunications Engineering

ECTS: 5.0
Year: 2
Semester: First semester
Subject Type: Optional
Module: ---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as Lectures (M1), computer lab sessions (M9), projects (M4), tutorials (M10), and assessment (M11).

4.2.Learning tasks

The course includes the following learning tasks:

- **A01 Lectures** and **A03 computer lab sessions** (40 hours). All these sessions take place in the computer room so that students can work on the theoretical aspects, by means of proposed exercises or mini-projects, as soon as they are introduced.
- **A05 Project** (25 hours). At the beginning of the semester, a specific application will be established as a subject for the project (see Syllabus, Section 2. APPLICATIONS). The results of this project must comprise both theoretical and practical issues. For instance, a typical project could consists on choosing a relevant scientific paper related to the application, and prepare and report experiments in order to check that the main contributions of the paper have been understood.

4.3.Syllabus

The course will address the following topics:

Section 1. BASIC TOOLS

- Topic 1. Multidimensional signals: interpretation, visualization and basic manipulations
- Topic 2. Image point operators and histogram
- Topic 3. Geometric image transforms
- Topic 4. Local nonlinear operators
- Topic 5. Linear operators: convolution, correlation and applications
- Topic 6. Multidimensional transforms

Section 2. APPLICATIONS

- Topic 7. Coding
- Topic 8. Inverse problems (denoising, deblurring, super-resolution)
- Topic 9. Computational photography
- Topic 10. Medium and high level tasks: image alignment, tracking, segmentation, indexation

4.4.Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course, will be provided on the first day of class or please refer to the EINA website.

4.5.Bibliography and recommended resources

http://psfunizar7.unizar.es/br13/egAsignaturas.php?codigo=60935&Identificador=C70295