60937 - Machine learning in multimedia data

Syllabus Information

Academic Year: 2019/20
Subject: 60937 - Machine learning in multimedia data
Faculty / School: 110 -

Degree: 533 - Master's Degree in Telecommunications Engineering

ECTS: 2.5
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), practice sessions (M8), lab sessions (M9), mini-projects (M4), tutorials (M10), and assessment (M11).

4.2.Learning tasks

The course includes the following learning tasks:

- **A01 Lectures** (12 hours). The teacher presents the theory and students participate actively. This activity will take place in the classroom. This methodology is designed to provide students with the theoretical aspects of the course and requires student's autonomous work.
- **A02 Practice sessions** (5 hours). The teacher proposes problems to be solved using the concepts presented in the lectures, with the possibility of students presenting them individually or in groups. This activity will take place in the classroom.
- **A03 Lab sessions** (8 hours). There will be 4 sessions of 2 hours held in the Signals and Systems Laboratory L2.02 (Ada Byron building). The students are provided with a series of problems to solve, which include the main blocks of a machine learning system for multimedia data, to consolidate the theoretical concepts from the lectures.

- **A05 Mini-project** (15 hours). The students implement some of the theory concepts using a multimedia dataset. Then they write a report and make an oral presentation.
- **A07 Tutorials**. Teacher's office hours to answers questions with the aim of reviewing and discussing the materials and topics presented in both lectures and practice sessions.
- **A08 Assessment**. A set of reports, the project and the final test.

4.3.Syllabus

The course will address the following topics:

- 1. Introduction to pattern recognition
- 2. Pattern recognition models:

        Probabilistic models

        Decision trees

        Linear models

        Neural networks

        Hidden variable models

- 3. Feature extraction

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=60937&Identificador=C70297