

60937 - Machine learning in multimedia data

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	533 - Master's Degree in Telecommunications Engineering
ECTS	2.5
Course	2
Period	First semester
Subject Type	Optional
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

M1. Lectures.

M8: Classroom exercises.

M9: Lab work.

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M4: Miniproject.

M10: Tutoring.

M11: Evaluation.

5.2.Learning activities

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 foundations of the subject and requires individual home work from the student.

A02: Classroom exercises (5 hours). The teacher proposes problems to be solved using the concepts presented in the lecture, with the possibility of presenting them by students individually or in groups. This activity will take place in the classroom.

A03: Lab work (8 hours). There will be 4 sessions of 2 hours 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. This activity will be conducted at the Laboratory.

A05: Miniproject (15 hours). The students develop an implementation of the theory concepts of the course using a multimedia dataset. Then they write a report and make an oral presentation.

A07: Tutoring . The teacher answers questions to the students in the office with the aim of reviewing and discussing the materials and topics presented in both theoretical and practical classes.

A08: Evaluation . The evaluation is done using the reports, the project work and the final test.

5.3.Program

The program of the course is the following:

- Introduction to pattern recognition
- Supervised and unsupervised systems
- Feature extraction multimedia signals

5.4.Planning and scheduling

The timetable of the course, contact hours, and laboratory sessions will be defined by the center in the academic calendar of the corresponding course.

5.5.Bibliography and recommended resources

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- Bishop, Christopher M.. Pattern recognition and machine learning / Christopher M. Bishop New York : Springer, cop. 2006
- Duda, Richard O.. Pattern classification / Richard O. Duda, Peter E. Hart, David G. Stork . - 2nd ed. New York [etc.] : John Wiley and Sons, cop. 2001
- Murphy, K.P. Machine Learning: A Probabilistic Perspective / Murphy K.P. MIT Press, 2012.
- Mackay, D.J.C. Information Theory, Inference, and Learning Algorithms / MacKay D.J.C Cambridge University Press 2003.