

Academic Year: (2022 / 2023)

Review date: 30-05-2022

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: SAEZ ACHAERANDIO, YAGO

Type: Electives ECTS Credits : 3.0

Year : 1 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Basic knowledge of statistics and programming

OBJECTIVES

This course covers the main fundamentals of machine learning, from a very practical approach we are going to work for making a computer to be able to build models that allows it to learn concepts or recognize patterns, and to be able to define them and/or predict new incoming instances, and all this without being programmed explicitly.

DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction to machine learning and inductive learning
2. Supervised Learning I: Trees and Decision Rules
3. Evaluation and validation of learning models
4. Machine learning methodology
5. Supervised Learning II: Regression Trees, Instance-Based Learning, and Ensembles of Classifiers
6. Unsupervised and semi-supervised learning techniques
7. Relational machine learning

LEARNING ACTIVITIES AND METHODOLOGY

Lectures
Practice sessions
Tutorship
Team work
Individual student work
Presentations for partial and final assessments

ASSESSMENT SYSTEM

The assessment methodology has been designed for a complete applied and practical approach to the subject and it consists of going through a series of incremental assignments along the course.

% end-of-term-examination:	0
% of continuous assessment (assignments, laboratory, practicals...):	100

BASIC BIBLIOGRAPHY

- Aurélien Geron Hands-on Machine Learning with Scikit-Learn, Keras, and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems, O'Reilly, 2017
- Crish Bishop Pattern Recognition and Machine Learning, Springer, 2006
- Murphy, K.P.. Machine Learning. A Probabilistic Perspective, MIT Press, 2012

BASIC ELECTRONIC RESOURCES

- David Cournapeau, Matthieu Brucher, Fabian Pedregosa, et al. . Scikit-Learn: <https://scikit-learn.org/stable/index.html>