

Academic Year: (2019 / 2020)

Review date: 22/04/2019 09:20:30

Department assigned to the subject:

Coordinating teacher: GOMEZ VERDEJO, VANESSA

Type: Electives ECTS Credits : 6.0

Year : 1 Semester : 2

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Machine Learning

OBJECTIVES

(CB6) Obtain the knowledge which allows the students to establish the basis to be original in the development and / or application ideas, often within a research context.

(CB7) Students should be able to apply their knowledge and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study

(CB9) Students should be able to communicate their conclusions, as well as the knowledge and rationale supporting them, for either a specialists or non-specialists audience in a clear and unambiguous way.

(CB10) Students must possess the learning skills to enable them to continue studying in a way that will be mainly self-directed or autonomous.

(CG1) Systematic understanding of a study field and knowledge of the research skills and methods associated with that field.

(CG5) Communication skills with the academic and scientific community and society in general about their expertise areas in the ways and languages commonly used in the international scientific community

(CE5) Obtain the skills to design and carry out experiments, as well as analyze and interpret data.

(CE8) Improve their skills in handling advanced analytical machine learning techniques (taking advantage of Python environment) and its application to real problems.

DESCRIPTION OF CONTENTS: PROGRAMME

This subject is divided in 5 thematic units. The first four ones introduce several machine learning techniques and apply them in several lab sessions, whereas the last unit proposes a data processing challenge. These thematic units are summarized as follows:

1. Classification
2. Dimensionality reduction
3. Feature selection
4. Deep learning
5. Challenge

LEARNING ACTIVITIES AND METHODOLOGY

(MD1) Teacher talks possibly supported by audiovisual media. These talks will contain the main concepts of the subject. Besides, additional bibliography will be provided to complete the student learning.

(MD2) The teacher will recommend reading critical texts: Newspaper articles, reports, tutorials and / or academic articles. These readings will be discussed in subsequent lessons or will extend and consolidate the knowledge of the subject.

(MD3) Resolution, individually or in group, of case studies, problems, etc. proposed by the teacher.

(MD4) Presentation and discussion in class, under the teacher moderation, of several topics related to the subject content and/or practical cases.

(MD5) Development, individually or in group, of projects and reports.

ASSESSMENT SYSTEM

% end-of-term-examination/test: 60

% of continuous assessment (assignments, laboratory, practicals...): 40

The final mark results from combining an evaluation from the course activity by means of the evaluation of 3 or 4 lab projects (each project is related with one thematic unit) and it gets the 60% of the mark. And the final project mark associated with the data processing challenge (40%).

BASIC BIBLIOGRAPHY

- J. Han, M. Kamber Data Mining. Concepts and Techniques, Morgan Kaufmann, 2001
- M. W. Berry Survey of Text Mining : Clustering, Classification, and Retrieval, Springer Verlag, 2004
- P. Perner Data Mining on Multimedia Data, Springer Verlag, 2002
- Trevor Hastie, Robert Tibshirani, Jerome Friedman The Elements of Statistical Learning: Data Mining, Inference, and Prediction , Springer, Second Edition February 2009