AI in Education

Academic Year: (2023 / 2024)   **Review date: 20/05/2023 10:58:23**

Department assigned to the subject: Telematic Engineering Department

Coordinating teacher: MUÑOZ MERINO, PEDRO JOSE

Type: Electives ECTS Credits : 3.0

Year : 1 Semester : 2

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

- Basic knowledge about statistics and probability
- Basic knowledge about programming

OBJECTIVES

- Know the main applications that use data and artificial intelligence in education.

- Know conversational tutors that assits during the educational process

- Know how to use methods to infer intelligent information about students based on their interactions in learning platforms.

- Know how adaptive learning applications work.

- Know how predictive systems in education work.

- Know how to evaluate educational systems.

DESCRIPTION OF CONTENTS: PROGRAMME

1.- Introduction to learning analytics and applications in education of the use of data

2.- User models
    2.1.- Skill models, meta-cognitive models, and affective models
    2.2.- Models based on knowledge engineering
    2.3.- Models based on probabilistic methods
    2.4.- Models based on ontologies
    2.5.- Models based on text mining

3.- Adaptative learning
    3.1.- Components of an adaptive system
    3.2.- Adaptation methods

4.- Predictive systems in education
    4.1.- Purposes
    4.2.- Methods: regression, random forest, neural networks, etc.
    4.3.- Validation and evaluation of the models

5.- Conversational intelligent tutors

6. Evaluation of learning systems
    5.1.- Pattern discovery with clustering techniques
    5.2.- Comparison between systems or system vs human tutor
    5.3.- Evaluation of usability

5.4.- Evaluation of effectiveness and impact
5.5.- Evaluation of other indicators

LEARNING ACTIVITIES AND METHODOLOGY

The training activities consist of:

- AF1: Theoretical sessions
- AF2: Practical sessions
- AF5: Office hours
- AF6: Work in group
- AF7: Individual work of the student
- AF8: Final exam

The methodologies will include:

- MD1: Presentations in teaching sessions by the professor with the support of computer and audiovisual media, in which the main concepts of
the subject and the bibliography is provided to complement the learning of the students.

- MD2: Critical reading of texts recommended by the professor: scientific articles.

- MD3 Resolution of practical cases, problems, etc... proposed by the teacher in a group

- MD4: Presentation and discussion in class, under the moderation of the teacher, of issues related to the content of the subject, as well as practical cases

- MD5: Preparation of work and reports individually or in groups

ASSESSMENT SYSTEM

% end-of-term-examination/test: 30

% of continuous assessment (assigments, laboratory, practicals…):   70

For the first opportunity (ordinary call), grade will be calculated in the following way:

- 20% Participation of students in class sessions (SE1)
- 50% Assignment in groups (SE2)
- 30% Final exam (SE3)

It is not required a minimum grade for each part.

For the second opportunity (extraordinary call), grade will be calculated in the same way as the first opportunity, or the student can choose 100% for the final exam.

BASIC BIBLIOGRAPHY

- Lang, C., Siemens, G., Wise, A., & Gasevic, D. (Eds.) Handbook of learning analytics. , New York: SOLAR, Society for Learning Analytics and Research., 2017

BASIC ELECTRONIC RESOURCES

- Learning Analytics Research Network . Learning Analytics Research Network: https://steinhardt.nyu.edu/learning-analytics-101