

Deep learning

Academic Year: (2022 / 2023)

Review date: 02-06-2022

Department assigned to the subject: Signal and Communications Theory Department

Coordinating teacher: MARTÍNEZ OLMOS, PABLO

Type: Electives ECTS Credits : 3.0

Year : 1 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

The students are expected to have basic knowledge of

- Calculus
- Programming skills
- Numerical optimization

OBJECTIVES

The fundamental objective of this subject is for the student to know and learn to use learning schemes based on advanced neural networks, with special emphasis on computer vision applications, treatment of temporal signals and text, and the adjustment of probabilistic models for the generation of artificial data.

DESCRIPTION OF CONTENTS: PROGRAMME

1. Deep Neural Networks for computer vision
2. Deep Neural Networks for sequential processing: seq2seq, encoder-decoder networks, transformers
3. Deep probabilistic models

LEARNING ACTIVITIES AND METHODOLOGY

Theoretical practical classes
 Laboratory practices
 Tutorials
 Team work
 Student individual work
 Partial and final exams

ASSESSMENT SYSTEM

The continuous evaluation will consist of partial exams, practicals and programming projects and presentation of works.

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

BASIC BIBLIOGRAPHY

- Cristopher Bishop Pattern Recognition and Machine Learning, Springer, 2006
- Ian Goodfellow and Yoshua Bengio and Aaron Courville Deep Learning, MIT Press, 2017
- Kevin Murphy Machine Learning A Probabilistic Perspective, MIT Press, 2012