SUBJECT TEACHING GUIDE

364 - Neural Networks

Master's Degree in Mathematics and Computing

Academic year 2023-2024

1. IDENTIFYING DATA				
Degree	Master's Degree in Mathematics and Computing		Type and Year	Optional. Year 1
Faculty	Faculty of Sciences			
Discipline				
Course unit title and code	364 - Neural Networks			
Number of ECTS credits allocated	3	Term	Semester based (2)	
Web	https://personales.unican.es/crespoj/redes/Cursoredes.html			
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. MATEMATICA APLICADA Y CIENCIAS DE LA COMPUTACION
Name of lecturer	JOSE LUIS CRESPO FIDALGO
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Other lecturers	

3.1 LEARNING OUTCOMES

- -Neural networks basics: modelling and learning; links with standard statistical and optimization techniques
  -Informed algorithm choice
  -Real life problem solving with neural networks
  -Choice of neural netowrk type

4. OBJECTIVES

Real life problem solving
Context-based method choice
Introduction to modeling and learning with neural networks; including statistics and optimization considerations
Neural networks algorithms understanding

6. COURSE ORGANIZATION

CONTENTS	
1	Neural network definition.
2	Feedforward multilayer perceptron
3	Deep networks
4	Other type of networks
5	Machine learning challenges

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Description Implementation of a neural network for a particular problem	Work	Yes	Yes	70,00
Class exercises	Laboratory evaluation	No	Yes	30,00
TOTAL				100,00

Observations

The teacher will provide each student with a problem to be solved with neural networks.
The deadline will be announced on start of the course. Students will present their solution whenever they have it ready before that deadline. If their solution is not valid, they will be told how to improve it, and will be able to present it in the resitting period.
Top (honor) grades are limited. Students deserving those grades will be acknowledged following presentation order. When the top limit is hit, no further maximum grades can be awarded.
Should any prevailing requirements forbid face-to-face evaluation, number, weights, conditions and exercise types would vary.

Observations for part-time students

Since dates for developing the application and presenting it are chosen individually by agreement between the teachar and each student, no further considerations are needed for half-time students. They can also choose to have 100% grade on the implementation case.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Aggarwal, Charu C
Neural Networks and Deep Learning A Textbook
Springer International Publishing AG
ISBN: 3-319-94462-2, 978-3-319-94462-3