UNIVERSITÀ DI PISA

ARTIFICIAL INTELLIGENCE II

LETIZIA MILLI

Academic year	2022/23
Course	BIOTECHNOLOGIES AND APPLIED ARTIFICIAL INTELLIGENCE FOR HEALTH
Code	785AA
Credits	6

Modules	Area	Type	Hours	Teacher(s)
ARTIFICIAL INTELLIGENCE II	INF/01	LEZIONI	48	LETIZIA MILLI

Obiettivi di apprendimento

Conoscenze
The course aims to introduce the paradigms to neural networks and deep learning, including the basics of recurrent neural networks and models for complex data, model design and validation, and application to health problems and case studies

Modalità di verifica delle conoscenze
The assessment of knowledge will be the subject of the written and project exam evaluation.

Capacità
The student who completes the course successfully will be able to Identify problems facing healthcare providers that machine learning can solve and analyze how AI affects patient care safety, quality, and research.

Modalità di verifica delle capacità
The student will have to solve a deep learning problem during a practical test.

Comportamenti
The student will acquire a method to deal with deep learning problems and to select the most effective solution to be adopted

Modalità di verifica dei comportamenti
During the lab sessions, the accuracy and precision of the activities carried out will be evaluated

Prerequisiti (conoscenze iniziali)
Basic knowledge of mathematics
Knowledge of programming in python

Programma (contenuti dell'insegnamento)
Syllabus:

- Health data
- DNN

- Embedding
- CNN
- RNN
- Autoencoder
- Attention models
- Graph neural network
- Memory network
- Deep generative model

Bibliografia e materiale didattico

Recommended book: Introduction to Deep Learning for Healthcare, Cao Xiao Jimeng Sun
Papers on different algorithms described during the course
Slides of the lectures
Code written during the exercises

Modalità d'esame

Written test plus individual project and oral exam

Pagina web del corso

https://polo3.elearning.unipi.it/course/view.php?id=3329

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