UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Machine Learning and Big Data

2223-1002-8

Title

MACHINE LEARNING AND BIG DATA

Teacher(s)

- Daniela Besozzi
- Giancarlo Mauri
- Andrea Tangherloni
- Fabio Stella
- Marco S. Nobile
- Federico Cabitza
- Alex Graudenzi
- Marco Antoniotti
- Maurizio Callari

- Isabella Castiglioni
- Elisabetta De Bernardi
- Daniele Ramazzotti

Language

English

Short description

COURSE OBJECTIVES

To covers modern methods related to artificial intelligence with a critical view of their application in medical research.

MAIN TOPICS

- Introduction to machine learning – 2h Daniela Besozzi
- Unsupervised learning – 2h Giancarlo Mauri
- Neural networks and deep learning – 4h Andrea Tangherloni
- Bayesian and causal networks – 2h Fabio Stella (in presence)
- Explainable artificial intelligence – 2h Marco S. Nobile (in presence)
- Validation of machine learning models for decision support in medicine – 2h Federico Cabitza (in presence)
- Theory vs. big data: complex systems biology for the right blend – 2h Alex Graduenzi (in presence)
- Deterministic, stochastic and hybrid agent-based simulation methods– 2h Marco Antoniotti (in presence)
- COVID-19: from biological/clinical data to epidemiological models – 3h Daniela Besozzi (in presence)
- Big data and bioinformatics in biomedical research – 3h Maurizio Callari (in presence)
- Mutational signatures in human cancers – 2h Daniele Ramazzotti (in presence)
- Integrative clustering of genomic data – 2h Daniele Ramazzotti (in presence)
- Computational methods for big medical-imaging data – 2h Isabella Castiglioni (in presence)
- Radiomics in oncological and fibrous diseases imaging – 2h Elisabetta De Bernardi (in presence)

CFU / Hours

4/32

Teaching period

- Oct 19th (2h) 17.00-19.00 Besozzi - Streaming
- Oct 21st (2h) 17.00-19.00 Mauri - Streaming
- Oct 22nd (4h) 9.00-13.00 Tangherloni - Streaming
- Oct 26th (2h) 9.00-11.00 Stella - In presence
- Oct 26th (2h) 11.00-13.00 Nobile - In presence

- Oct 26th (2h) 14.00-16.00 Cabitza - In presence

- Oct 26th (2h) 16.00-18.00 Graudenzi - In presence

- Oct 27th (2h) 9.00-11.00 Antoniotti - In presence
- Oct 27th (3h) 11.00-13.00 14.00-15.00 Besozzi - In presence

- Oct 27th (3h) 15.00-18.00 Callari - In presence

- Oct 28th (2h) 9.00-11.00 Castiglioni - In presence
- Oct 28th (2h) 11.00-13.00 De Bernardi - In presence

- Oct 28th (4h) 14.00-18.00 Ramazzotti - In presence

Sustainable Development Goals