ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

DIPARTIMENTO
DI PSICOLOGIA
"RENZO CANESTRARI"

PhD Program in Psychology

Seminar "Unsupervised machine learning techniques"

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01/7/2025 and 03/7/2025, 11:00-13:30
Aula 1 via Filippo Re 10 Bologna

Abstract

This seminar will offer an introduction to unsupervised machine learning, with a particular focus on clustering and dimensionality reduction techniques. Aimed at PhD students, we will explore how these methods can be used to uncover latent patterns in complex datasets and to produce more interpretable data representations—insights that often remain hidden using traditional statistical tools.

Key algorithms in the field will be introduced, like K-means or Principal Component Analysis (PCA). Each technique will be explained both conceptually and through hands-on exercises using Python programming language.

The techniques explained are broadly applicable across diverse subfields of Psychology. PhD students will gain practical tools that may support the analysis and interpretation of data in their own research, particularly when dealing with large or high-dimensional datasets.

Participants are invited to bring laptops with pre-installed "Anaconda 3", which also installs Spyder, from which Python can be run: https://www.anaconda.com/download
The examples will consist of running Python code, and analyzing data with machine learning techniques from the Python package "sci-kit-learn."