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Machine Learning

Session 6 - PL

Unsupervised Learning – Dimensionality Reduction

Degree in Applied Data Science

2024/2025

Dimensionality Reduction with Python

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- Scikit-Learn:
  - https://scikit-learn.org/stable/modules/unsupervised_reduction.html
  - https://scikit-learn.org/stable/modules/manifold.html

- In scikit-learn clustrering mehods follow the fit-transform methods:
  - "fit": Learns patterns from the data.
  - "transform": Applies learned transformations.
  - "fit_transform": Combines fitting and transforming in one step.

- UMAP:
  - https://umap-learn.readthedocs.io/en/latest/

Dimensionality Reduction with Python

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- Scikit-learn:
  - PCA:
    - https://scikit-learn.org/stable/modules/generated/sklearn.decomposition.PCA.html
  - MDS:
    - https://scikit-learn.org/stable/modules/generated/sklearn.manifold.MDS.html#sklearn.manifold.MDS
  - t-SNE:
    - https://scikit-learn.org/stable/modules/generated/sklearn.manifold.TSNE.html#sklearn.manifold.TSNE
- UMAP:
  - https://umap-learn.readthedocs.io/en/latest/basic_usage.html

Exercises:

- Notebooks on the github repository:
  - Notebook with examples:
    - exercises/session06/examples.ipynb
  - Notebook with exercises:
    - exercises/session06/exercises.ipynb