

Ungraded: Non Negative Matrix Factorization

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Practice Assignment • 10 min

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Next item →

1. What is a key difference between NMF and PCA?

1 / 1 point

☐ PCA finds a representation of the data in a lower dimension, whereas NMF does not.

☐ NMF requires orthogonal vectors created, whereas such constraint doesn't apply for PCA.

☐ NMF decomposes the original matrix, whereas PCA does not.

☒ The input matrix for NMF consists of only positive values.

Correct! The intuition behind NMF is adding together different values so that it can never undo application of a latent feature.

2. In which case would you prefer using PCA over NMF?

1 / 1 point

☐ When the original decomposition strictly contains positive values.

☐ When cancelling out with negative values is not desired.

☐ When you want to decompose videos, music, or images.

☒ When you have a linear combination of features.

Correct! PCA excels in handling and creating linear combination of the original features.

3. Which of the following is the most suitable for NMF?

1 / 1 point

☒ Reconstruct a text document with learned topics (features).

Correct! NMF can be very powerful in natural language processing by outputting the relationship between terms and topics, which are used as features to reconstruct the document.

☐ Analyze potential movements and relationships of multiple stocks.

☐ Predict the price of a rental space based on location, facility, and average rent in the surrounding area.

☐ Learn features for a dataset in which negative values are highly insightful and valuable.

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Graded: Module 6 Quiz

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Next item →

1. (True/False) In some applications, NMF can make for more human interpretable latent features.

1 / 1 point

- ☒ True
☐ False

✔ Correct
Correct! You can find more information in the video Non Negative Matrix Factorization.

2. Which of the following set of features is the least adapted to NMF?

1 / 1 point

- ☐ Word Count of the different words present in a text.
☐ Pixel color values of a an Image.
☐ Spectral decomposition of an audio file.
☒ Monthly returns of a set of stock portfolios.

✔ Correct
Correct! You can find more information in the video Non Negative Matrix Factorization.

3. (True/False) The NMF can produce different outputs depending on its initialization.

1 / 1 point

- ☒ True
☐ False

✔ Correct
Correct! Please review the video Non Negative Matrix Factorization.

4. Which option is the sparse representation of the matrix below?

1 / 1 point

$\begin{bmatrix} 1 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 4 & 1 \\ 2 & 4 & 4 \\ 4 & 3 & 1 \end{bmatrix}$

- ☒ $\begin{bmatrix} 2 & 0 & 0 \end{bmatrix}$,
 $\begin{bmatrix} 0 & 3 & 0 \end{bmatrix}$,
 $\begin{bmatrix} 0 & 0 & 1 \end{bmatrix}$,
 $\begin{bmatrix} 0 & 4 & 1 \end{bmatrix}$
☐ $\begin{bmatrix} 0 & 0 & 1 \end{bmatrix}$,
 $\begin{bmatrix} 0 & 2 & 0 \end{bmatrix}$,
 $\begin{bmatrix} 0 & 0 & 3 \end{bmatrix}$,
 $\begin{bmatrix} 0 & 4 & 1 \end{bmatrix}$
☐ $\begin{bmatrix} 1 & 0 & 0 \end{bmatrix}$,
 $\begin{bmatrix} 0 & 3 & 0 \end{bmatrix}$,
 $\begin{bmatrix} 0 & 2 & 0 \end{bmatrix}$,
 $\begin{bmatrix} 0 & 4 & 2 \end{bmatrix}$
☐ $\begin{bmatrix} 0 & 0 & 2 \end{bmatrix}$,
 $\begin{bmatrix} 0 & 3 & 4 \end{bmatrix}$,
 $\begin{bmatrix} 0 & 0 & 0 \end{bmatrix}$,
 $\begin{bmatrix} 0 & 0 & 1 \end{bmatrix}$

✔ Correct
Correct! You can find more information in the video Non Negative Matrix Factorization Notebook - Part 1.

5. In Practice lab: Non-Negative Matrix Factorization, why did we use "pairwise_distances" from scikit-learn?

1 point

- ☐ To calculate the maximum pairwise distance between points in the dataset.
☐ To calculate the pairwise distance between data points for eliminating outliers.
☐ To calculate the pairwise distance between NMF encoded version of the original dataset and the encoded query dataset.
☒ To calculate the pairwise distance between points of the NMF encoded version of the original dataset.

✘ Incorrect
Incorrect. Please review Practice lab: Non-Negative Matrix Factorization.