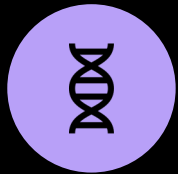




PRINCIPAL COMPONENT ANALYSIS

PRINCIPAL COMPONENT ANALYSIS



What is PCA?



Benefit of PCA



Calculation
step



Discussion
about PCA



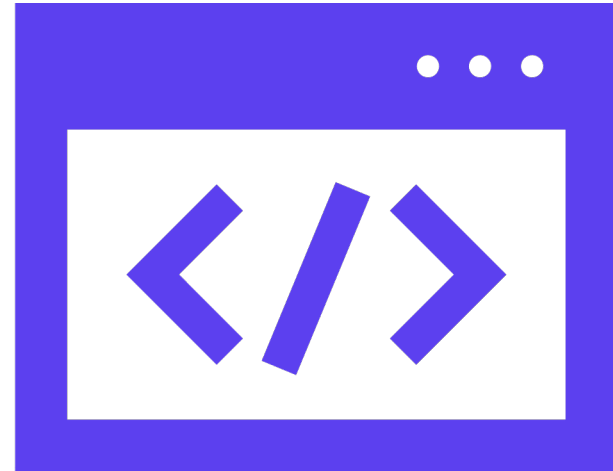
Code



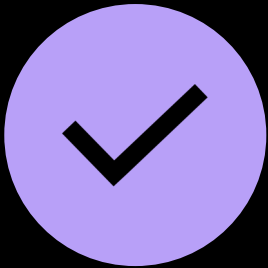
Further reading

What is PCA?

Principal component analysis (PCA) is a dimensionality reduction and machine learning method used to simplify a large data set into a smaller set while still maintaining significant information.



Benefit of PCA



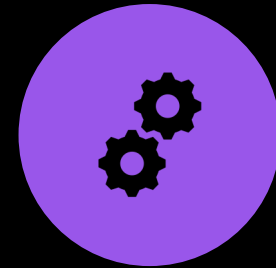
DIMENSIONALITY
REDUCTION



IMPROVED
VISUALIZATION



COMPUTATIONAL
EFFICIENCY

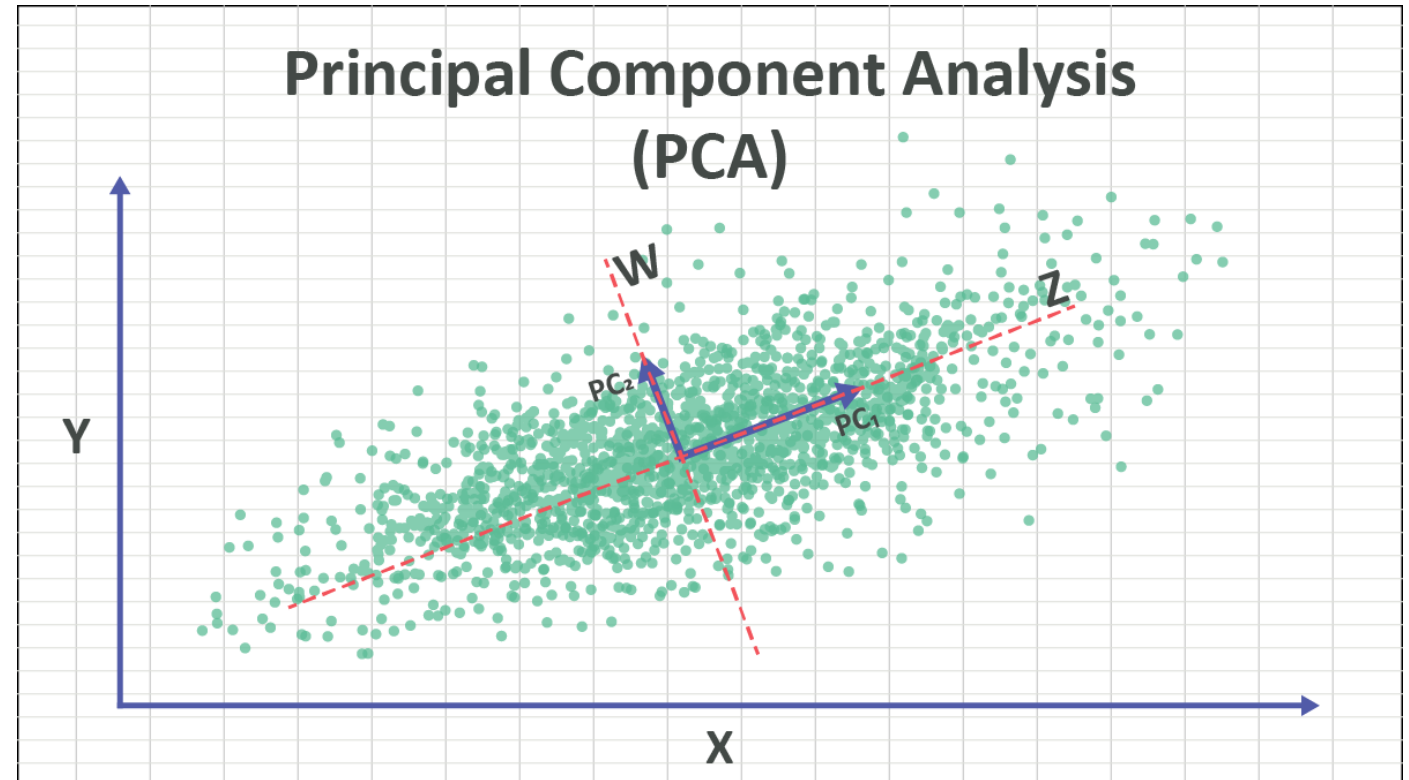


FEATURE
ENGINEERING

Calculation step

- Standardization
- Compute covariance matrix
- Compute the eigenvalues and eigenvectors
- Consider the eigenvalues
- Map data to new space

Calculation concept



<https://numxl.com/blogs/principal-component-analysis-pca-101/>



Discussion about PCA

- What is the motivation of PCA?
- Why PCA axes are orthogonal to each other
- Why summation of variance before PCA and after PCA is still the same?
- Why size of eigenvalue represent size of variance?
- Why Proportion of variance in PCA can be calculated by proportion of eigenvalue?



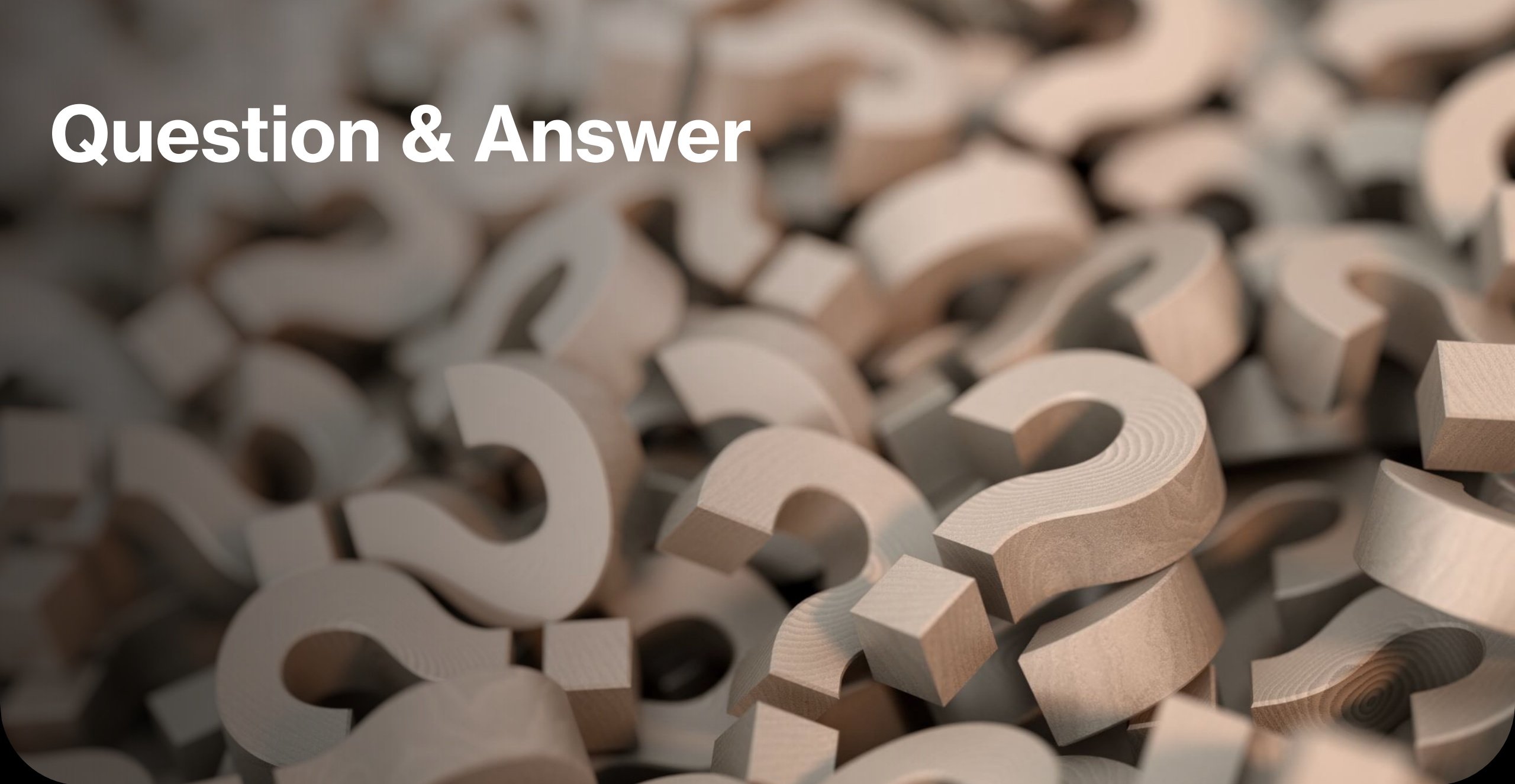
Code: PCA.ipynb



Further reading

- Singular Value Decomposition (SVD)
- t-Distributed Stochastic Neighbor Embedding (t-SNE)
- Linear Discriminant Analysis (LDA)
- Isomap
- Locally Linear Embedding (LLE)

Question & Answer



Reference

- <https://builtin.com/data-science/step-step-explanation-principal-component-analysis>
- <https://numxl.com/blogs/principal-component-analysis-pca-101/>

THANK YOU

