Dimensionality Reduction MCQ (Version : 1)

TEST

Correct Answer

Answered in 238.23333333333 Minutes

Question 1/17

Principal Component Analysis is a linear dimensionality reduction technique.

- [ ] False
- [x] True

Question 2/17

Before performing PCA, what should ideally be done to the data set?

- [x] standardize variables
- [ ] categorise variables
- [ ] encode variables
- [ ] normalise variables

Question 3/17

What can be said of the largest eigenvalue, in terms of its relation to the principal components of a dataset?

- [ ] it is equal to the amount of variance in the

last principal component

- [ ] it is equal to the amount of variance in the first principal component
- [ ] it corresponds to the direction in which there is the least amount of variance in the data
- [x] it corresponds to the direction in which there is the largest amount of variance in the data

Question 4/17

Which of the following is NOT a method for dimensionality reduction?

- [ ] t-SNE
- [ ] Principal Component Analysis
- [ ] Multidimensional Scaling
- [x] k-means clustering

Question 5/17

t-SNE is a linear dimensionality reduction technique.

- [x] False
- [ ] True

Question 6/17

Which of the following is not true regarding dimensionality reduction:

- [ ] it decreases the interpretability of models
- [ ] it can be used to aid data visualization
- [x] it always improves performance of clustering algorithms
- [ ] it decreases the computational time for training models

Question 7/17

t-SNE has one tunable hyperparameter, namely:

- [x] perplexity
- [ ] duplicity
- [ ] irregularity
- [ ] complexity

Question 8/17

Which of the following dimensionality reduction techniques preserves distances between points?

- [x] Multidimensional scaling
- [ ] t-SNE

Question 9/17

It is not necessary to have a target variable for applying dimensionality reduction algorithms.

- [x] True
- [ ] False

Question 10/17

The most popularly used dimensionality reduction algorithm is Principal Component Analysis (PCA). Which of the following is/are true about PCA?
1. PCA is an unsupervised method
2. It searches for the directions that data have the largest variance
3. Maximum number of principal components <= number of features
4. All principal components are orthogonal to each other

- [x] 1, 2, 3 and 4
- [ ] 1, 2, and 4
- [ ] 1, 2 and 3
- [ ] 1, 3 and 4

Question 11/17

In which of the following scenarios is t-SNE better to use than PCA for dimensionality reduction while working on a local machine with minimal computational power?

- [ ] Data set with 10,000 entries and 200 features
- [ ] Data set with 1 Million entries and 300 features

- [x] Data set with 10,000 entries and 8 features
- [ ] Data set with 100000 entries and 310 features

Question 12/17

In t-SNE algorithm, which of the following hyper parameters can be tuned?

- [ ] Number of dimensions
- [ ] Smooth measure of effective number of neighbours
- [x] Number of dimensions, smooth measure and max iterations
- [ ] Maximum number of iterations

Question 13/17

Which of the following statement is correct for t-SNE and PCA?

- [ ] t-SNE is linear whereas PCA is non-linear
- [ ] t-SNE and PCA both are linear
- [ ] t-SNE and PCA both are nonlinear
- [x] t-SNE is nonlinear whereas PCA is linear

Question 14/17

What will happen when eigenvalues are roughly equal?

- [ ] The number of dimensions in the data will increase
- [ ] PCA will perform optimally
- [x] PCA will perform poorly
- [ ] All eignevectors will be the same

Question 15/17

An embedding is a representation of a vector in a different feature space.

- [x] True
- [ ] False

Question 16/17

In Multi-dimensional Scaling, a larger stress value is preferred, and it is this quantity that is maximised by MDS.

- [ ] True
- [x] False

Question 17/17

Regarding an MDS scatter plot, which of the following is false:

- [x] The distances between observations are not preserved
- [ ] The axes themselves are meaningless
- [ ] The important thing is the proximity of the points
- [ ] The orientation of the figure is arbitrary