Started on	Thursday, February 22, 2018, 8:23 PM
State	Finished
Completed on	Thursday, February 22, 2018, 8:40 PM
Time taken	17 mins 16 secs
Grade	**60.00** out of 60.00 (**100**%)

Question 1

Complete

4.00 points out of 4.00

How does `FeatureUnion` transformer in the scikit learn library work?

Select one:

- a. It combines the feature union with a new classifier.
- b. It combines sets of features identified with different techniques
- c. It combines other transformers, by using a pipeline, to create a union of the features selected by the different transformers in the pipeline.
- d. It produces a set of models from different model selection techniques.

Question 2

Complete

4.00 points out of 4.00

By using which of the following estimator can we use any algorithm to perform model-based feature selection?

Select one:

- a. `SelectModel`
- b. `SelectFromModel`
- c. `SelectPercentile`
- d. `VarianceThreshold`

Question 3

Complete

4.00 points out of 4.00

What criteria can be used to determine how many features to keep after applying PCA?

Select one:

- a. Fraction of explained components
- b. Fraction of explained correlation
- c. Fraction of explained data
- d. Fraction of explained variance

Question 4

Complete

4.00 points out of 4.00

Which of the following algorithms provide access to measures of the feature importance?

Select one or more:

- [x] a. Decision Tree
- [ ] b. Support Vector Machine
- [ ] c. Principal Component Analysis
- [ ] d. Cluster Analysis
- [x] e. Random Forest Classifier

Question 5

Complete

4.00 points out of 4.00

Which of following techniques describes this process best: Recursively removing attributes and building a model from the remaining attributes.

Select one:

- ( ) a. L1-based feature selection
- ( ) b. L2-based feature selection
- (•) c. Recursive Feature Extraction
- ( ) d. Tree based feature selection

Question 6

Complete

4.00 points out of 4.00

What assumptions are made by PCA?

Select one or more:

- [x] a. The principal components are orthogonal
- [x] b. A large matrix must be inverted
- [x] c. Features that have large variances encode interesting and important signals
- [x] d. The data are linear

Question 7

Complete

4.00 points out of 4.00

Why is dimension reduction helpful?

Select one or more:

- [x] a. Unimportant information is discarded so results are more robust
- [ ] b. There are less hyperparameters so making models is easier
- [x] c. There is less data to process so algorithms run faster
- [ ] d. There are less data points so algorithms fun faster

Question 8

Complete

4.00 points out of 4.00

Broadly speaking, what are three ways that feature selection can be algorithmically performed?

Select one or more:

- [ ] a. By univariate Techniques
- [x] b. Select by filtering
- [ ] c. By Information Gain
- [x] d. By embedding the selection in another technique
- [ ] e. By model selection
- [ ] f. By variance thresholding
- [x] g. By wrapping the selection using another technique

Question 9

Complete

4.00 points out of 4.00

Which of the following are key hyperparameters the `LocallyLinearEmbedding` estimator in the `manifold` module?

Select one or more:

- [x] a. n_components
- [x] b. n_neighbors
- [x] c. method
- [ ] d. n_init
- [ ] e. dissimilarity

Question 10

Complete

4.00 points out of 4.00

Sort the the possible process that the feature union is used to produce a set of features from different feature selection techniques into the correct order:

1.create the different feature selection estimators, and the feature union pipeline that combines them into a new transformer

2. creates a new pipeline that combines the feature union with a new classifier, which will be used to perform hyperparameter tuning via a cross-validation grid search.

3.split data into training and testing samples

Select one:

- ( ) a. 2, 1, 3
- ( ) b. 1,2,3
- (•) c. 3, 1, 2
- ( ) d. 3, 2, 1

Question 11

Complete

4.00 points out of 4.00

PCA does not perform so well when there are *nonlinear* relationships within the data.

To address this deficiency of PCA's, which class of method can we turn to?

Select one:

- a. manifold learning
- b. deep learning
- c. supervised learning
- d. semi-supervised learning

Question 12

Complete

4.00 points out of 4.00

What is the idea in using PCA for noise filtering ?

Select one:

- a. Any components with variance much larger than the effect of the noise should be relatively unaffected by the noise.
- b. The noise tends to have the largest variance.
- c. Some components with variance much larger than the effect of the noise will be relatively affected by the noise.
- d. The noise can be seen as outliers.

Question 13

Complete

4.00 points out of 4.00

Which algorithm computes a transformation that produces a manifold which generates a graph connecting neighbors?

Select one:

- a. t-SNE
- b. Isometric Mapping
- c. Feature Unions
- d. Multidimensional Scaling

Question 14

Complete

4.00 points out of 4.00

Which of following techniques describes this process best: "Selecting features by measuring variance"?

Select one:

- a. Variance Thresholding
- b. Variance Selection
- c. Normal Distributions
- d. Standard Deviations

Question 15

Complete

4.00 points out of 4.00

What are some other dimension reduction techniques supported by scikit learn aside from PCA?

Select one or more:

- [x] a. Independent Component Analysis
- [ ] b. Cluster Analysis
- [x] c. Non-negative Matrix Factorization
- [ ] d. SVM
- [x] e. Randomized PCA
- [x] f. Factor Analysis