

Started on Wednesday, 16 October 2024, 9:30 AM

State Finished

Completed on Saturday, 19 October 2024, 12:20 AM

Time taken 2 days 14 hours

Grade 3.0 out of 3.0 (100%)

Question 1

Correct

Mark 0.5 out of 0.5

Let us study and experiment with the given data set. Carry out the following tasks as needed by implementing the necessary code for Matlab or Python:

1. **Data onboarding:** load and study the data set to understand its characteristics.
2. **Data standardisation:** standardise the data. After this type of normalisation, the mean of each feature dimension is ✓ and the standard deviation of each feature dimension is ✓.
3. **Data division:** the data has been already divided into training and test subsets. Study whether the data in the subsets seems to follow the same distribution for each class.

Additional files: [training_\(CSV\)](#), [test_\(CSV\)](#), [training_\(MAT\)](#), [test_\(MAT\)](#).

Question 2

Correct

Mark 0.5 out of 0.5

After studying the data, experiment with **classification approaches**:

1. **Data:** the data contains ✓ classes and the data is ✓ when it comes to the number of samples per class. Use a validation subset if needed.
2. **Classifier design:** *implement by yourself* at least two approaches from the following for multi-class classification: linear, k-nearest neighbour (kNN), support-vector machine (SVM), decision tree (DT), random forest (RF), or statistical classifier. You may follow Occam's razor in the process.
3. **Classifier training:** train the selected classifiers using the training data, check that the classifiers have learned and aim for generalisation of the classifier for future data. Optional: optimise the classifiers' hyperparameters using an appropriate subset of the data.

Question 3

Complete

Mark 0.5 out of 0.5

Evaluate and compare the trained models:

- **Classification:** classify the test set samples using the trained models.
- **Performance evaluation:** compare the classification performances of the models considering also the class-wise accuracies. Submit information about the compared models and the corresponding confusion matrices.

 [ArmanGolbidi.zip](#)

Comment:

Question 4

Complete

Mark 1.5 out of 1.5

Submit your implementation for the workshop tasks as a single file.

 [ArmanGolbidi.zip](#)

Comment: