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Unit 7 - Week 6 : Supervised Learning (Regression and Classification Techniques)-II

Assignment 6

The due date for submitting this assignment has passed. Due on 2017-09-06, 23:55 IST.
As per our records you have not submitted this assignment.

1) Is it possible to use neural networks to perform compression? If so, will the compression be lossy (i.e, exact input cannot be recovered) or lossless (decompression gives back the exact input)? ***1 point***

- no, compression is not possible using neural networks
- yes, compression is possible, but only lossy compression
- yes, compression is possible, but only lossless compression
- yes, compression is possible, and depending upon the data and the network, both lossy and lossless compression may be performed

No, the answer is incorrect.
Score: 0

Accepted Answers:
yes, compression is possible, and depending upon the data and the network, both lossy and lossless compression may be performed

2) Assume that you are given a data set and a neural network model trained on the data set. You are asked to build a decision tree model with the sole purpose of understanding/interpreting the built neural network model. In such a scenario, which among the following measures would you concentrate most on optimizing? ***1 point***

- Accuracy of the decision tree model on the given data set
- F1 measure of the decision tree model on the given data set
- Fidelity of the decision tree model, which is the fraction of instances on which the neural network and the decision tree give the same output
- Comprehensibility of the decision tree model, measured in terms of the size of the corresponding rule set

No, the answer is incorrect.
Score: 0

Accepted Answers:
Fidelity of the decision tree model, which is the fraction of instances on which the neural network and the decision tree give the same output

3) Which of the following is/are true about bagging? ***1 point***

- bagging reduces variance of the classifier
- bagging increases the variance of the classifier
- bagging can help make robust classifiers from unstable classifiers
- majority is one way of combining outputs from various classifiers which are being bagged

No, the answer is incorrect.
Score: 0

Accepted Answers:
bagging reduces variance of the classifier
bagging can help make robust classifiers from unstable classifiers
majority is one way of combining outputs from various classifiers which are being bagged

4) Can the boosting technique be applied on regression problems? Can bagging be applied on regression problems? ***1 point***

- no, no
- no, yes
- yes, no
- yes, yes

No, the answer is incorrect.
Score: 0

Accepted Answers:
yes, yes

5) In the general context of classification, re-weighting the data points (relative to an original training data set where the points are un-weighted) can lead to ***1 point***

- change in the underlying optimization problem that is solved
- change in the positions of data points in the feature space
- change in the decision surface generated by the classifier
- change in the nature of the data set from being linearly separable to becoming linearly non-separable (in case the original data was linearly separable)

No, the answer is incorrect.
Score: 0

Accepted Answers:
change in the underlying optimization problem that is solved
change in the decision surface generated by the classifier

6) If one feature (compared to all others) is a very strong predictor of the class label of the output variable, then all of the trees in a random forest will have this feature as the root node. ***1 point***

- false
- true

No, the answer is incorrect.
Score: 0

Accepted Answers:
false

7) Which of the following statements are true about ensemble classifiers? ***1 point***

- The different learners in boosting based ensembles can be trained in parallel
- The different learners in bagging based ensembles can be trained in parallel
- Boosting based algorithms which iteratively re-weight training points, such as AdaBoost, are more sensitive to noise than bagging based methods.
- Boosting methods generally use strong learners as individual classifiers
- Boosting methods generally use weak learners as individual classifiers
- An individual classifier in a bagging based ensemble is trained with every point in the training set
- An individual classifier in a boosting based ensemble is trained with every point in the training set.

No, the answer is incorrect.
Score: 0

Accepted Answers:
The different learners in bagging based ensembles can be trained in parallel
Boosting based algorithms which iteratively re-weight training points, such as AdaBoost, are more sensitiv to noise than bagging based methods.
Boosting methods generally use weak learners as individual classifiers

An individual classifier in a boosting based ensemble is trained with every point in the training set.

8) By using a linear activation function in the output layer of a neural network for solving regression tasks, are we constraining the resultant model to be linear in the input features? ***1 point***

- no
- yes

No, the answer is incorrect.
Score: 0

Accepted Answers:
no

9) In case of limited training data, which technique, bagging or stacking, would be preferred, and why? ***1 point***

- bagging, because we can combine as many classifier as we want by training each on a different sample of the training data
- bagging, because we use the same classification algorithms on all samples of the training data
- stacking, because each classifier is trained on all of the available data
- stacking, because we can use different classification algorithms on the training data

No, the answer is incorrect.
Score: 0

Accepted Answers:
stacking, because each classifier is trained on all of the available data

10) In the lectures, we saw how to train a 7 layer auto encoder network. In case we wanted to perform classification on the data used for training this network, while making use of the trained network, a suitable approach would be to ***1 point***

- add an additional eighth layer on top of the 7 layers as the output layer and train the entire network for the classification task
- add an additional eighth layer on top of the 7 layers as the output layer and only modify the weights between layers 7 and 8 in training for the classification task
- discard the top 3 layers, add an additional layer on top of the 4th layer as the output layer and train the entire network for the classification task
- discard the top 3 layers, add an additional layer on top of the 4th layer as the output layer and only modify the weights between layers 4 and 5 in training for the classification task

No, the answer is incorrect.
Score: 0

Accepted Answers:
discard the top 3 layers, add an additional layer on top of the 4th layer as the output layer and train the entire network for the classification task

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