Module 4 Quiz

Quiz, 10 questions

1 point

1.
Which of the following is an example of clustering?

- (●) Separate the data into distinct groups by similarity
- ( ) Compress elongated clouds of data into more spherical representations
- ( ) Creating a new representation of the data with fewer features
- ( ) Accumulate data into groups based on labels

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1 point

2.
Which of the following are advantages to using decision trees over other models? (Select all that apply)

- [ ] Trees are naturally resistant to overfitting
- [x] Trees are easy to interpret and visualize
- [ ] Decision trees can learn complex statistical models using a variety of kernel functions
- [x] Trees often require less preprocessing of data

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3.

What is the main reason that each tree of a random forest only looks at a random subset of the features when building each node?

- ○ To increase interpretability of the model
- ● To improve generalization by reducing correlation among the trees and making the model more robust to bias.
- ○ To learn which features are not strong predictors
- ○ To reduce the computational complexity associated with training each of the trees needed for the random forest.

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1 point

4.

Which of the following supervised machine learning methods are greatly affected by feature scaling? (Select all that apply)

- ☑ KNN
- ☐ Decision Trees
- ☐ Naive Bayes
- ☑ Neural Networks
- ☑ Support Vector Machines

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5.

Select which of the following statements are true.

- [ ] For a fitted model that doesn't take up a lot of memory, **KNN** would be a better choice than **logistic regression.**
- [x] For predicting future sales of a clothing line, **Linear regression** would be a better choice than a **decision tree regressor**.
- [ ] For having an audience interpret the fitted model, a **support vector machine** would be a better choice than a **decision tree**.
- [x] For a model that won't overfit a training set, **Naive Bayes** would be a better choice than a **decision tree**.

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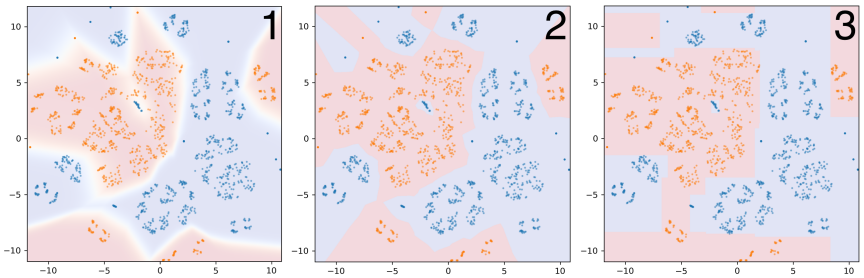
1 point

6.

Match each of the prediction probabilities decision boundaries visualized below with the model that created them.



1. Neural Network
2. Decision Tree
3. KNN (k=1)

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1. KNN (k=1)
2. Neural Network
3. Decision Tree

- [x] 1. Neural Network
2. KNN (k=1)
3. Decision Tree

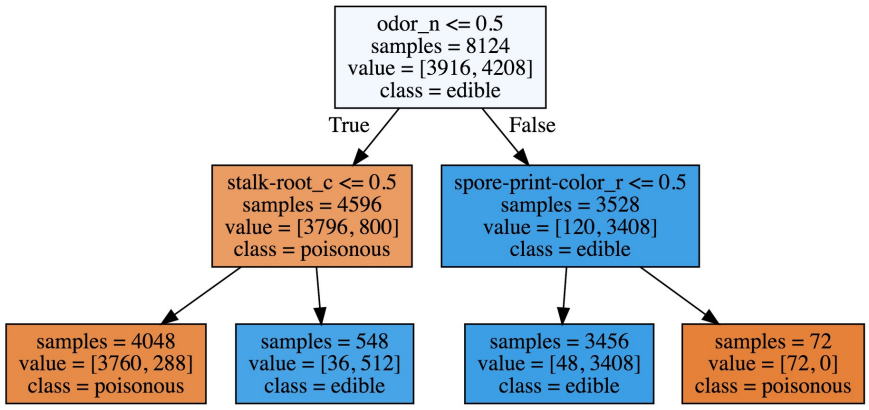
- [ ] 1. KNN (k=1)
2. Decision Tree
3. Neural Network

---

1 point

7.

A decision tree of depth 2 is visualized below. Using the `value` attribute of each leaf, find the accuracy score for the tree of depth 2 and the accuracy score for a tree of depth 1.



What is the improvement in accuracy between the model of depth 1 and the model of depth 2? (i.e. accuracy2 - accuracy1)

0.0674

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8.

For the autograded assignment in this module, you will create a classifier to predict whether a given blight ticket will be paid on time (See the module 4 assignment notebook for a more detailed description). Which of the following features should be removed from the training of the model to prevent data leakage? (Select all that apply)

- [x] collection_status - Flag for payments in collections
- [ ] ticket_issued_date - Date and time the ticket was issued
- [x] compliance_detail - More information on why each ticket was marked compliant or non-compliant
- [ ] grafitti_status - Flag for graffiti violations
- [ ] agency_name - Agency that issued the ticket

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1 point

9.

Which of the following might be good ways to help prevent a data leakage situation?

- [x] If time is a factor, remove any data related to the event of interest that doesn't take place prior to the event.
- [ ] Ensure that data is preprocessed outside of any cross validation folds.
- [x] Remove variables that a model in production wouldn't have access to
- [ ] Sanity check the model with an unseen validation set

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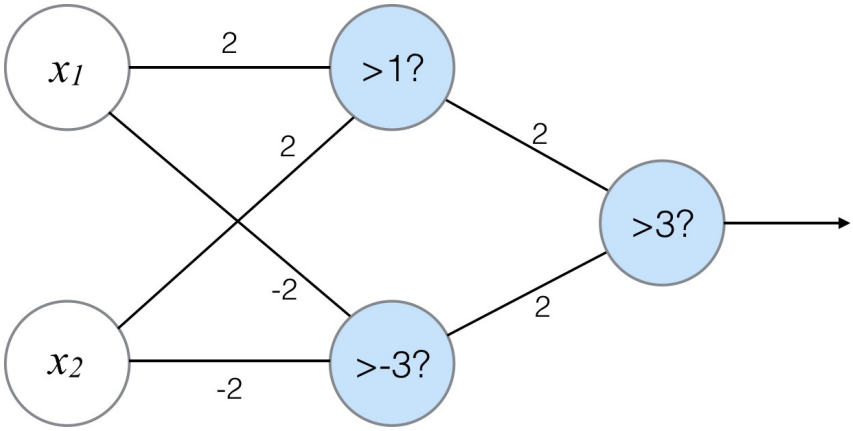
10.

Given the neural network below, find the correct outputs for the given values of x1 and x2.

The neurons that are shaded have an activation threshold, e.g. the neuron with *>1?* will be activated and output 1 if the input is greater than 1 and will output 0 otherwise.



○

x1	x2	output
0	0	0
0	1	1
1	0	1
1	1	1

●

x1	x2	output
0	0	0
0	1	1
1	0	1

1	1	0

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x1	x2	output
0	0	1
0	1	0
1	0	0
1	1	1

x1	x2	output
0	0	0
0	1	0
1	0	0
1	1	1

I, **Varun Varun**, understand that submitting work that isn't my own may result in permanent failure of this course or deactivation of my Coursera account.

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