Congratulations! You passed!

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1. What is the subfield of computer science that gives "computers the ability to learn without being explicitly programmed"? **1 / 1 point**

- Information management
- Computational science
- Graphics and visual computing
- Machine learning ✓

Correct
Correct!

2. Which of the following is not a Machine Learning technique? **1 / 1 point**

- Clustering
- Associations
- Regression/Estimation
- Heuristics ✓

Correct
Correct! The common machine learning techniques are regression/estimation, classification, clustering, association, anomaly detection, sequence mining, and recommendation systems.

3. When would you use **Multiple Linear Regression**? **0 / 1 point**

- When we would like to predict the impacts that weather and temperature have on crop yield.
- Predict whether or not a customer switches to another brand based on income, education, etc.
- Group genetic markers to identify family ties.
- None of the above. ✓

Incorrect
Incorrect. Please review video Multiple Linear Regression.

4. Which of the below is an example of classification problem? **1 / 1 point**

- Predicting whether an email is spam or not.
- Predicting whether a customer will purchase a particular item based on an advertising campaign.
- Predicting whether a customer would purchase an associated product based on previous purchases.
- All of the above. ✓

Correct
Correct! All of these can be phrased as a classification task.

5. When is logistic regression more suitable than linear regression? **1 / 1 point**

- When we have multiple independent variables.
- When we want to predict the income of an unknown customer based on age.
- When we want the probability of a point belonging to a class. ✓
- When we want to model the relationship between two variables by fitting a linear equation to observe data.

Correct
Correct! Linear regression with a step function can't provide the class probability, so values close to and far away from the threshold are treated equally.

6. What type of clustering divides the data into non-overlapping subsets without any cluster-internal structure? **1 / 1 point**

- k-mean clustering ✓
- Hierarchical clustering
- DBSCAN
- None of the above

Correct
Correct! Other algorithms divide data into clusters of varying shapes.

7. Which of the following statements is false for k-means clustering? **1 / 1 point**

- k-means clustering creates a tree of clusters ✓
- The object of k-means is to form clusters in such a way that similar samples go into a cluster, and dissimilar samples fall into different clusters.
- k-means divides the data into non-overlapping clusters without any cluster-interval structure.
- None of the above

Correct
Correct! Hierarchical clustering algorithms produces a tree of clusters, whereas k-means clustering is a type of partition-based clustering that produces sphere-like clusters.

8. What is a hyperplane in SVM? **1 / 1 point**

- ○ Classes
- ◉ Decision boundaries
- ○ Features
- ○ Data points

Correct
Correct! Each hyperplane has its own equation which creates the largest margin between two classes.

9. In comparison to mean absolute error, mean squared error: **1 / 1 point**

- ◉ Focuses more on large errors.
- ○ Avoids cancellation of errors.
- ○ Weighs small and large errors equally.
- ○ Is more interpretable by taking the same unit as the response.

Correct
Correct! The squared term exponentially increases larger errors as compared to smaller ones.

10. When are decision trees more suitable than regression trees? **1 / 1 point**

- ○ The dependent variable is continuous instead of categorical
- ○ There are no continuous independent variables.
- ◉ The dependent variable is categorical instead of continuous
- ○ Some of the independent variables are categorical.

Correct
Correct! Regression trees are best used when the task is predicting a continuous response.