

Module 1 Quiz

1. What is the difference between "machine learning" and "deep learning"?
 1. Deep learning is a subfield within the broad field of artificial intelligence while machine learning is not
 2. Deep learning involves the use of cloud or high-performance compute power to create models while machine learning does not
 3. Deep learning is a separate field unrelated to machine learning
 4. Deep learning is a sub-field of machine learning focused on the use of neural network models consisting of multiple layers
2. Which of the following are characteristics of structured data (select all that apply)?
 - It follows a structure consisting of a fixed number of defined fields
 - It includes content such as video, text and images
 - It is often stored in relational databases and works well with common tools used in organizations such as spreadsheet tools
 - It comprises ~80% of a typical organization's total data
3. We are building a model for a nationwide fast food retailer to predict the daily sales from one of their restaurants around the country. Which of the following features would we most likely treat as categorical (rather than continuous) variables in our model?
 - Day of week
 - Whether it is raining or sunny
 - Zip code of the restaurant
 - Number of days the restaurant has been in business to date
4. What is the purpose of the "algorithm" in building a machine learning model?
 1. It acts as a "template" to define the form of the relationship between inputs and outputs that is used in the model
 2. It is a "knob" that can be tuned during model training to adjust the performance of the model
 3. It is used to evaluate the performance of the model during model training
 4. It dictates which features are used in the model
5. Building a model which uses historical data to predict the future demand for electricity within a certain utility territory would likely be an application of which type of machine learning?
 1. Reinforcement learning
 2. Supervised learning
 3. Unsupervised learning

6. Building a model which organizes news articles from the daily paper into groups by subject (e.g. sports, business, politics) using only the text of the articles, without being trained on previous labeled articles, would likely be an application of which type of machine learning?

1. Supervised learning
2. Unsupervised learning
3. Reinforcement learning

7. Which of the following are things that machine learning cannot do well (select all that apply)?

- Understand context of situations
- Automate routine tasks
- Determine causation
- Find solutions to problems

8. Building a model to identify whether a patient has skin cancer based on images of the patient's skin is an example of which type of supervised learning task?

1. Regression
2. Classification
3. Clustering

9. In the matrix of input variable data to a supervised learning model (often referred to as X), the rows of the matrix represent the _____ and the columns of the matrix represent the

1. features, targets
2. observations, features
3. features, observations
4. observations, targets

10. What is the main difference between regression and classification?

1. In regression we aim to predict one or more numerical variables, and in classification we are predicting a class or category
2. With regression models we are making a prediction whereas with classification models we generally seek only to identify patterns in the relationships between the input and output variables
3. For regression models we need only the input feature data to build the model, whereas for classification models we need both input feature data and a set of output targets to train the model
4. For regression we always use a linear model, and for classification we always use a neural network