Module 1 Quiz

TOTAL POINTS 10

1. Select the option that correctly completes the sentence: 1 point

   Training a model using labeled data and using this model to predict the labels for new data is known as _____.

   - ○ Clustering
   - ○ Density Estimation
   - ○ Unsupervised Learning
   - ◉ Supervised Learning

2. Select the option that correctly completes the sentence: 1 point

   Modeling the features of an unlabeled dataset to find hidden structure is known as _____.

   - ○ Supervised Learning
   - ◉ Unsupervised Learning
   - ○ Regression
   - ○ Classification

3. Select the option that correctly completes the sentence: 1 point

   Training a model using categorically labelled data to predict labels for new data is known as _____.

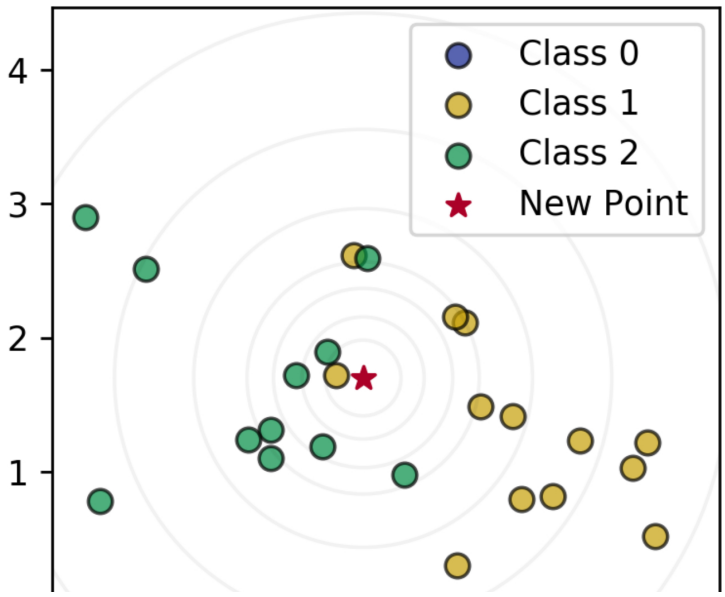
   - ◉ Classification
   - ○ Feature Extraction
   - ○ Clustering
   - ○ Regression

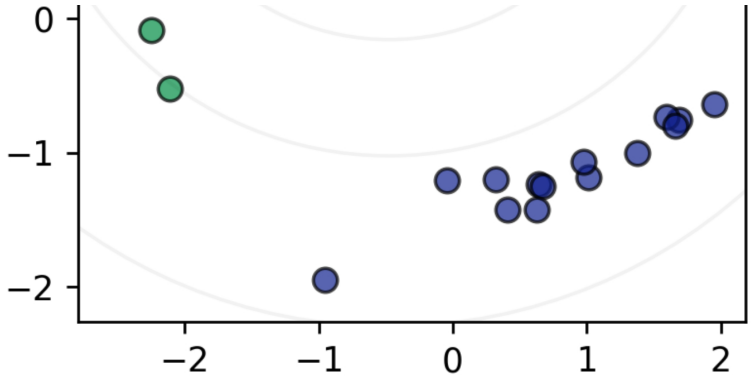
4. Select the option that correctly completes the sentence: 1 point

   Training a model using labelled data where the labels are continuous quantities to predict labels for new data is known as _____.

   - ○ Classification
   - ○ Clustering
   - ◉ Regression
   - ○ Feature Extraction

5. Using the data for classes 0, 1, and 2 plotted below, what class would a KNeighborsClassifier classify the new point as for k = 1 and k = 3? 1 point





- (●) • k=1: Class 1
  • k=3: Class 2
- ( ) • k=1: Class 1
  • k=3: Class 0
- ( ) • k=1: Class 0
  • k=3: Class 2
- ( ) • k=1: Class 0
  • k=3: Class 1
- ( ) • k=1: Class 2
  • k=3: Class 1

6. Which of the following is true for the nearest neighbor classifier (Select all that apply): 1 point

- [ ] Given a data instance to classify, computes the probability of each possible class using a statistical model of the input features
- [x] Memorizes the entire training set
- [ ] A higher value of k leads to a more complex decision boundary
- [ ] Partitions observations into k clusters where each observation belongs to the cluster with the nearest mean

7. Why is it important to examine your dataset as a first step in applying machine learning? (Select all that apply): 1 point

- [x] See what type of cleaning or preprocessing still needs to be done
- [x] You might notice missing data
- [x] Gain insight on what machine learning model might be appropriate, if any
- [x] Get a sense for how difficult the problem might be
- [ ] It is not important

8. The key purpose of splitting the dataset into training and test sets is: 1 point

- ( ) To speed up the training process
- (●) To estimate how well the learned model will generalize to new data
- ( ) To reduce the number of features we need to consider as input to the learning algorithm
- ( ) To reduce the amount of labelled data needed for evaluating classifier accuracy

9. The purpose of setting the random_state parameter in train_test_split is: (Select all that apply) 1 point

- [ ] To avoid bias in data splitting
- [x] To make experiments easily reproducible by always using the same partitioning of the data
- [ ] To avoid predictable splitting of the data
- [ ] To split the data into similar subsets so that bias is not introduced into the final results

10. Given a dataset with 10,000 observations and 50 features plus one label, what would be the dimensions of X_train, y_train, X_test, and y_test? Assume a train/test split of 75%/25%. 1 point

- X_train: (2500,)
  - y_train: (2500, 50)
  - X_test: (7500,)
  - y_test: (7500, 50)

- X_train: (2500, 50)
  - y_train: (2500,)
  - X_test: (7500, 50)
  - y_test: (7500,)

- X_train: (7500, 50)
  - y_train: (7500,)
  - X_test: (2500, 50)
  - y_test: (2500,)

- X_train: (10000, 50)
  - y_train: (10000,)
  - X_test: (10000, 50)
  - y_test: (10000,)

- X_train: (10000, 28)
  - y_train: (10000,)
  - X_test: (10000, 12)
  - y_test: (10000,)

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