Quiz 8

Problem 1

1/1 point (graded)

Clustering refers to which of the following?

- (•) Grouping similar data points together
- ( ) Assigning data points to some mean value
- ( ) Excluding outliers from the data set
- ( ) Finding commonalities between groups of data points

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Problem 2

1/1 point (graded)

When does the k-means algorithm terminate?

- ( ) After n iterations, where n is defined by the user
- ( ) After the average distance from each point to its mean is minimized

- (●) After no additional updates are made in grouping data points
- ( ) After each point has been assigned to a mean value

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Problem 3

1/1 point (graded)

What does the value k represent in the k-means algorithm?

- ( ) The number of iterations that the algorithm will run
- (●) The number of clusters we want our solution to have
- ( ) The number of data points that will be clustered
- ( ) The number of data points that can be assigned to each cluster

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Problem 4

1/1 point (graded)

Suppose we use clustering to come up with a representation for images. If there are k clusters, each image is represented by first extracting a large collection of image patches from it, and then using these to map the image to a k-dimensional vector. What is the i'th coordinate of this vector?

- ○ The number of image patches that were associated with the i'th cluster
- ◉ The fraction of image patches that were associated with the i'th cluster
- ○ The i'th coordinate of the i'th cluster center
- ○ A cumulative sum, over all k-means iterations, of the number of image patches associated with the i'th cluster

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Problem 5

1/1 point (graded)

True or false: in the streaming model of computation, the dataset used for clustering is required to be small enough to fit in main memory.

- ○ True
- ◉ False

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Problem 6

1/1 point (graded)

The EM algorithm stands for expectation maximization algorithm and it will find what kind of solution?

- (•) Local maximum
- ( ) Global maximum

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Problem 7

1/1 point (graded)

Which of the following values are updated with each iteration of the EM algorithm?

- [ ] number of clusters, k
- [x] cluster mixing weights, i.e. π_j
- [x] cluster means, i.e. μ_j
- [x] cluster covariance matrices, i.e. Σ_j

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Problem 8

1/1 point (graded)

True or false: Using the single linkage algorithm, the tree is built in a top down manner by first grouping all of the data points together, then dividing the data points into two or more clusters, and then further subdividing those clusters.

- ( ) True

- [x] False

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Problem 9

1/1 point (graded)

How does the complete linkage algorithm differ from the single linkage algorithm?

- [ ] Complete linkage algorithm can only group up to two clusters together while single linkage algorithm can group multiple clusters
- [ ] Complete linkage generates fewer clusters than single linkage
- [x] Complete linkage merges clusters based on maximum distance (between those clusters) while single linkage merges clusters based on minimum distance
- [ ] Complete linkage builds the tree in a bottom up manner, while single linkage builds the tree in a top down manner

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