Week 8 Quiz

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Checkboxes

1/1 point (graded)

Check all probabilistic models.

- [x] logistic regression
- [ ] support vector machines
- [ ] K-means
- [x] Bayes classifiers
- [ ] Decision trees

✔

Submit You have used 1 of 1 attempt

✔ Correct (1/1 point)

Checkboxes

1/1 point (graded)

Check all that are true about the KL divergence between distributions q and p.

- [ ] $KL(q||p) = KL(p||q)$
- [x] $KL(q||p) \geq 0$
- [x] $KL(q||p) = 0 \Rightarrow q = p$
- [ ] $KL(q||p) \leq 0$

✔

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✔ Correct (1/1 point)

Checkboxes

0/1 point (graded)

Which of the following are true about our discussion of the EM algorithm?

- [x] we assumed the conditional posterior distribution of the auxiliary variable was in closed form
- [ ] we assumed the expectation of the log likelihood was in closed form
- [ ] we assumed the log likelihood was a convex function
- [ ] we assumed we could find an auxiliary parameter with the correct marginal distribution

✖

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✖ Incorrect (0/1 point)

Multiple Choice

1/1 point (graded)

The EM algorithm is guaranteed to monotonically increase the log likelihood.

- (•) TRUE ✔
- ( ) FALSE

Submit You have used 1 of 1 attempt

✔ Correct (1/1 point)

Multiple Choice

1/1 point (graded)

The EM algorithm is guaranteed to find the global optimal solution of the log likelihood.

- TRUE
- FALSE ✔

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✔ Correct (1/1 point)

Text Input

2/2 points (graded)

A _____ clustering model assigns each data point to only one cluster, while a _____ clustering model splits data points across clusters.

The word for the first blank is:

hard ✔

The word for the second blank is:

soft ✔

Submit You have used 1 of 1 attempt

✔ Correct (2/2 points)

Multiple Choice

1/1 point (graded)

A mixture model represents the distribution of a data set as a weighted combination of simpler distributions.

- TRUE ✔
- FALSE

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✔ Correct (1/1 point)

Checkboxes

1/1 point (graded)

Check all true statements about (1) K-component mixture models and (2) K-class Bayes classifiers.

- [ ] (1) is a supervised model, while (2) is an unsupervised model
- [x] (1) is an unsupervised model, while (2) is a supervised model
- [x] the cluster assignments in (1) correspond to the class assignments in (2)
- [ ] both have closed form solutions without the need for an iterative algorithm

✔

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✔ Correct (1/1 point)

Checkboxes

1/1 point (graded)

The maximum likelihood EM algorithm for the Gaussian mixture model will automatically learn an "appropriate" number of clusters for the data set by not assigning any data to the unnecessary clusters.

- [ ] TRUE
- [x] FALSE

✔

Submit You have used 1 of 1 attempt

✔ Correct (1/1 point)