MODULE 8 QUIZ 4

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1. We have used gaussian mixture models to fit data which has real-valued continuous features. Do you think we can also apply mixture models to discrete features, like integral values. * 1 point

- (●) Yes, if we choose an appropriate Probability Mass function.
- ( ) No, only if the data is categorical
- ( ) No, probability distributions only support real values
- ( ) Yes, but we must generate a continuous interpolation of the input information.

2. Say we run a gaussian mixture model with 5 clusters. One test data point is exactly equidistant from the means of all clusters. Which cluster does this point belong to? * 1 point

- ○ It's with 20% probability in each of the clusters
- ◉ It with highest probability in the cluster with the highest variance
- ○ It's with the highest probability in the cluster with the lowest variance
- ○ Nothing can be said about which cluster it belongs to

3. Which is an advantage of probabilistic soft clustering over hard clustering methods like k-means? * 1 point

- ○ It is better on dealing with outliers
- ○ The number of clusters in the data can be directly inferred from soft clustering, for k-means we have to guess it from the elbow of fit quality graph
- ◉ Being a bayesian method is offers much better interpretability of why a particular point is in a given cluster as compared to k-means
- ○ It is better at dealing with points which lie between 2 clusters

4. The process of training a mixture model can be thought of as an optimization process, which involves maximizing over which of these parameters * 1 point

- ◉ P(cluster parameters | cluster assignments)
- ○ P(cluster assignments | cluster parameters)
- ○ Both A and B
- ○ P(cluster assignments)
- ○ P(cluster parameters)

5. The mixture model is currently proposing a mixture of 3 gaussians with means 0, 3, 5 and variance 1, 2 and 2. Which of the following are the correct ratios between values for the tuple P(x=1 | class i) for i = 1,2,3 * 1 point

- [ ] 2.00, 1.00, 4.48
- [x] 2.24, 1.00, 4.48
- [ ] 1.00, 2.00, 4.00
- [ ] 4.00, 2.00, 1.00
- [ ] 4.48, 1.00, 2.00

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