All site functionality should be restored at this time.

Week 7 Quiz

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Association Rules

10/10 points (graded)

In association rules, if an itemset is frequent, then all its supersets are frequent.

- (•) False ✔
- ( ) True

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✔ Correct (10/10 points)

Association Rules

10/10 points (graded)

Check all that apply.

- [x] The bottleneck in finding strong association rules is in finding frequent itemsets. ✔
- [x] Deriving association rules from frequent itemsets does not require scanning the dataset. ✔
- [ ] The search space of frequent itemsets is a lattice of size 2^(number of transactions).
- [x] The search space of frequent itemsets is a lattice of size 2^(number of items). ✔

- [x] Extracting quantitative association rules is an optimization problem, because it is not possible to do a systematic search of association rules involving numerical variables. ✔

✔

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✔ Correct (10/10 points)

Association Rules

10/10 points (graded)

	$\mathbf{2\%milk}$	$\overline{\mathbf{2\%milk}}$	$\sum$ **lines**
whole milk	400	200	600
$\overline{\textbf{whole milk}}$	350	50	400
$\sum$ **columns**	750	250	1000

Consider the table above summarizing a larger transaction dataset with only two items. Let **2%milk** refer to the transactions containing 2% milk, and let $\overline{\textbf{2\%milk}}$ refer to the transactions without 2% milk. Similarly, **whole milk** refers to the transactions containing whole milk, while $\overline{\textbf{whole milk}}$ refers to the transactions without whole milk. Suppose we are interested in the rule **whole milk** → **2%milk**. Is this rule strong? Assume a MinSup=30% and a MinConf=60%.

- (•) True ✔
- ( ) False

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✔ Correct (10/10 points)

Association Rules

10/10 points (graded)

Consider the same table above. What kind of relationship exists between the items whole milk and 2% milk?

(Hint: Use the interest measure)

- [ ] Independent
- [x] Negatively correlated ✔
- [ ] Positively correlated

✔

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✔ Correct (10/10 points)

Neural Networks

10.0/10.0 points (graded)

Check all that apply.

- [x] "Training" a neural network means learning the weights in the network.
- [ ] "Backpropagation" means propagating the errors forward.
- [x] "Feed forward" means propagating the examples through the network and computing the output from every neuron.

✔

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Neural Networks

10.0/10.0 points (graded)

Neural networks can solve both linear and non-linear classification problems.

- (•) True ✔
- ( ) False

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Neural Networks

10/10 points (graded)

Check all that apply.

- [ ] A neural network can overfit the training data if the network is too simple; that is, if it has a very small number of units.
- [x] A neural network can overfit the training data if the network is too complex; that is, if it has a very large number of units. ✔
- [x] Overfitting in neural networks can be reduced by using cross-validation to choose the number of neurons. ✔

✔

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✔ Correct (10/10 points)

Clustering with K-means

0.0/10.0 points (graded)

Check all that apply.

- [x] The basic K-means algorithm requires setting up the parameter K (number of clusters) apriori.
- [ ] In K-means, we assume that each cluster fits a Gaussian distribution (normal distribution).
- [x] We can set K to optimally cluster the data by starting with a small number of clusters, and then iteratively splitting them until all clusters fit a normal distribution.
- [x] A clustering is good if it has a high intra-cluster similarity and a low inter-cluster similarity.

- [ ] A clustering is good if it has a low intra-cluster similarity and a high inter-cluster similarity.

✖

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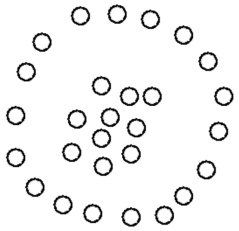
Clustering with K-means

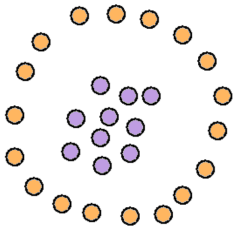
10.0/10.0 points (graded)

Consider the unlabeled data below.

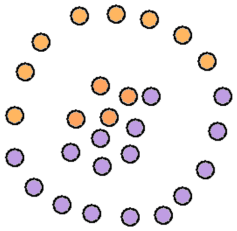


Which of the following clustering will k-means clustering produce for k = 2?

- [ ] Clustering 1:



- [x] Clustering 2:



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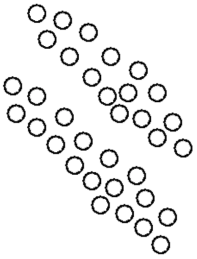
Clustering with K-means

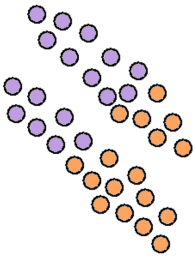
10.0/10.0 points (graded)

Consider the unlabeled data below.



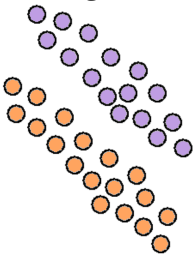
Which of the following clustering will k-means clustering produce for k = 2?

- [x] Clustering 1:



✔

- [ ] Clustering 2:



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