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Lecture 13
Boosting

Lecture 14
Clustering and K-means

Week 7 Quiz

Quiz due Apr 11, 2017
05:00 IST

Week 7 Discussion Questions

Practice Proctored Exam

Ungraded Practice Exam due Apr 10, 2017 05:00 IST

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Week 7 Quiz

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Checkboxes

1/1 point (graded)

Which of the following are FALSE about AdaBoost? (check all that apply)

☐ Adaboost forms an ensemble of multiple weak classifiers into a single classifier.

☒ AdaBoost is guaranteed to minimize the testing error to zero.

☒ AdaBoost is done by bagging multiple weak classifiers.

☐ AdaBoost is guaranteed to minimize the training error to zero.



Submit

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Multiple Choice

1/1 point (graded)

True or False: While it can significantly increase computation time, technically any classifier that performs better than random guessing can be boosted.

☒ TRUE ✓

☐ FALSE

Submit

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Multiple Choice

1/1 point (graded)

When boosting a classifier, after round t the misclassified weights are multiplied by _____.

☒ e^{α_t} ✓

☐ $e^{-\alpha_t}$

Submit

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Multiple Choice

1/1 point (graded)

For a new data point x_0 , which of the following represents the boosted prediction of y_0 ?

☒ $y_0 = \text{sign}(\sum_t \alpha_t f_t(x_0))$ ✓

☐ $y_0 = \text{sign}(\sum_t f_t(x_0))$

☐ $y_0 = \text{sign}(\alpha f(x_0))$

☐ $y_0 = \text{sign}(f(x_0))$

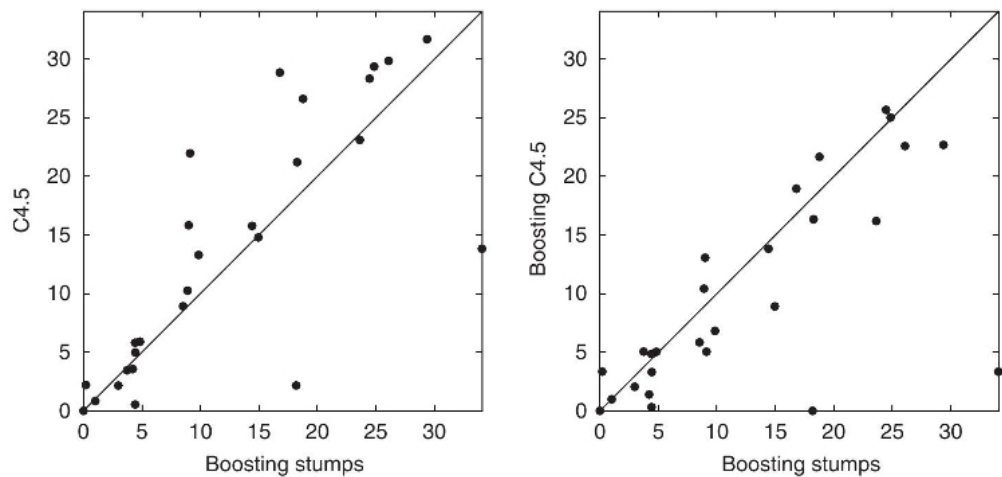
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You have used 1 of 1 attempt

✓ Correct (1/1 point)

Multiple Choice

1/1 point (graded)



The left and right figures compare a weak decision stump classifier to a complex decision tree classifier (C4.5) in the boosting framework. Which of the following statements is most accurate based on the figures.

- ☒ Boosting a weak classifier is generally better than not boosting a strong classifier. ✓
- ☐ C4.5 should be chosen over a decision stump in all scenarios.
- ☐ There is no advantage to boosting a decision stump instead of boosting C4.5.

Submit

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Multiple Choice

1/1 point (graded)

True or False: The K-means objective function is convex and therefore the output of the K-means algorithm is the one true global solution.

☐ TRUE

☒ FALSE ✓

Submit

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Checkboxes

1/1 point (graded)

Which of the following models are unsupervised?

☒ K-means

☐ K-nearest neighbors

☐ Logistic regression

☐ Boosting a decision stump



Submit

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Multiple Choice

1/1 point (graded)

True or False: The K-means algorithm will converge in a finite number of steps when there are finite observations.

☒ TRUE ✓

☐ FALSE

Submit

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Text Input

1/1 point (graded)

(enter missing word) The difference between K-means and K-medoids is that they use different _____ measures.

distance



Submit

You have used 1 of 1 attempt

✓ Correct (1/1 point)

Multiple Choice

1/1 point (graded)

The K-means objective function is $\sum_{n=1}^N \sum_{k=1}^K \mathbf{1}\{c_n = k\} \|x_n - \mu_k\|^2$. We discussed an algorithm for optimizing over all \mathbf{c} and μ using _____.

☐ gradient ascent☐ coordinate ascent☐ gradient descent☒ coordinate descent ✓

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✓ Correct (1/1 point)

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