

ColumbiaX: CSMM.102x Machine Learning

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Lecture 7 Nearest Neighbors and Bayes Classifiers

Lecture 8 Linear Classifiers and Perceptron

## Week 4 Quiz

Quiz due Apr 11, 2017 05:00 IST 📝

**Week 4 Discussion Question** 

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## Week 4 Quiz

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## **Multiple Choice**

1/1 point (graded)

For two vectors u and v both in  $\mathbb{R}^d$  ,  $\|u-v\|_1 \leq \|u-v\|_2$  .

TRUE

FALSE

Submit

You have used 1 of 1 attempt

## **Multiple Choice**

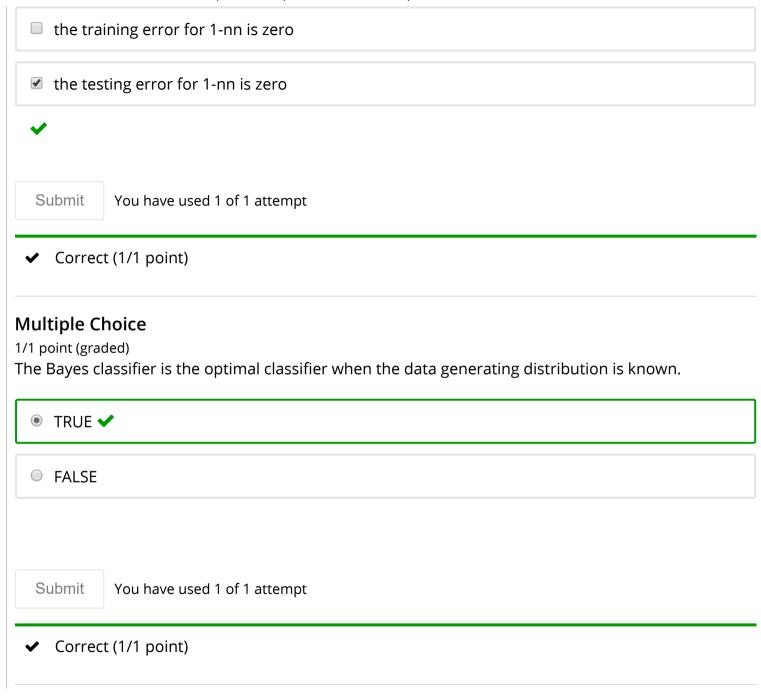
1/1 point (graded)

While there are many factors that go into making a good supervised model, the *key* assumption that makes learning an accurate classifier or regression model possible is

ullet the statistical regularity within the data - past data accurately represents future data  $\checkmark$ 

| there is enough data to learn the classifier   |  |  |
|--|--|--|
| we have powerful enough computers to handle big data   |  |  |
|  |  |  |
| Submit You have used 1 of 1 attempt  |  |  |
| ✓ Correct (1/1 point)  |  |  |
| Checkboxes  1/1 point (graded)  Which of the following describe a classification problem? (Check all that apply) |  |  |
| predicting the gas milage of a car based on its weight and type  |  |  |
| ✓ predicting the presence of a disease based on preliminary tests  |  |  |
|  |  |  |
| predicting the temperature tomorrow based on the temperature today   |  |  |
| <b>✓</b>   |  |  |
|  |  |  |

| Submit                                       | You have used 1 of 1 attempt                          |
|--|---|
| Multiple C<br>1/1 point (gra<br>Using a k-ni |   |
| <ul><li>larger</li></ul>                     |   |
| • smalle                                     | er 🗸  |
| Submit                                       | You have used 1 of 1 attempt                          |
| Checkbox<br>1/1 point (gra<br>Which of th    |   |
| ✓ k-nn c                                     | lassifiers are parametric                             |
| ✓ k-nn c                                     | lassifiers always become more accurate as k increases |
|  |   |



| Text Input  |
|---|
| 1/1 point (graded)  |
| The naive Bayes classifier makes the assumption that the dimensions of the covariate vector are   |
| conditionally   |
|   |
| independent   |
| Submit You have used 1 of 2 attempts  |
| Multiple Choice  1/1 point (graded)  An example of a linear classifier with a quadratic decision boundary is a Bayes classifier using class dependent Gaussians having a covariance matrix. |
| • shared  |
| ● unique  |
|   |
| Submit You have used 1 of 1 attempt   |
|   |

| 1/1 point (graded) For a binary $\{-1,+1\}$ linear classifier, the coefficient vector $m{w}$ points in the direction of the class.                               |
|--|
| ○ <b>-1</b>  |
| ⊕ +1 ✓   |
|  |
| Submit You have used 1 of 1 attempt  |
| ✓ Correct (1/1 point)  |
| Dropdown  1/1 point (graded) The perceptron algorithm is a binary classifier that is guaranteed to converge to the solution can find when the data is separable. |
| first, linearly ▼  |
| Submit You have used 1 of 1 attempt  |
| ✓ Correct (1/1 point)  |

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