← Back



Congratulations! You passed!

Grade received 100% To pass 80% or higher

Go to next item

Practice quiz: Bias and variance

Latest Submission Grade 100%

1. 1/1 point

 $train(\overrightarrow{\mathbf{w}}, b)$

 J_{train} will be high and $J_{cv} \gg J_{train}$

Diagnosing bias and variance How do you tell if your algorithm has a bias or variance problem? High bias (underfit) J_{train} will be high $(J_{train} \approx J_{cv})$ $(\overrightarrow{\mathbf{w}}, b)$ overfit underfit High variance (overfit) high low variance variance (J_{train} may be be low High bias and high variance

If the model's cross validation error J_{cv} is much higher than the training error J_{train} , this is an indication that the model has...

degree of polynomial

- Low variance
- high bias
- Low bias
- high variance

⟨√⟩ Corr

When $J_{cv}>>J_{train}$ (whether J_{train} is also high or not, this is a sign that the model is overfitting to the training data and performing much worse on new examples.

2. 1/1 point

Bias/variance examples

Baseline performance : 10.6% 0.2% 10.6%

Which of these is the best way to determine whether your model has high bias (has underfit the training data)?

- Compare the training error to the cross validation error.
- O See if the training error is high (above 15% or so)
- See if the cross validation error is high compared to the baseline level of performance
- Ompare the training error to the baseline level of performance

✓ Correct

Correct. If comparing your model's training error to a baseline level of performance (such as human level performance, or performance of other well-established models), if your model's training error is much higher, then this is a sign that the model has high bias (has underfit).

3. 1/1 point

You've implemented regularized linear regression on housing prices

$$J(\vec{w},b) = \frac{1}{2m} \sum_{i=1}^{m} (f_{\vec{w},b}(\vec{x}^{(i)}) - y^{(i)})^{2} + \frac{2}{2m} \sum_{j=1}^{n} w_{j}^{2}$$

But it makes unacceptably large errors in predictions. What do you try next?

- -> Get more training examples
- → Try smaller sets of features x, x², x', x', x'...
- → Try getting additional features ←
- \rightarrow Try adding polynomial features $(x_1^2, x_2^2, x_1x_2, etc)$
- → Try decreasing λ ←
- \rightarrow Try increasing λ

fixes high variance

fixes high variance fixes high bias

fixes high bias

fixes high bias

fixes high variance

You find that your algorithm has high bias. Which of these seem like good options for improving the algorithm's performance? Hint: two of these are correct.

- ☐ Collect more training examples
- lacksquare Decrease the regularization parameter λ (lambda)

Correct. Decreasing regularization can help the model better fit the training data.

- Remove examples from the training set
- Collect additional features or add polynomial features

Correct. More features could potentially help the model better fit the training examples.

4. 1/1 point

You find that your algorithm has a training error of 2%, and a cross validation error of 20% (much higher than the training error). Based on the conclusion you would draw about whether the algorithm has a high bias or high variance problem, which of these seem like good options for improving the algorithm's performance? Hint: two of these are correct.

lacksquare Decrease the regularization parameter λ

- □ Reduce the training set size
 ✓ Collect more training data
 ✓ correct
 Yes, the model appears to have high variance (overfit), and collecting more training examples would help reduce high variance.

 ✓ Increase the regularization parameter λ

⊘ Correct

Yes, the model appears to have high variance (overfit), and increasing regularization would help reduce high variance.