Congratulations! You passed!

Grade received 100% **Latest Submission** Grade 100%

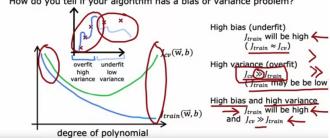
To pass 80% or higher

1/1 point

1.

Diagnosing bias and variance

How do you tell if your algorithm has a bias or variance problem?



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

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

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

1/1 point

Bias/variance examples

Baseline performance : 10.6% 10.6% 10.6% 14.4% Training error (J_{train}) : 10.8% Cross validation error (J_{cv}) : 14.8% 15.5% high bias high high high variance variance

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 baseline level of performance
- Ompare the training error to the cross validation error.
- $\bigcirc \ \ \mathsf{See} \ \mathsf{if} \ \mathsf{the} \ \mathsf{training} \ \mathsf{error} \ \mathsf{is} \ \mathsf{high} \ \mathsf{(above} \ \mathsf{15\%} \ \mathsf{or} \ \mathsf{so)}$
- O See if the cross validation error is high compared to the baseline level of performance

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

3.

1/1 point

Debugging a learning algorithm

You've implemented regularized linear regression on housing prices

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

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

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

fixes high variance fixes high variance

fixes high bias fixes high bias

fixes high bias

	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.
	$igsep$ Decrease the regularization parameter λ (lambda)
	 □ Collect more training examples ☑ Collect additional features or add polynomial features
	 Correct Correct. More features could potentially help the model better fit the training examples.
	Remove examples from the training set
ı.	
	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.
	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. Reduce the training set size
	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.
	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. Reduce the training set size
	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. ☐ Reduce the training set size ☑ Increase the regularization parameter λ ② correct Yes, the model appears to have high variance (overfit), and increasing regularization would help reduce

Yes, the model appears to have high variance (overfit), and collecting more training examples would help

reduce high variance.

fixes high variance

 \rightarrow Try increasing λ