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Practice quiz: Bias and variance

Graded Quiz • 30 min

**Due** Aug 21, 11:59 PM +07

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**Grade received** 100% **Latest Submission Grade** 100% **To pass** 80% or higher

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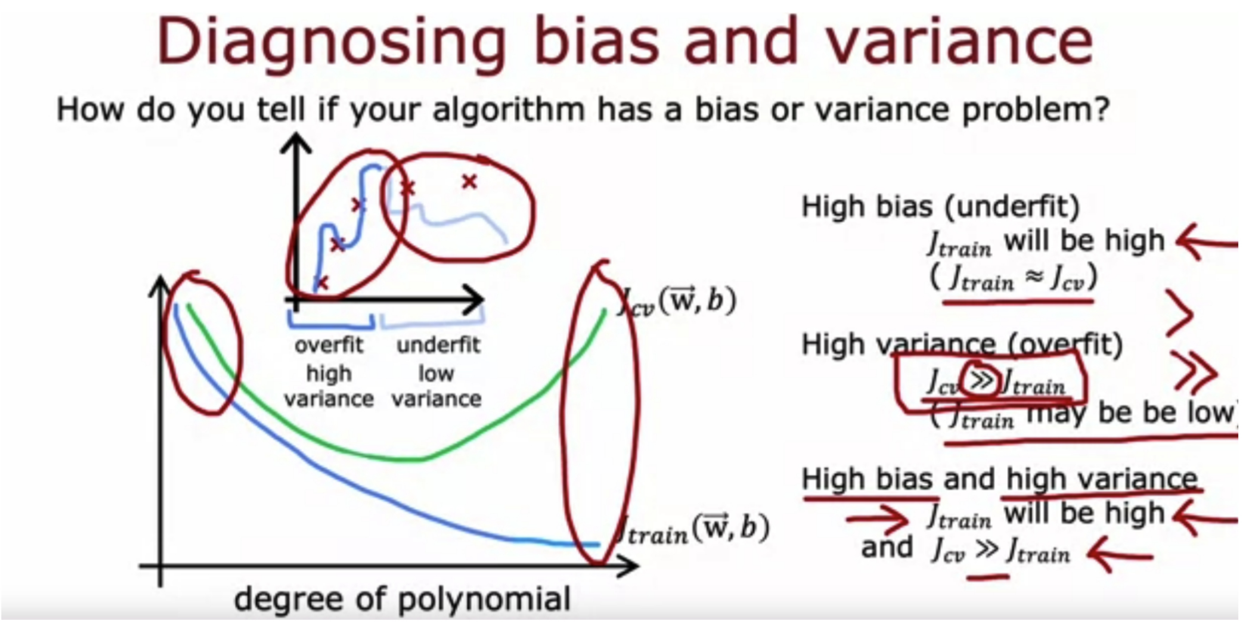
**1.**

1 / 1 point




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…

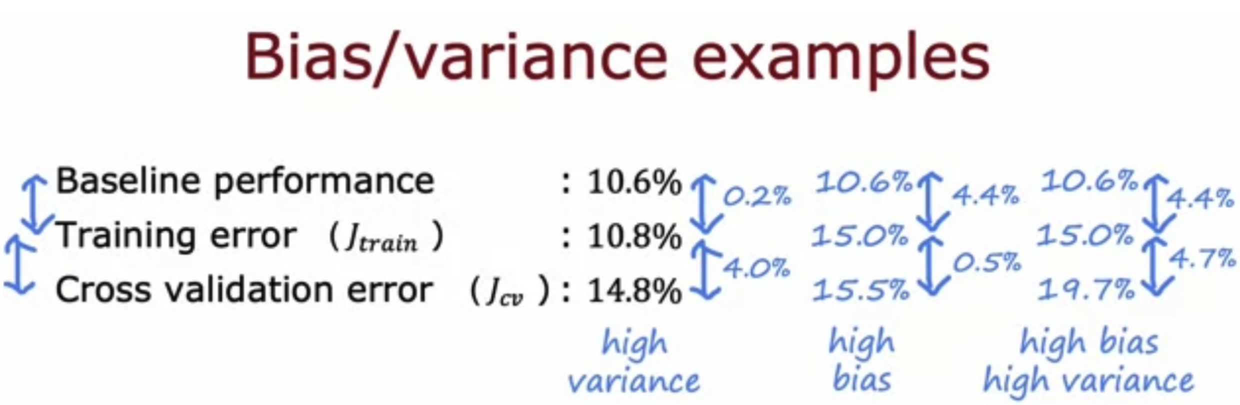
- Low variance
- Low bias
- high variance
- high bias

Correct

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

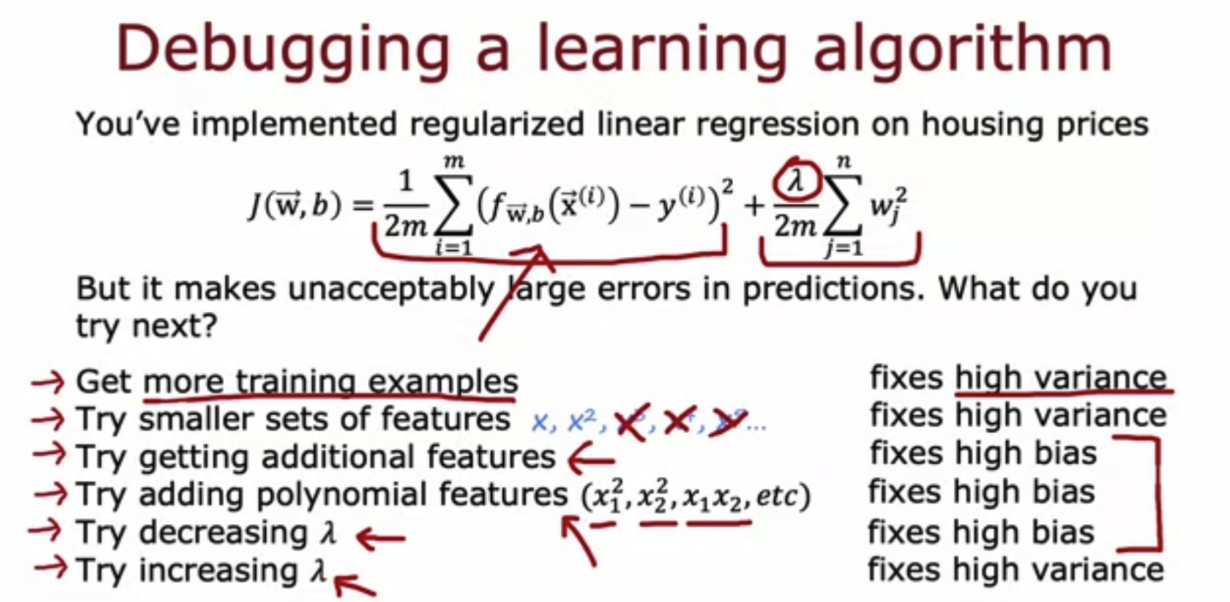


Which of these is the best way to determine whether your model has high bias (has underfit the training data)?

- ◯ 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
- ◯ Compare the training error to the cross validation error.
- ◉ Compare 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 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.

- [x] Collect additional features or add polynomial features

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

- [x] Decrease the regularization parameter $\lambda$ (lambda)

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

- [ ] Remove examples from the training set
- [ ] Collect more 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.

- [ ] Decrease the regularization parameter $\lambda$
- [x] Collect more training data

**Correct**

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

- [ ] Reduce the training set size
- [x] Increase the regularization parameter $\lambda$

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