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Graded Quiz • 30 min

Due Aug 1, 6:59 AM UTC

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Practice quiz: The problem of overfitting

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1. Which of the following can address overfitting?

1 / 1 point

- [x] Collect more training data

Correct
If the model trains on more data, it may generalize better to new examples.

- [x] Select a subset of the more relevant features.

Correct
If the model trains on the more relevant features, and not on the less useful features, it may generalize better to new examples.

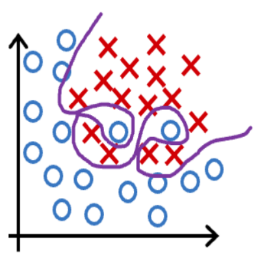
- [x] Apply regularization

Correct
Regularization is used to reduce overfitting.

- [ ] Remove a random set of training examples

2. You fit logistic regression with polynomial features to a dataset, and your model looks like this.

1 / 1 point



What would you conclude? (Pick one)

- ○ The model has high variance (overfit). Thus, adding data is, by itself, unlikely to help much.
- ○ The model has high bias (underfit). Thus, adding data is, by itself, unlikely to help much.
- ◉ The model has high variance (overfit). Thus, adding data is likely to help
- ○ The model has high bias (underfit). Thus, adding data is likely to help

Correct
The model has high variance (it overfits the training data). Adding data (more training examples) can help.

3\. # Regularization

1 / 1 point

$$\min_{\vec{w},b} J(\vec{w},b) = \min_{\vec{w},b}\left[\overbrace{\frac{1}{2m}\sum_{i=1}^{m}\left(f_{\vec{w},b}(\vec{x}^{(i)}) - y^{(i)}\right)^2}^{\text{mean squared error}} + \overbrace{\frac{\lambda}{2m}\sum_{j=1}^{n} w_j^2}^{\text{regularization term}}\right]$$

Suppose you have a regularized linear regression model. If you increase the regularization parameter λ, what do you expect to happen to the parameters $w_1, w_2, ..., w_n$?

- (●) This will reduce the size of the parameters $w_1, w_2, ..., w_n$
- ( ) This will increase the size of the parameters $w_1, w_2, ..., w_n$

Correct
Regularization reduces overfitting by reducing the size of the parameters $w_1, w_2, ...w_n$.