

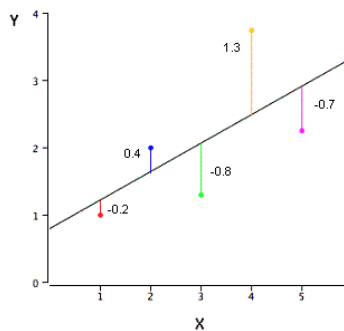
Large Scale Machine Learning and Deep Learning

Review Questions 1

1. Which of the following is/are true about *Normal Equation*?

- (a) We don't have to choose the learning rate.
 - (b) It becomes slow when number of features is very large.
 - (c) No need to iterate.
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2. The following graph represents a regression line predicting y from x . The values on the graph shows the residuals for each predictions value, i.e., $\hat{y} - y$. Calculate the squared error of the prediction.



3. How does number of observations influence overfitting? Choose the correct answer(s).

- (a) In case of fewer observations, it is easy to overfit the data.
 - (b) In case of fewer observations, it is hard to overfit the data.
 - (c) In case of more observations, it is easy to overfit the data.
 - (d) In case of more observations, it is hard to overfit the data.
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4. How many coefficients do you need to estimate in a simple linear regression model (One independent variable)?

5. Suppose you have fitted a complex regression model on a dataset. Now, you are using Ridge regression with tuning parameter lambda (λ) to reduce its complexity. Choose the option(s) below which describes relationship of bias and variance with lambda.

- (a) In case of very large λ ; bias is low, variance is low.
- (b) In case of very large λ ; bias is low, variance is high.
- (c) In case of very large λ ; bias is high, variance is low.
- (d) In case of very large λ ; bias is high, variance is high.