# Understanding the Bias-Variance Tradeoff

https://towardsdatascience.com/understanding-the-bias-variance-tradeoff-165e6942b229

## What is bias? (Accuracy)

Bias is the difference between the average(expectation) prediction of our model and the ground truth.

## What is Variance? (Precision)

Variance is the variability of model prediction.

## Mathematically

Suppose we have the variable

Where is the error term and it’s normally distributed with a mean of 0, and we have

Since we want to eliminate the effects of direction of errors (positive or negative), we use expected squared error to measure the fitness of model, which equals to

Since So we have

The first item is called variance, and the left one is called bias.

Diagram

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