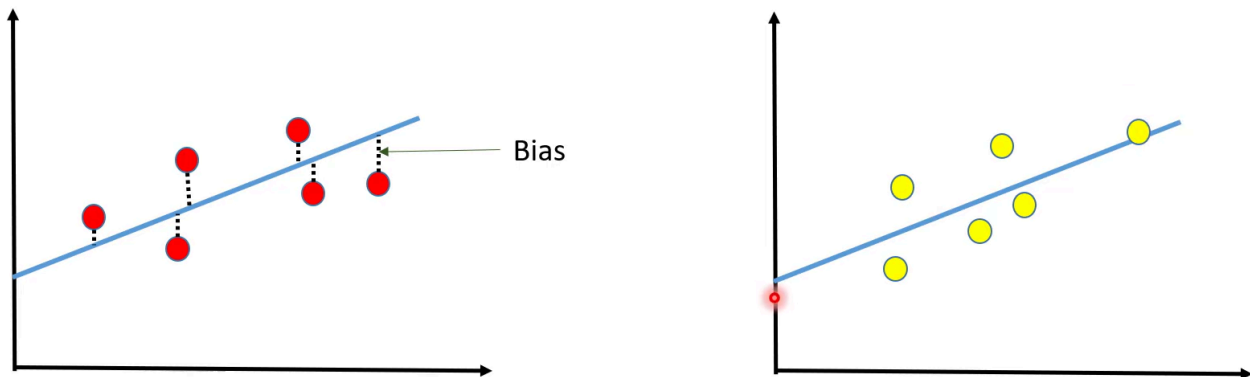


Bias Variance Tradeoff

It helps to find optimized model.

Bias :

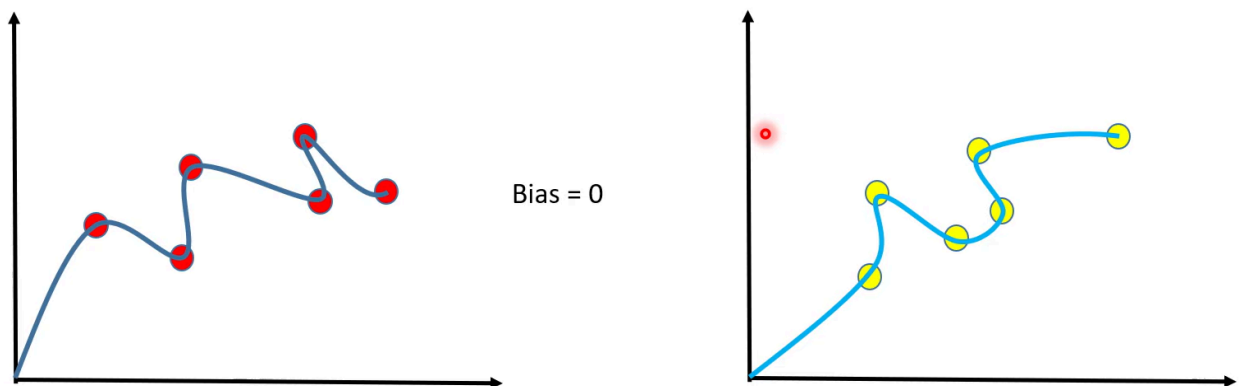
Bias is the difference between the average prediction of our model and the correct value which we are trying to predict.



High bias and low variance in the above image

Variance :

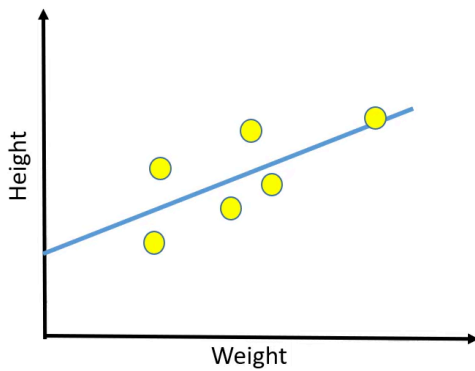
Variance is the amount that the estimate of the target function will change if different training data was used.



Zero bias and high variance.

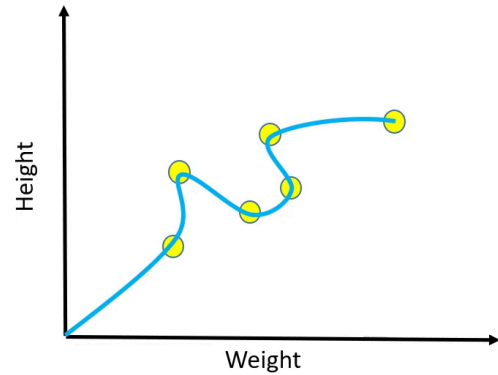
Bias- variance in overfitting and underfitting

(Testing with different data)



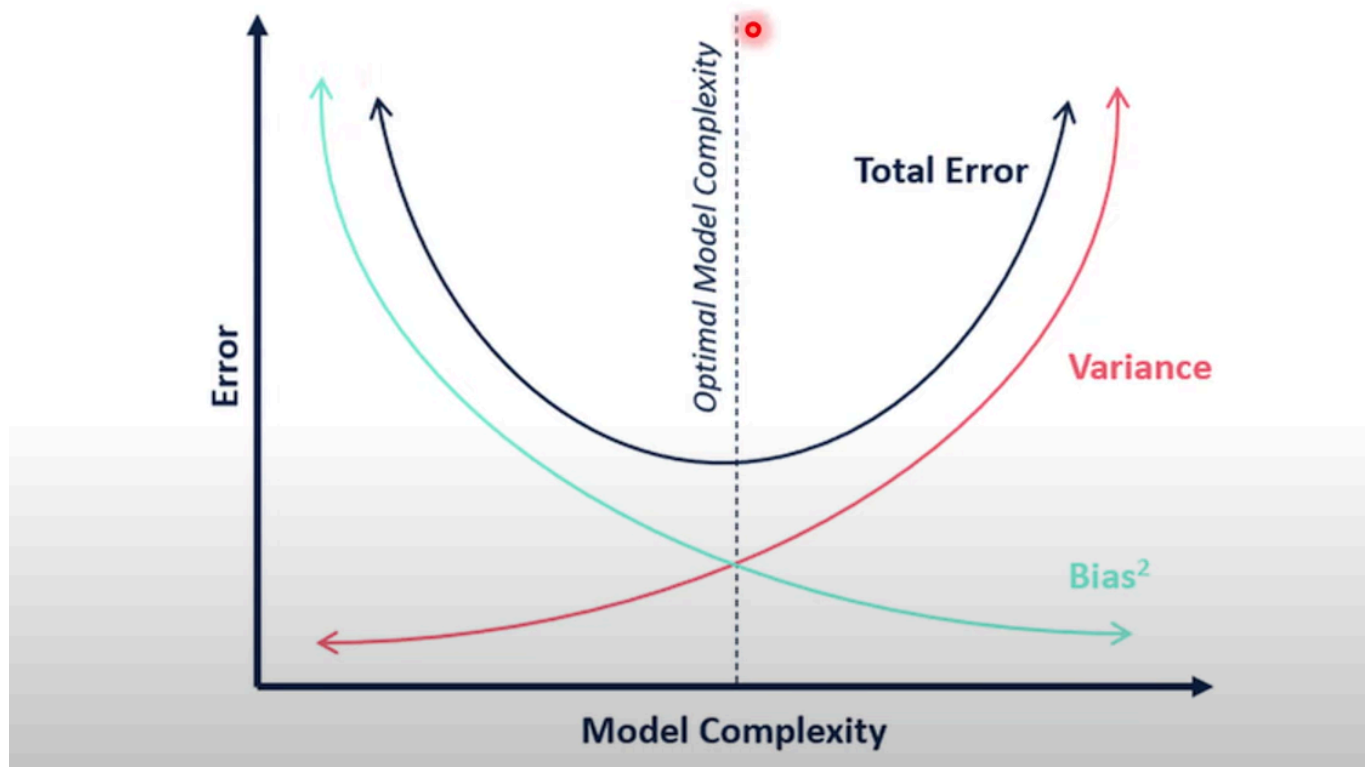
(i) Underfitting

Inference: a. High Bias
b. Low Variance



(ii) Overfitting

Inference: a. Low Bias
b. High Variance



Middle is the optimal model.

Left is underfitting with high bias and right is overfitting which has low bias but high variance.

Techniques to have better Bias – Variance Tradeoff :

- 1. Good Model Selection*
- 2. Regularization*
- 3. Dimensionality Reduction*
- 4. Ensemble methods*

Y

