

1 Discussion

The bias measures how far the **expected** prediction $E[\tilde{y}]$ is from the **true** function $f(x)$. High bias means that the models predictions are systematically different from the true function, potentially leading to underfitting, where the model fails to capture the underlying patterns.

The variance term measures how much the models predictions \tilde{y} fluctuate around their average $E[\tilde{y}]$ when training the model in a different dataset. High variance indicate that the model is sensitive to the data used during training, which results in overfitting, where the model learn noise rather than the true signal.

When we are talking about the trade-off between bias and variance we have to consider the following. When we are analysing the data and picking the model it's crucial to fins the right balance between bias and variance. We have to carefully consider whether the model is overfitting or underfitting. Striking this balance helps minimize the overall error. This is because our goal is to develop a model that generalizes well to unseen data.