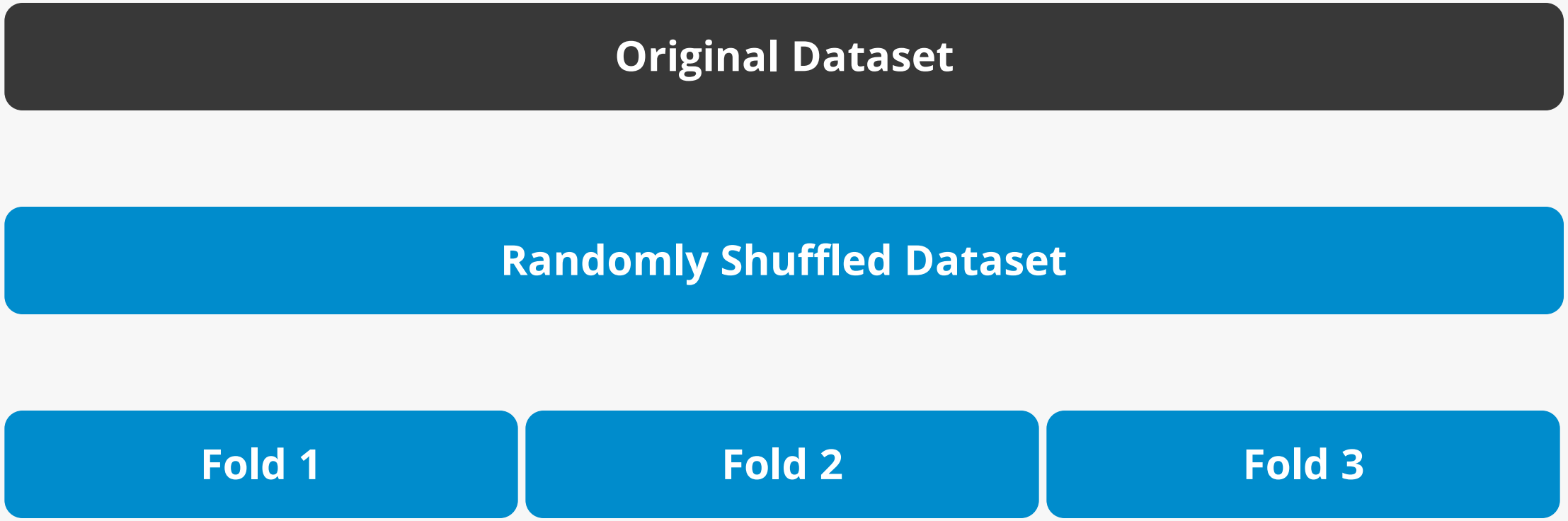
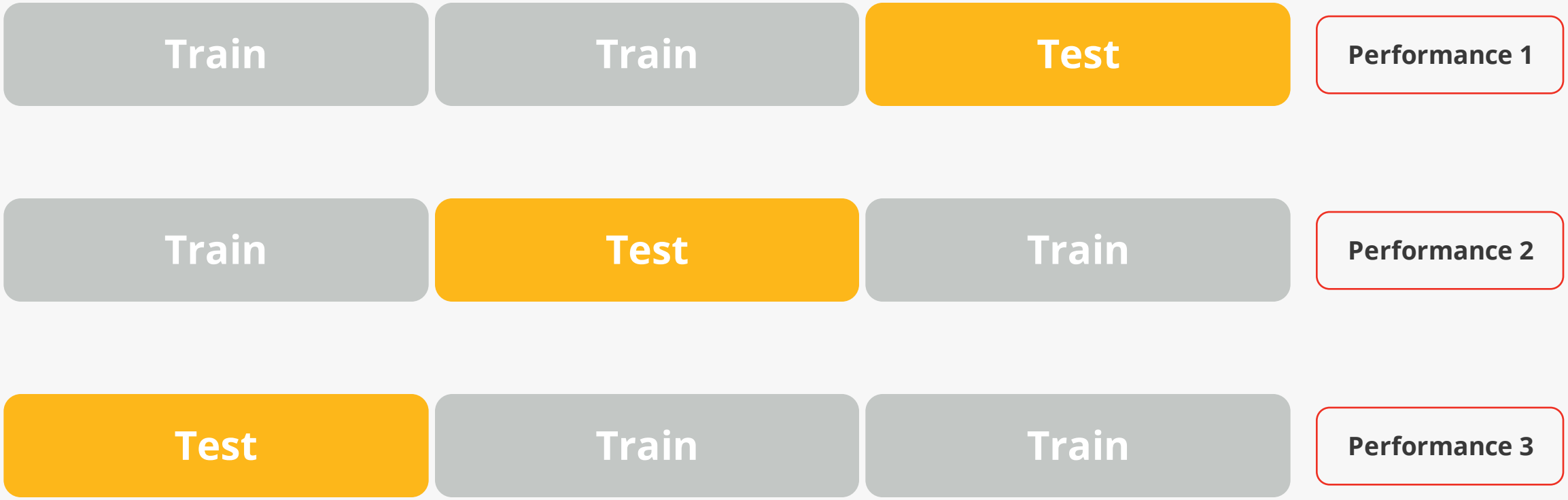
Cross-Validation

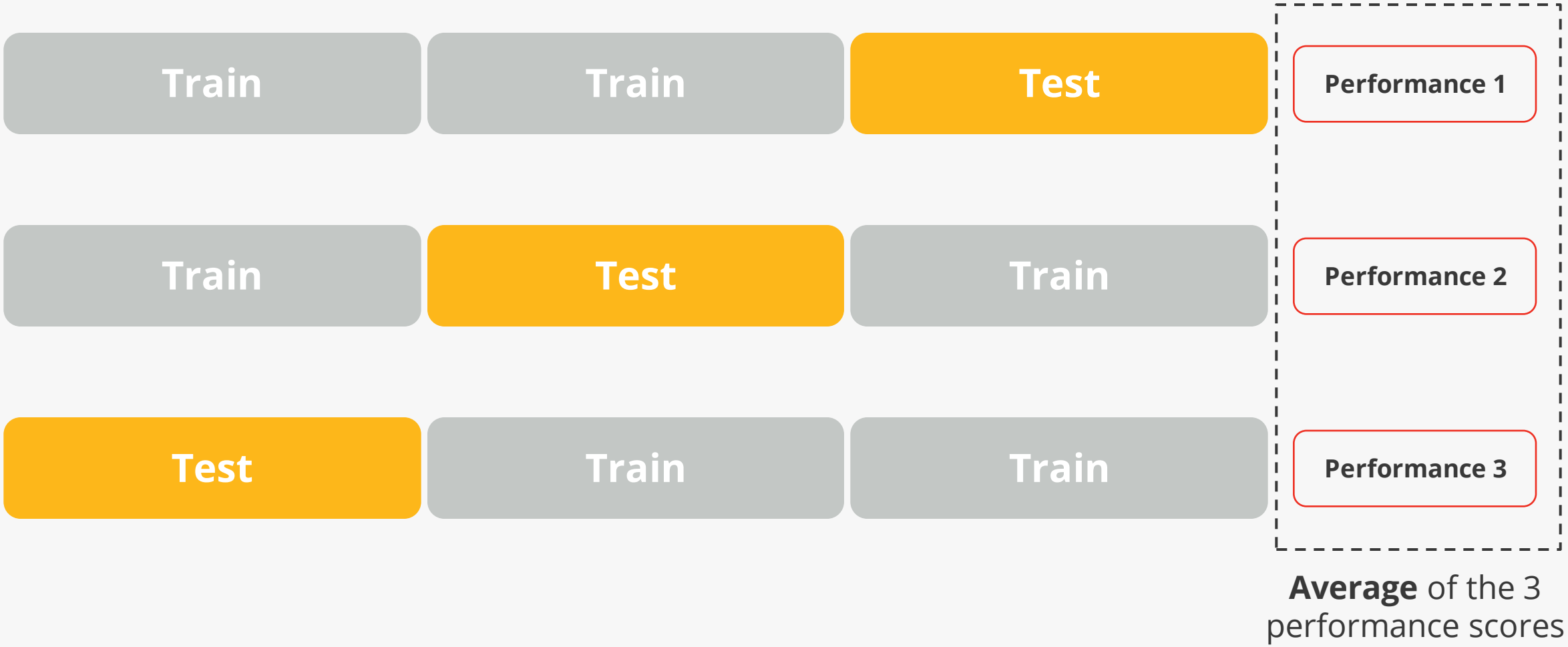
Cross-Validation



Cross-Validation



Cross-Validation



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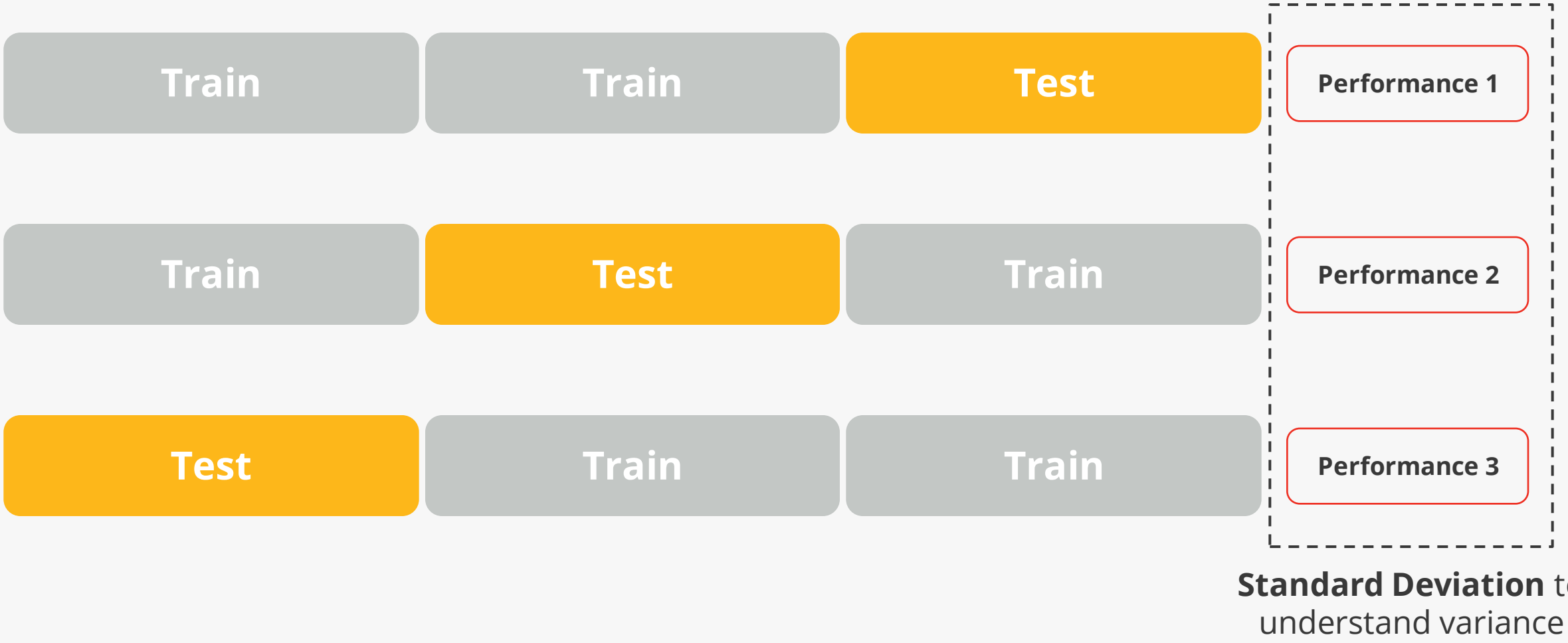
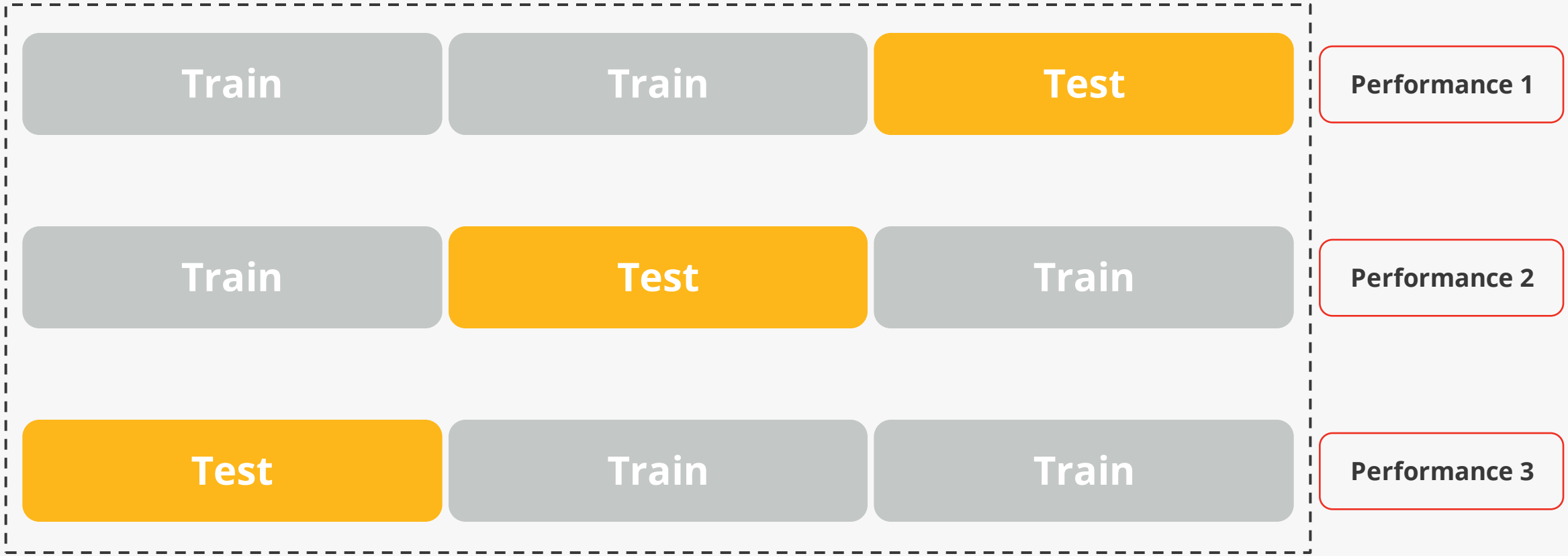


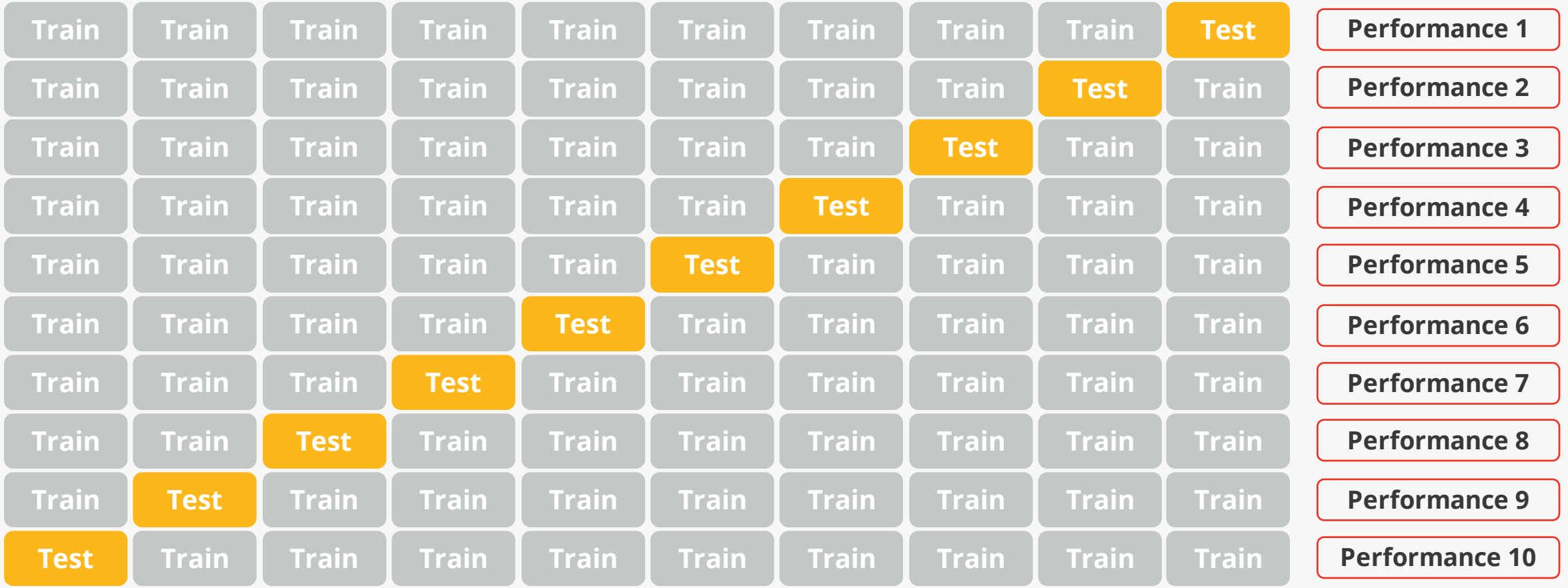
Standard Deviation to understand variance

Cross-Validation



Cross-Validation

Cross-Validation



Advantages of Cross-Validation

Advantages of Cross-Validation

- **Utilization of Data**

  Uses all the data for training and testing ensuring efficient use of the dataset

Advantages of Cross-Validation

- **Suitable for small datasets**

Suitable for smaller datasets where there is a high chance of sample bias.

Advantages of Cross-Validation

- **Better understanding of the model**

  Offers comprehensive basis for model selection and hyperparameter tuning.

Advantages of Cross-Validation

- **Better understanding of Bias and Variance**

  Reveals a model's generalization ability.

Bias

Bias is a measure of the performance of a ML model on the training dataset.

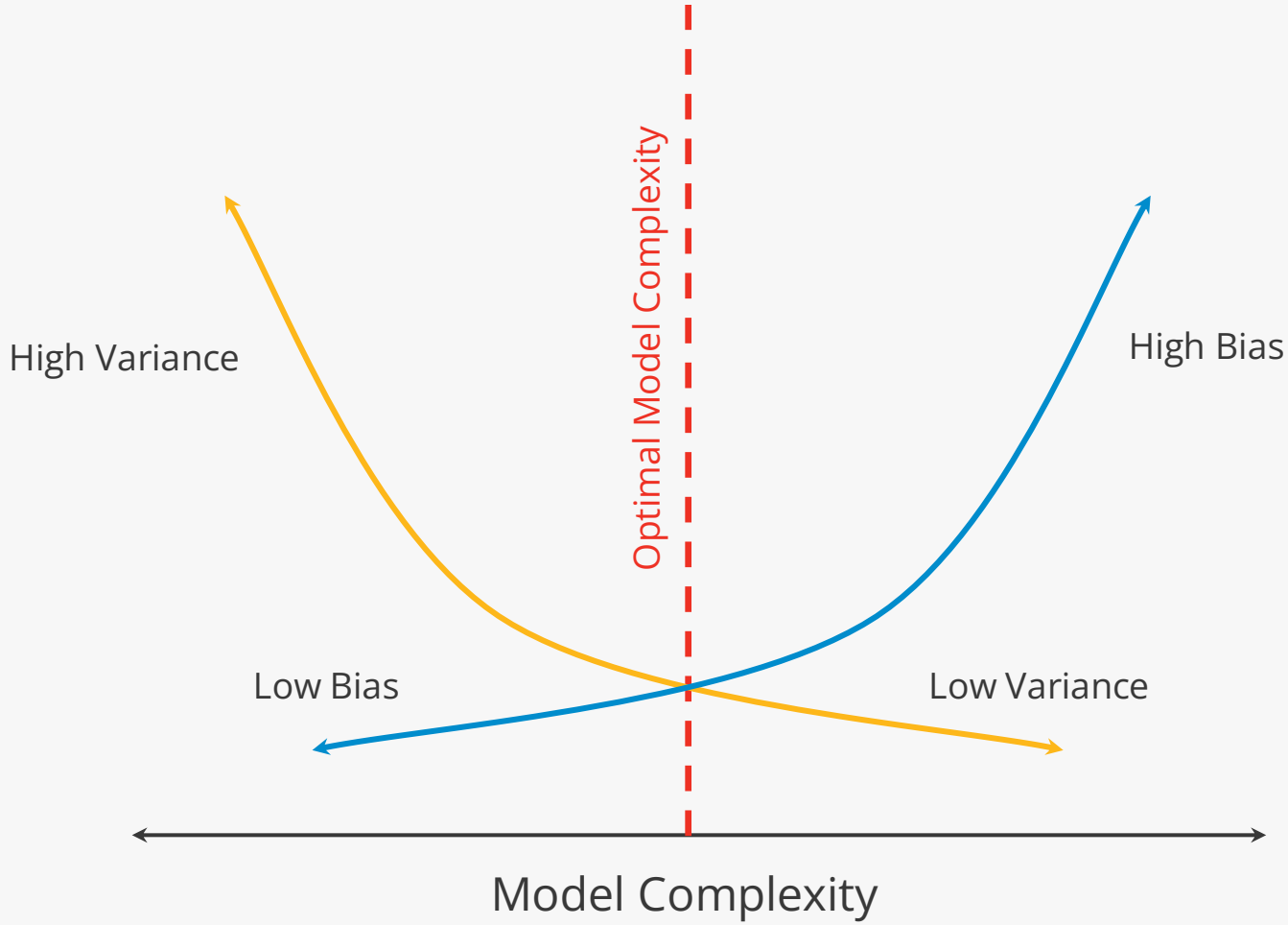
- A high-bias model performs poorly on the training dataset.
- A low-bias model performs very well on the training dataset.

Variance

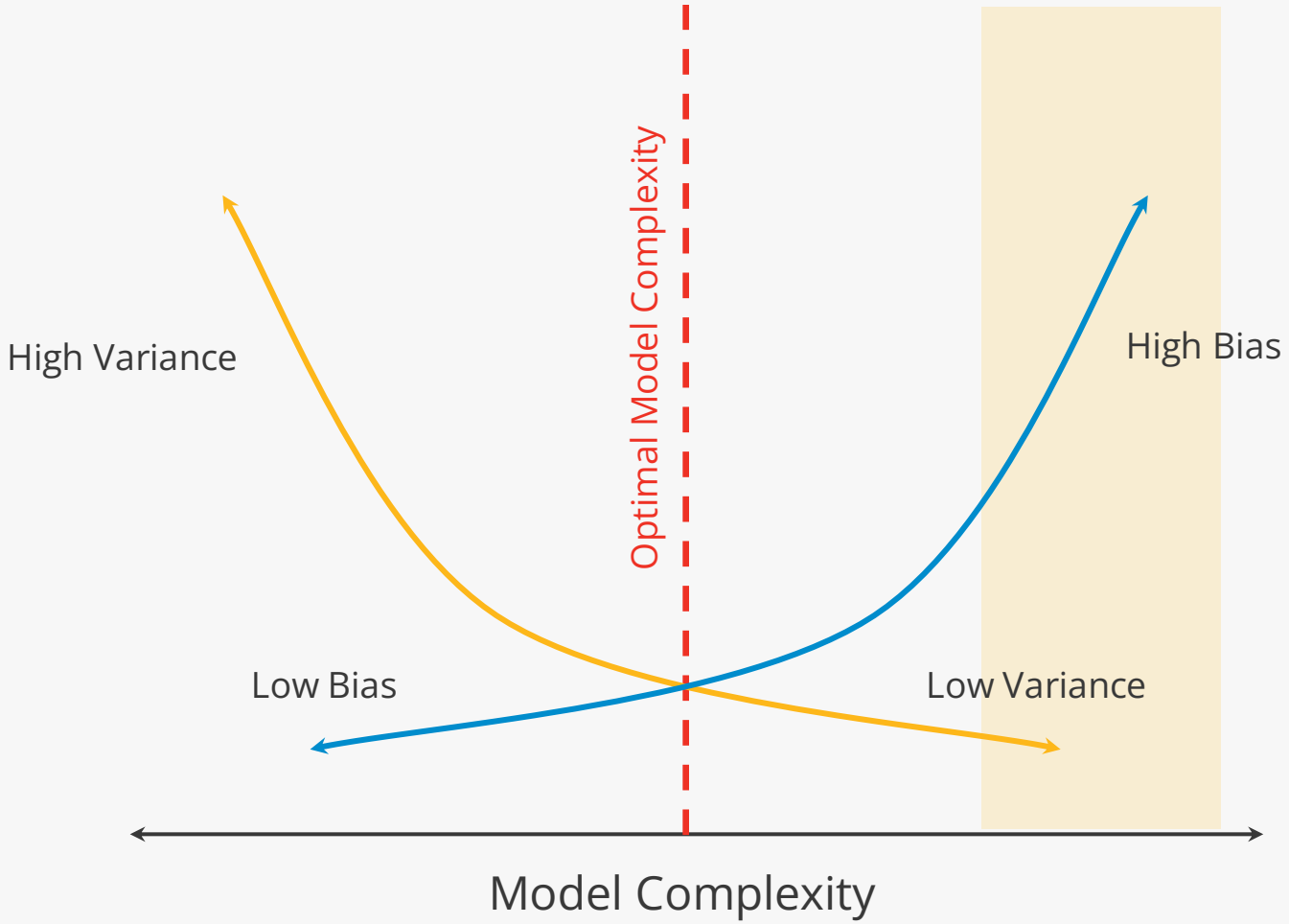
Variance refers to the **changes in the model** when we use **different portions** of the training data set.

Bias-Variance Tradeoff

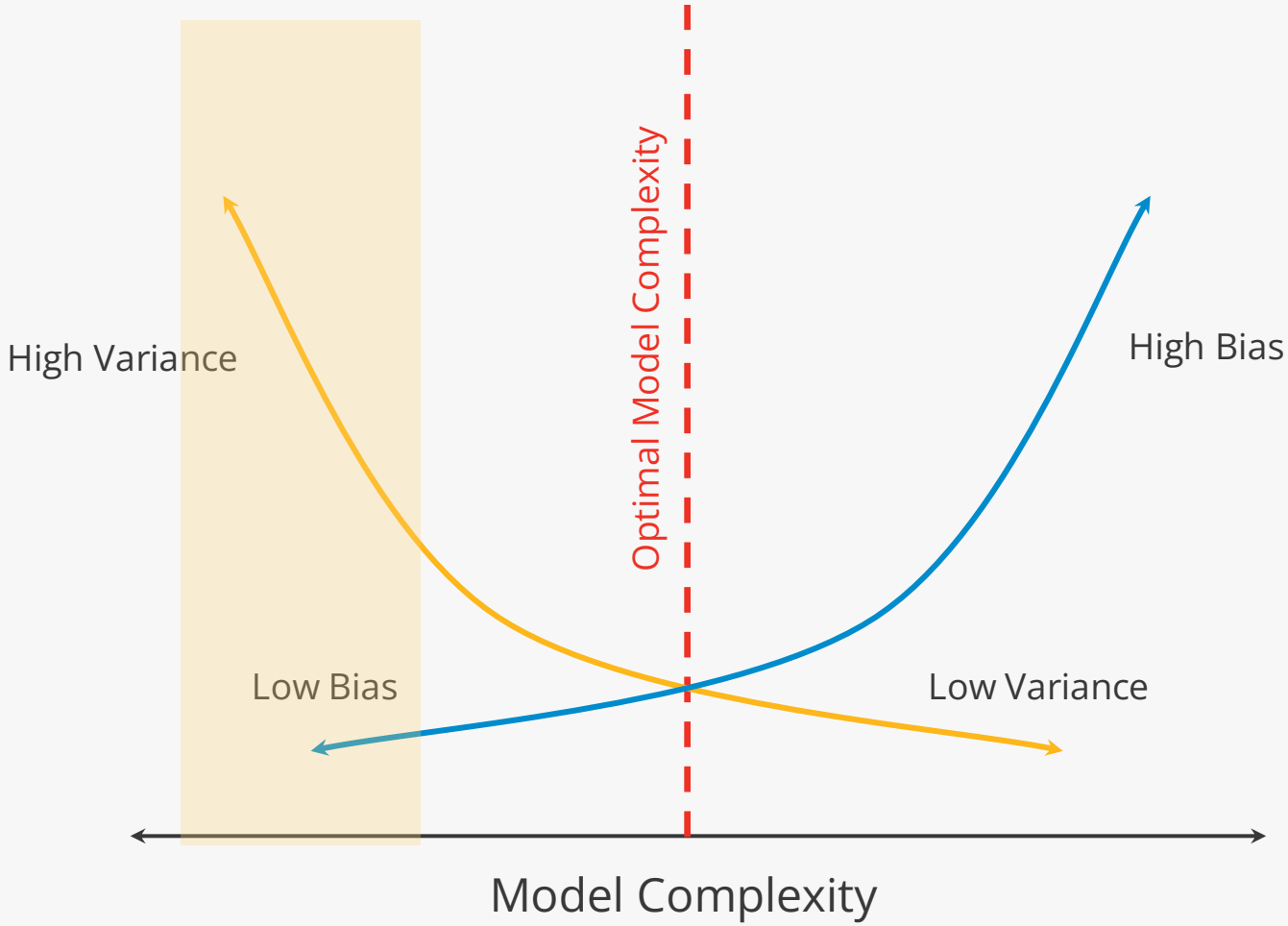
Bias-Variance Tradeoff



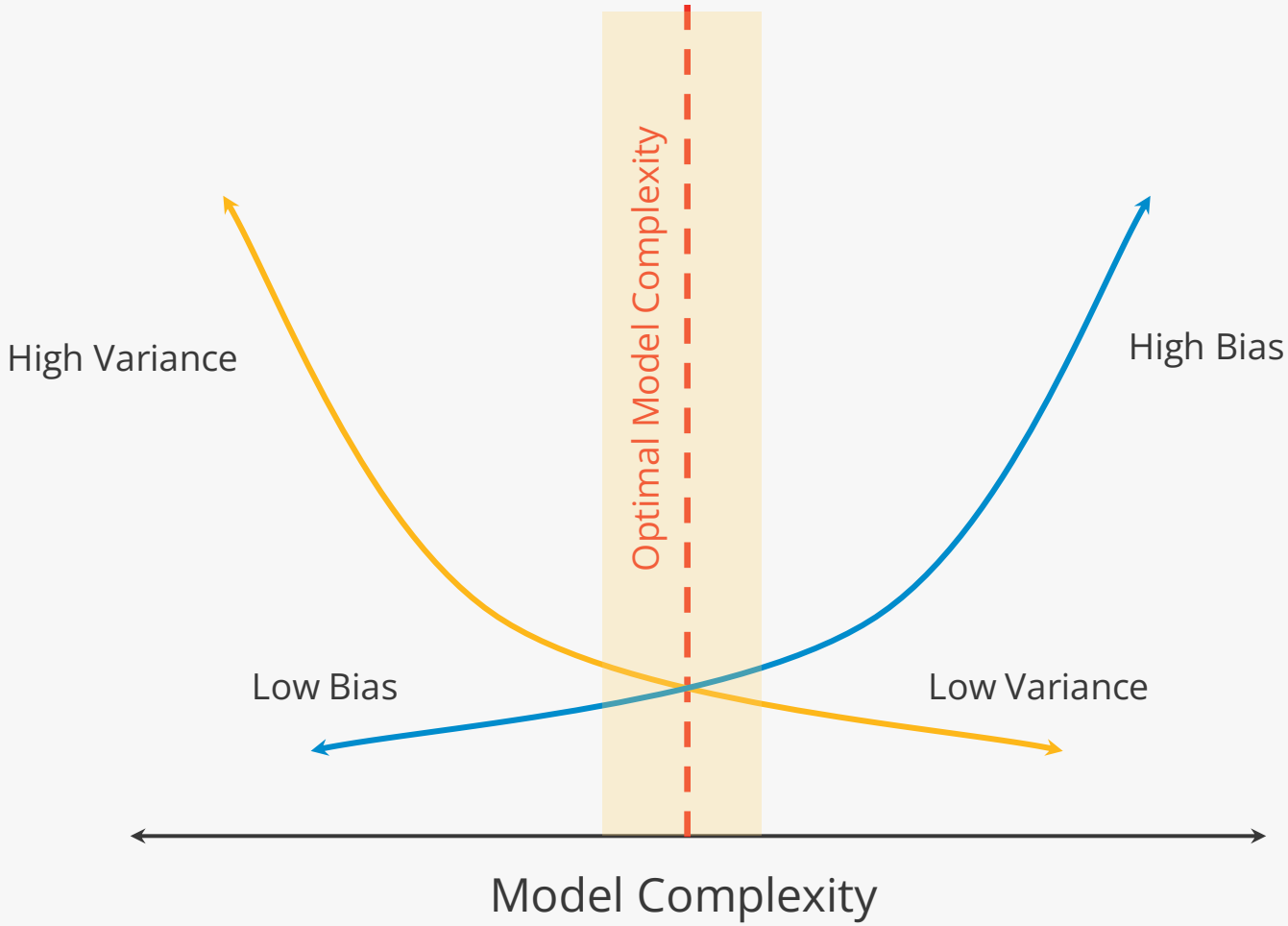
Bias-Variance Tradeoff



Bias-Variance Tradeoff



Bias-Variance Tradeoff



In air