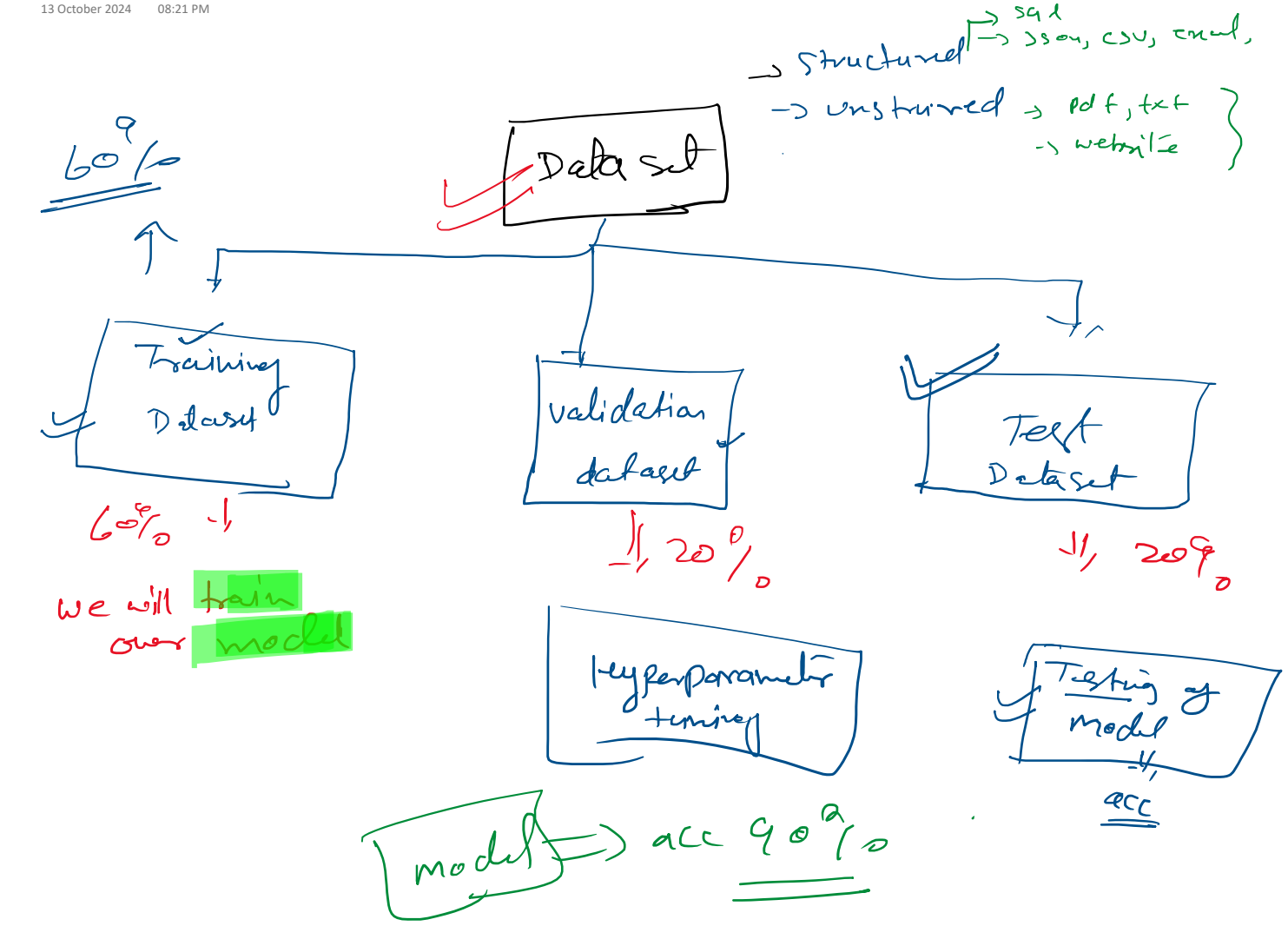
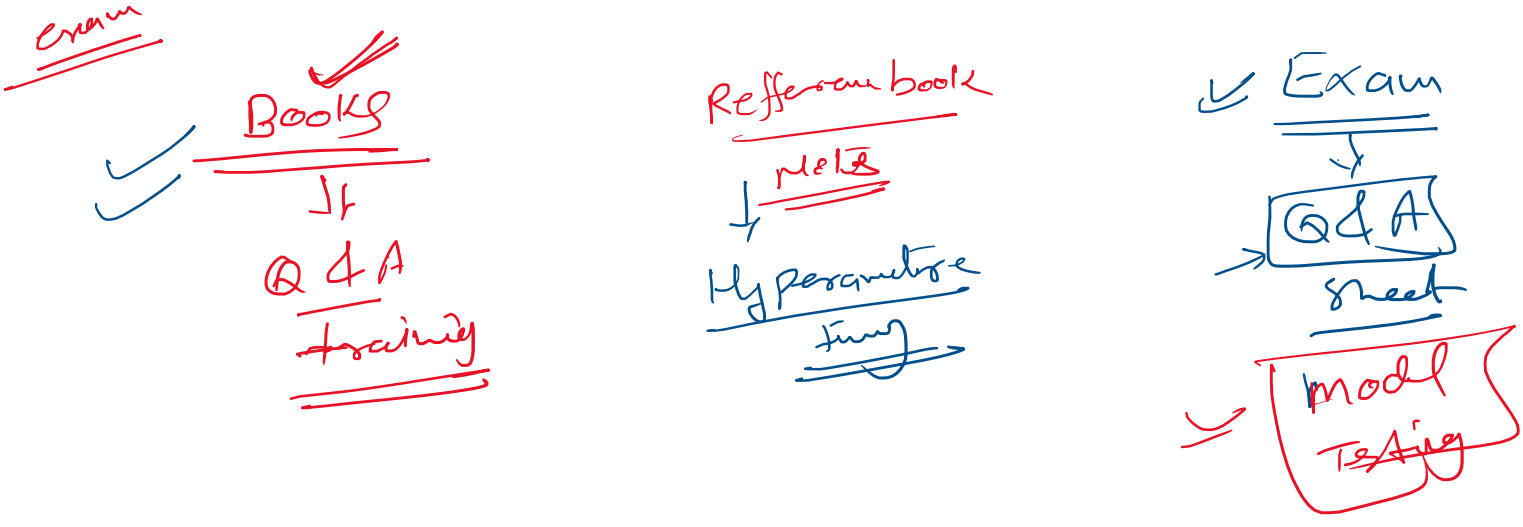
Session- 23 ML

13 October 2024 08:21 PM





Overfitting & Underfitting

1. Train -> dataset -> model is trained => Accuracy ↑

(1) Train -> dataset -> model is trained => Accuracy 95%

Test -> dataset -> model is tested -> Accuracy 60%

Overfitting

{ low Bias
High Variance }

(2) Train -> Accuracy -> 50%

Test -> " -> 49%

Underfitting

{ High Bias
High variance }

(3) optimized model

-> 92%

{ Train → Acc → ↑↑ 92%
Test → Acc → ↓↓ 90% }

=||=

{ low Bias
low variance }

Bias - Variance Trade-off

Error → The difference b/w actual value & Predicted value is the error & it is used to evaluate the model.

1. Bias Error
2. Variance Error
3. The Noice

* Noice is irreducible error but Bias & variance is reducible errors.

High bias → Underfitting model

High variance → overfitting model

Bias → Bias is difference b/w the predicted value & the expected value.

Bias ↑ ∝ underfitting

* model with high bias pays very little attention to the training data.
* It always leads to high error on training & test data

Variance

If there are more fluctuation in the data i.e. the noise as well. Os It has a high variance

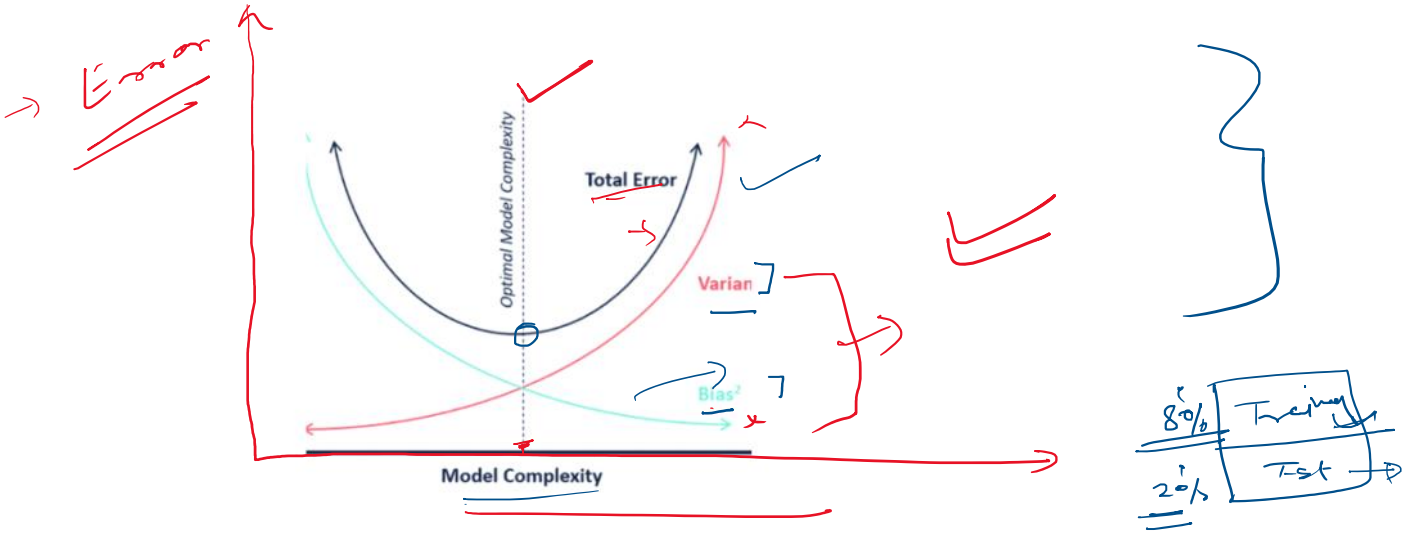
The model still considers the variance as something

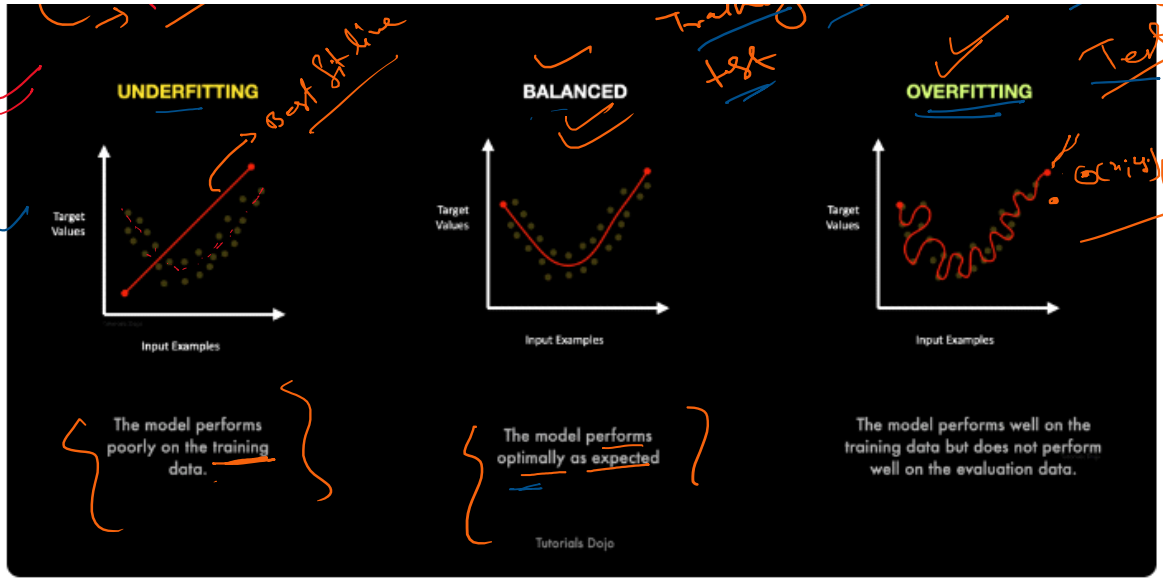
to learn from.

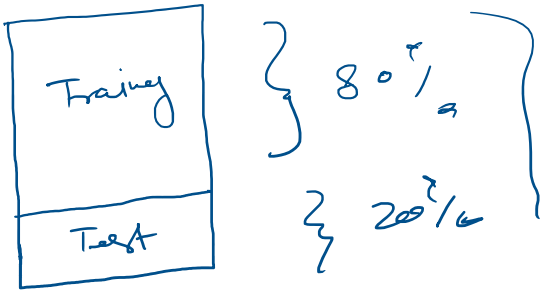
- model with high variance pays a lot of attention to training data & does not generalize on the data which it has not seen before.

As result, such model perform very well on training data but has high error rate on test data.

variance ↑ ∝ overfitting




UNDERFITTING
Target Values
Input Examples
The model performs poorly on the training data.
BALANCED
Target Values
Input Examples
The model performs optimally as expected
Tutorials Dojo
OVERFITTING
Target Values
Input Examples
The model performs well on the training data but does not perform well on the evaluation data.


Training
Test
80%
20%