

# Cross-Validation

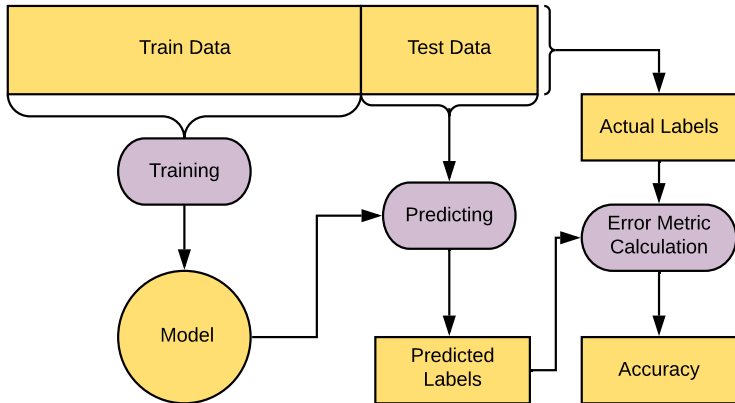
---

Nipun Batra and teaching staff

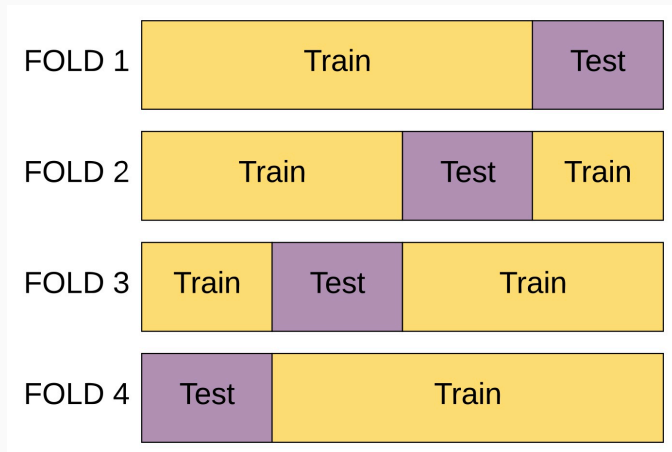
January 10, 2024

IIT Gandhinagar

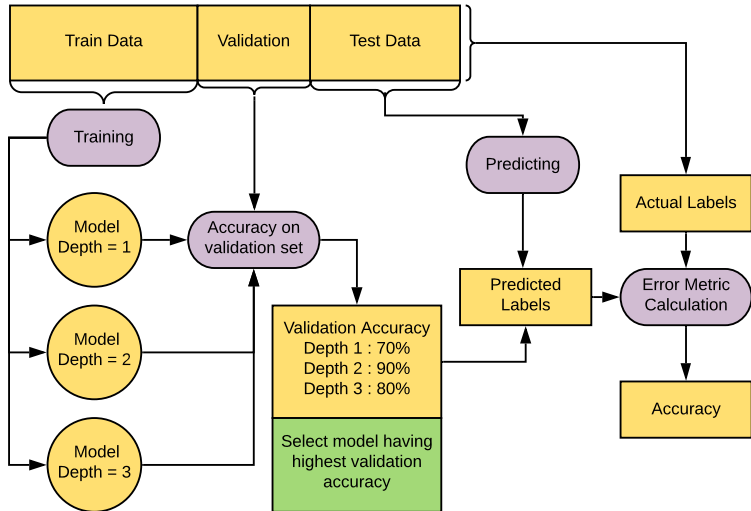
# Our General Training Flow



## K-Fold cross-validation: Utilise full dataset for testing



# The Validation Set

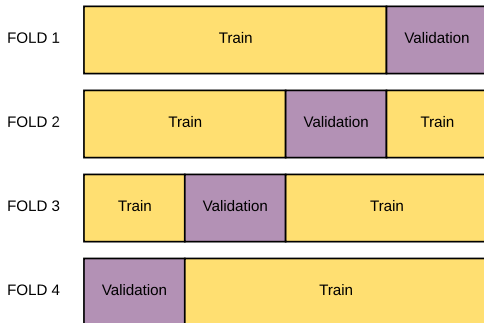


# Nested Cross Validation

Divide your training set into  $K$  equal parts.

Cyclically use 1 part as “validation set” and the rest for training.

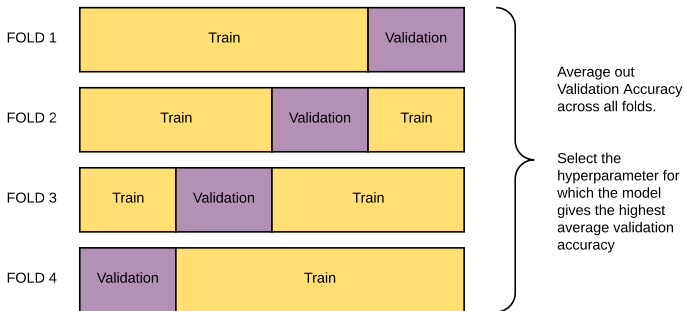
Here  $K = 4$



# Nested Cross Validation

Average out the validation accuracy across all the folds

Use the model with highest validation accuracy



## Next time: Ensemble Learning

- How to combine various models?
- Why to combine multiple models?
- How can we reduce bias?
- How can we reduce variance?