ENSEMBLE TECHNIQUE :-

→ Combining multiple model.

Weak learner / base learner = (single model)

→ high bias / high variance.

Bias - variance Trade off

(Low Bias, Low Variance)

→ combine multiple (base) learners to create a strong model.

→ Ensemble technique is used to reduce variance
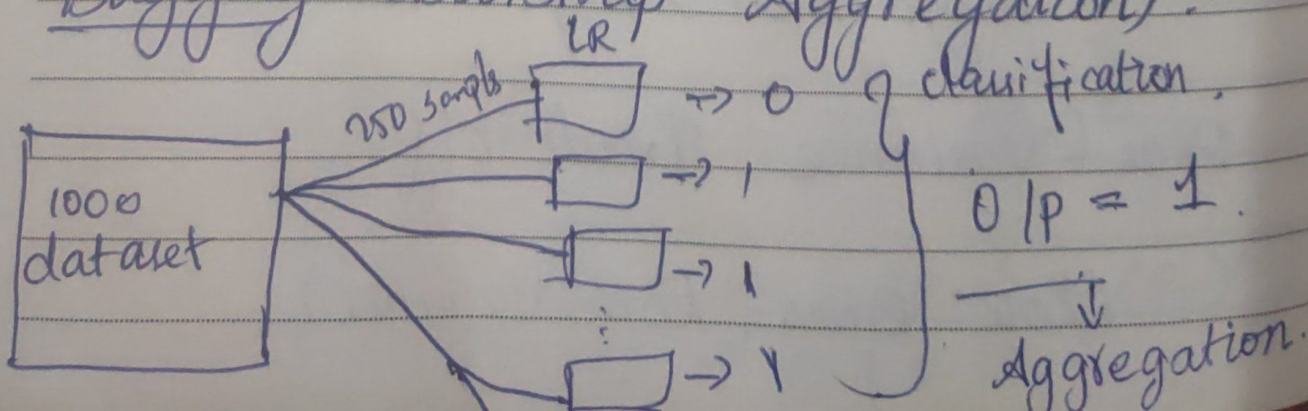
Two Major Techniques:-

Bagging (parallel)

Boosting (sequential)

Other techniques:-
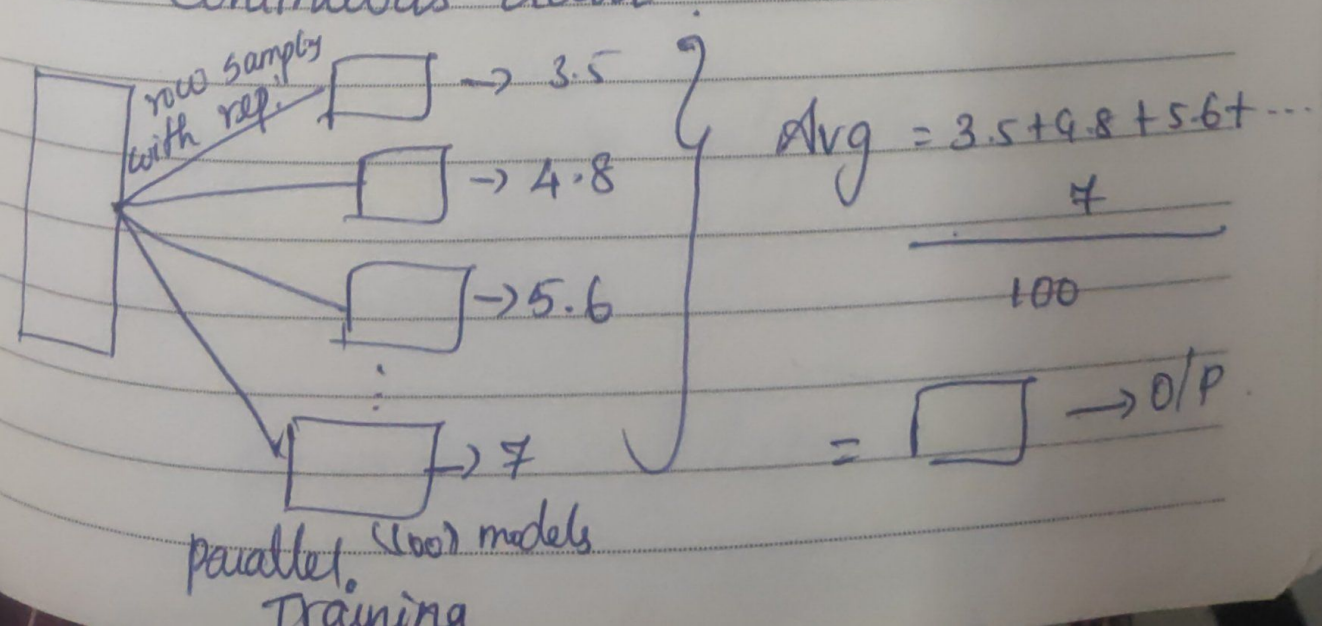
Stacking & Pasting but not good in terms of performance.

Bagging (Bootstrap Aggregation):-

1000 dataset → 250 samples → LR → 0 ⎫
→ 1   ⎬ classification
→ 1   ⎭
→ 1

O/p = 1

Aggregation.

→ maximum will be output for clasification

→ Its always done row sampling

with replacement (Bootstrap)

→ Combining the o/p all the model

is known as Aggregation.

→ All the weak learners (single model)

are trained parallely

→ homogeneous weak learner.

Regrexion (Bagging)

→ Continuous data

row sampling with rep.

→ 3.5
→ 4.8
→ 5.6
→ 7

$Avg = \dfrac{3.5 + 4.8 + 5.6 + \cdots}{7} \times \dfrac{}{100}$

= ☐ → O/P

parallel (bool) models
Training

Random Forest

→ Ensemble Technique

→ It is one of the bagging technique

→ It does Feature sampling + Row sampling

→ classification — Takes Majority

→ Regression — Takes Average only

→ It takes Decision Tree as base learner always.