Date .....

BOOSTING ALGORITHM :-

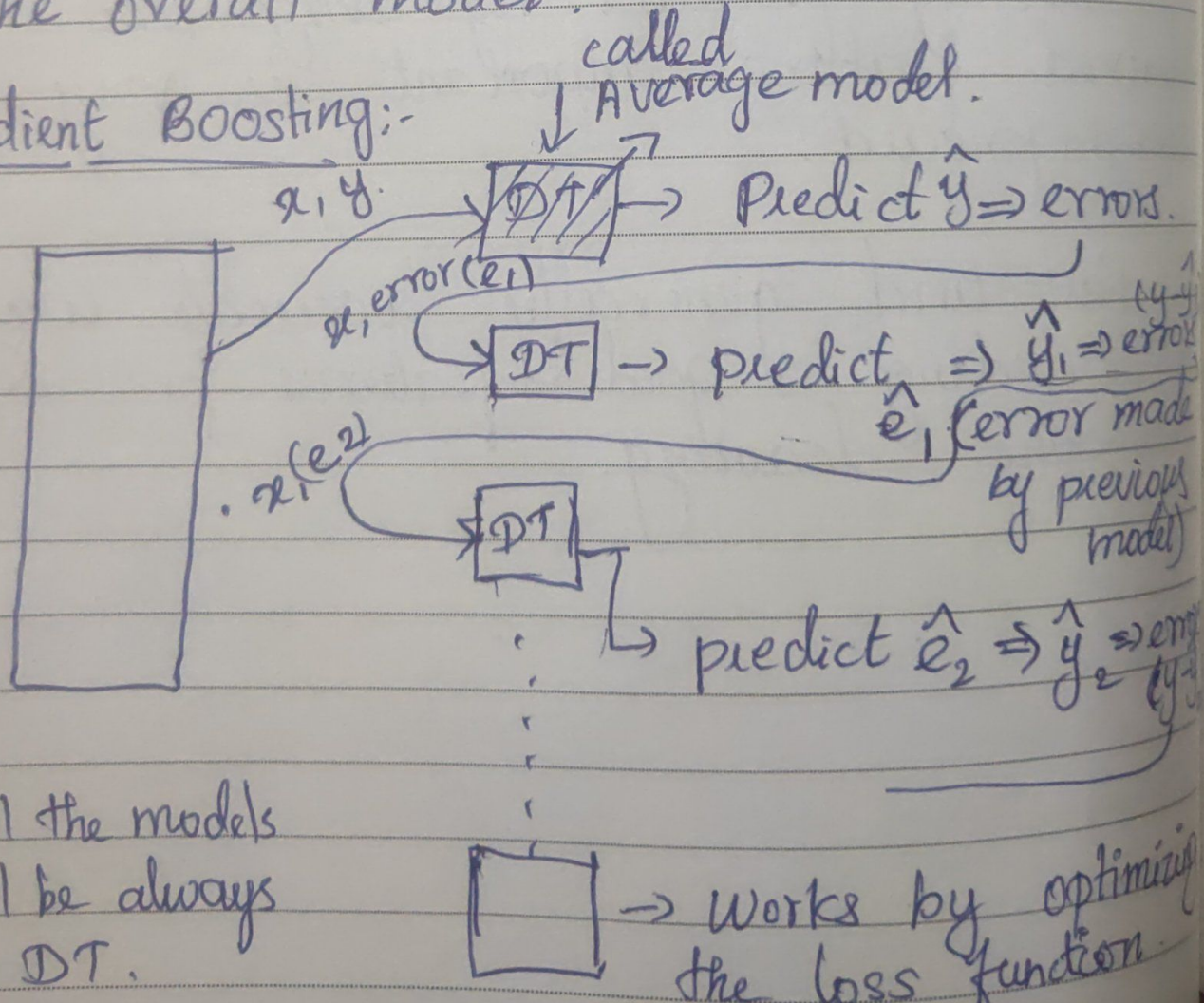
→ Ensemble Technique (Bagging, Random Forest)

→ Sequential Process.

→ Works on the principle of improving mistakes of the previous learner through the next learner.

→ It boosts the performance of the overall model.

Gradient Boosting :-



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Types of Boosting :-

→ Gradient Boosting

→ Extreme Gradient Boosting (XGB)

→ AdaBoost.

→

→ Light GB.

Steps in GB :-

① We will create a model base, Average model or most frequency category

② Calculate the Residuals from average prediction and actual values.

③ Now create another model RM1 (Residue model) which will take residuals as target.
[Residuals - errors.]

④ We have New predicted residual value, now we will Calculate new predicted target value.

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(5) Now we have residuals again (actual - predicted) and new model RM2 will fit again on the residues as target and will predict new residues. until no. of estimators reached or residuals becomes 0.

Final o/p = o/p of Base model + η RM1 + η RM2 +

η RM3 + ... + η RMn .

η → learning rate (range 0 to 1)
(always take small value)

↳ regularizing the parameter because it reduce the overfitting.

XGB :-

→ Same Mathematical Concept as Gradient Boosting.

→ But it has extra computation resources.

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→ Advancement of GB.

→ Speed & Performance are good

→ Controls overfitting (Auto pruning)

→ Parallelization (multi core parallel processing).