Lecture #18

Different Classification Techniques

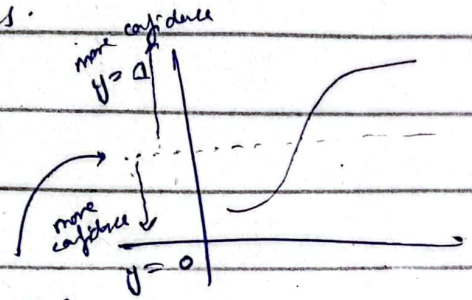
(category/nominal)

Liner regress
$-\infty \rightarrow +\infty$

① Logistic Regression (Binary classification)

Technique used to predict the probability of something happen or not.

it's like drawing line to separate thing into two groups.



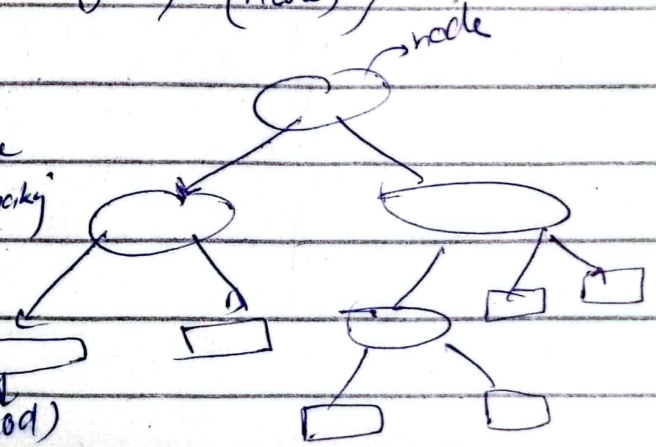
Threshold

activation function

(Sigmoid)

② Decision Tree Classifier

make decision by splitting data into smaller subset based on value of input.



which attribute have most effect in making data pure.

final decision (leaf node)

→ decision on each node

→ Root node (first node)

→ ultimate task is → class

To calculate purity
some of the act → ① GINI

→ ② Entropy ③ Information Gain

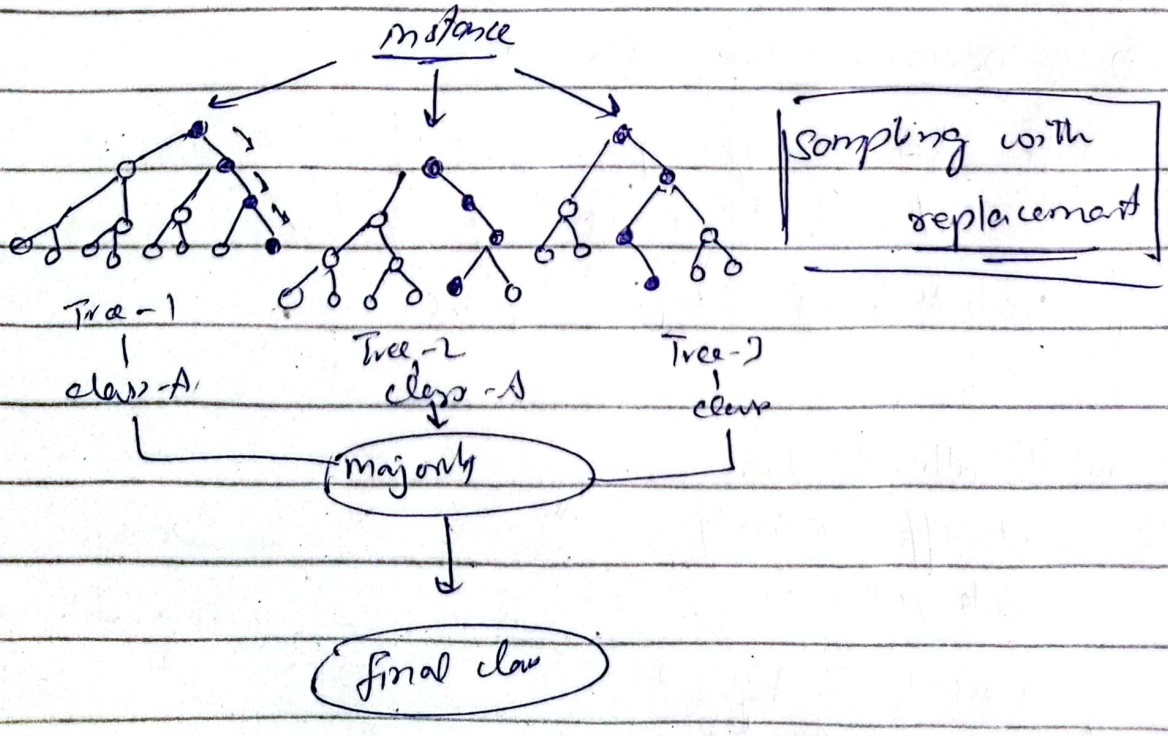
★

Ensemble ⇒ ml technique that combine the predictions of multiple individual models to improve overall performance

③ Random Forest Classifier

ensemble learning method that create multiple decision trees.

& output the majority from all individual tree.



- develop multiple decision trees
- to perform the result - majority of vote

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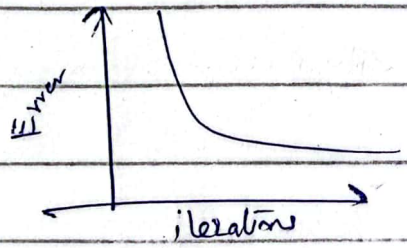
④ Gradient Boosting Classifier

یعنی ایک درخت کی غلطیوں کو دوسرا درخت سیکھتا ہے

- sequential

→ class of boosting algo's ⇒ build strong predictive model by combining multiple weaker learners sequentially.



compute intensive ?

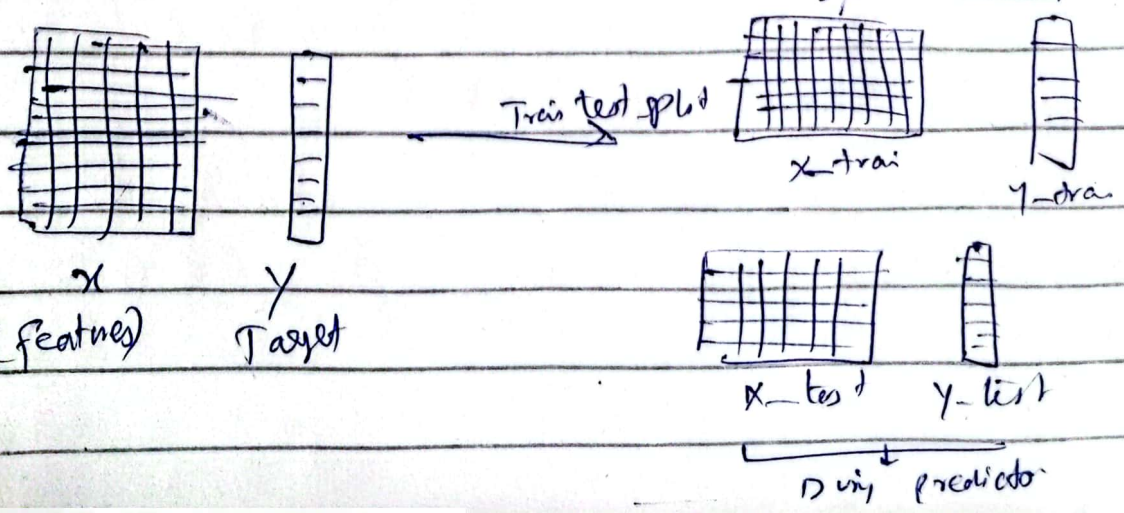
Practical

(1) → splitting of dataset

(a) Data set ⟶ features (X) + Target (y)

(2) perform scaling (i.e. standard scaling)

(3)



④ Then apply algorithms.

↳ (i) import the model from sklearn

(ii) create instance

(iii) Pass training data into model

⑤ Perform Model evaluate

↳ (i) import from sklearn.metrics

(ii) predict (example accuracy_score)

(iii) compare actual & predicted

and same apply for other algo's.