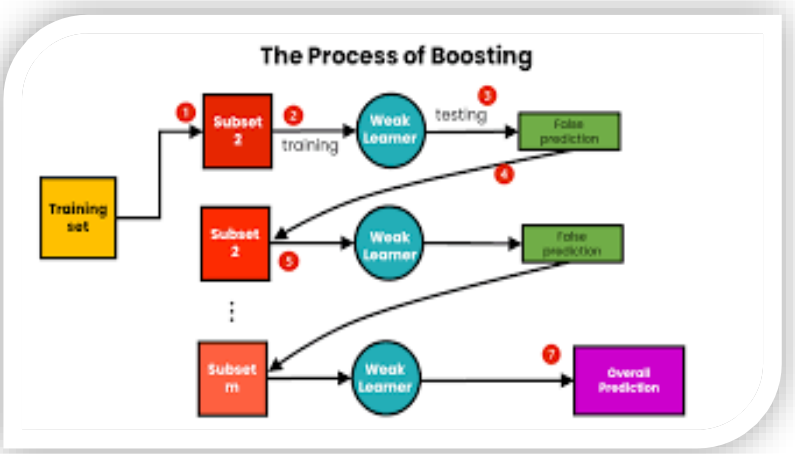
ASSINGMENT

BOOSTING ALGORITHM

What exactly is boosting?



Boosting is a **supervised machine learning strategy** that combines the predictions of multiple weak models (base models) to generate a powerful ensemble model.

Advantages of Boosting

In machine learning, boosting provides various benefits, including:

1.Improved Performance

2. Ability to Handle Complex Data

3.Robustness to Noise

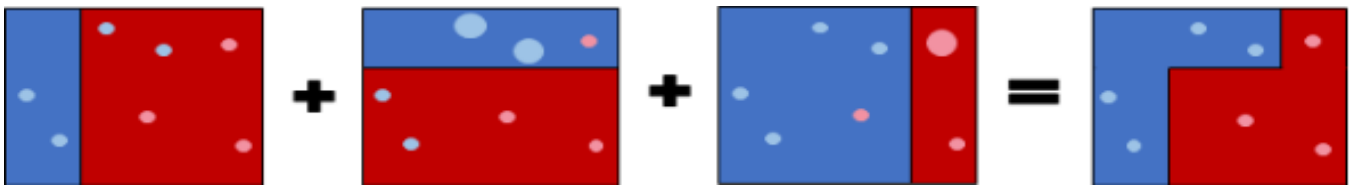
4.Flexibility

5.Interpretability

ADA BOOSTING :

ADA BOOST

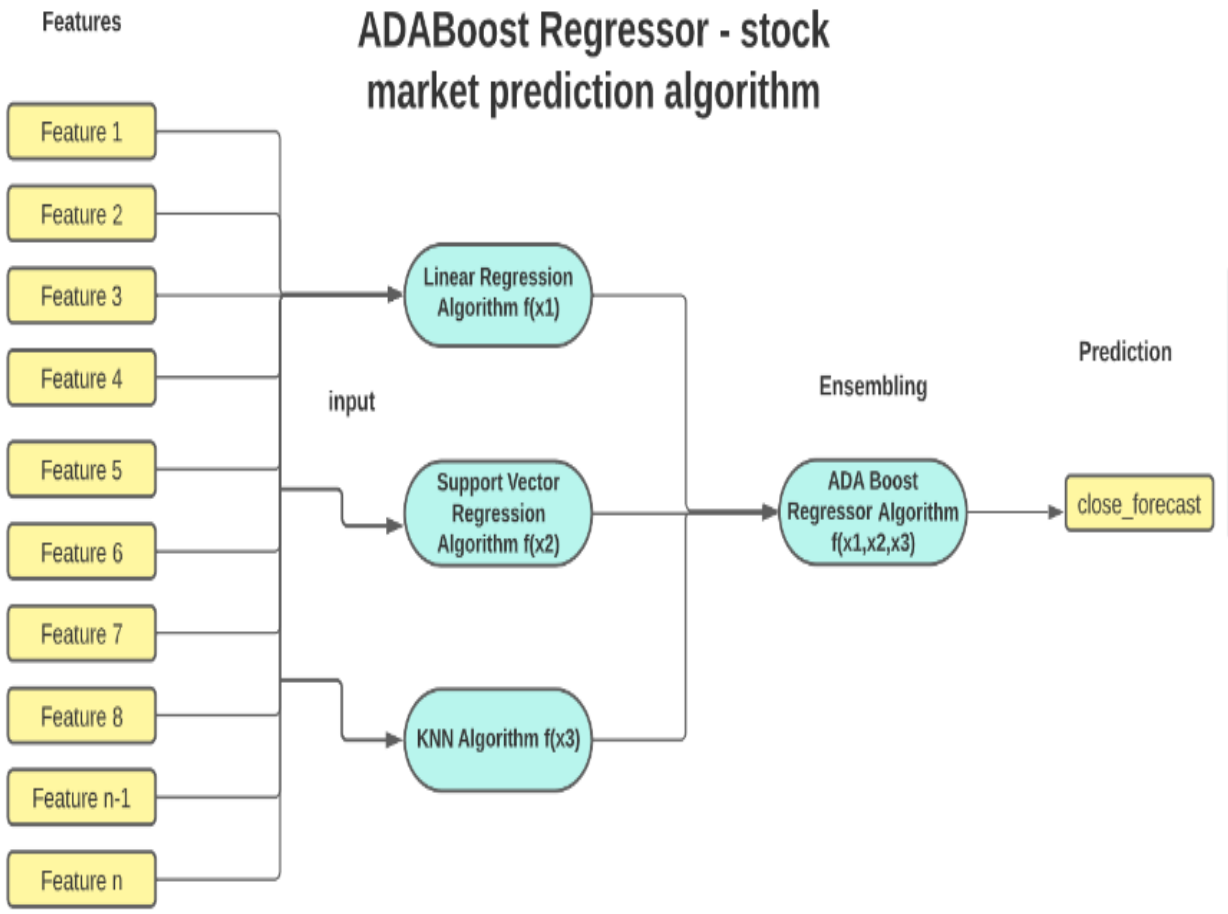
- Combining weak learners (decision trees)
- Assigning weights to incorrect values
- Sequential tree growing considering past mistakes



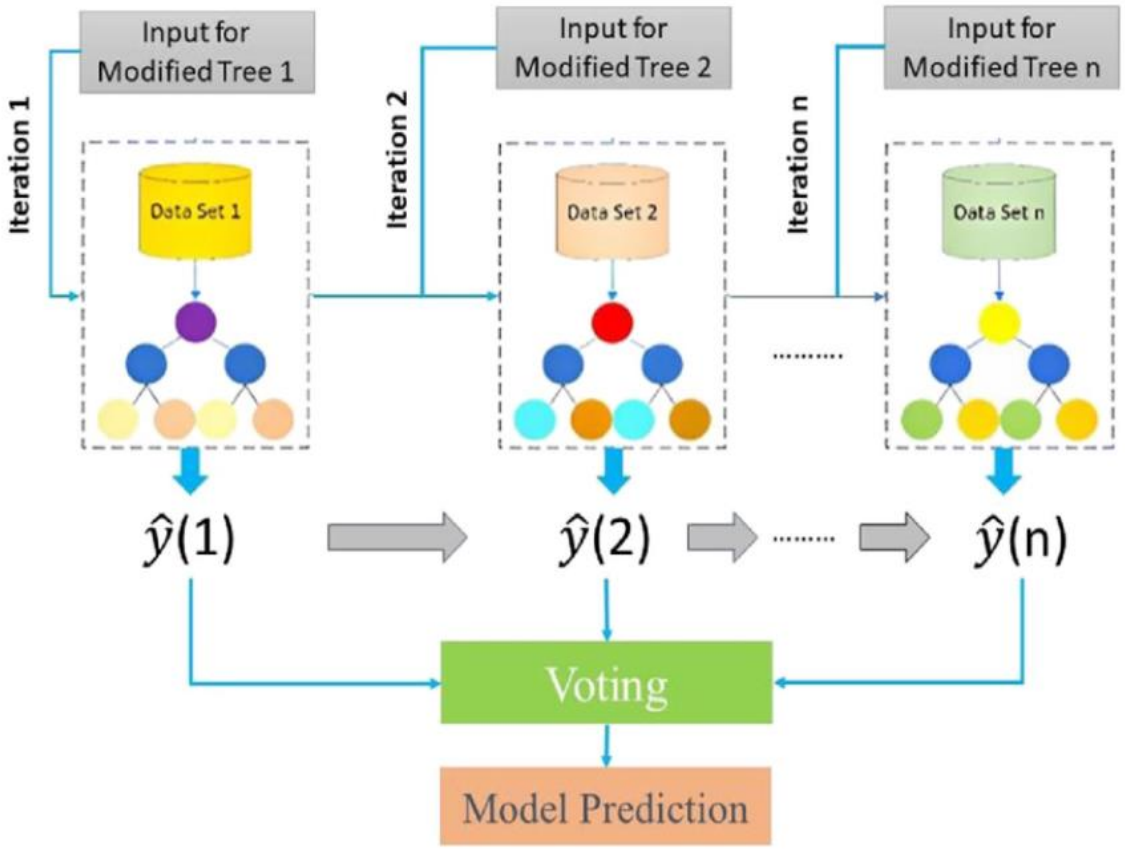
Result of tree 1 | Result of tree 2 | Result of tree 3 | Combined result

AdaBoost, short for Adaptive Boosting, is an ensemble machine learning algorithm that can be used in a wide variety of classification and regression tasks.

Example prediction diagram



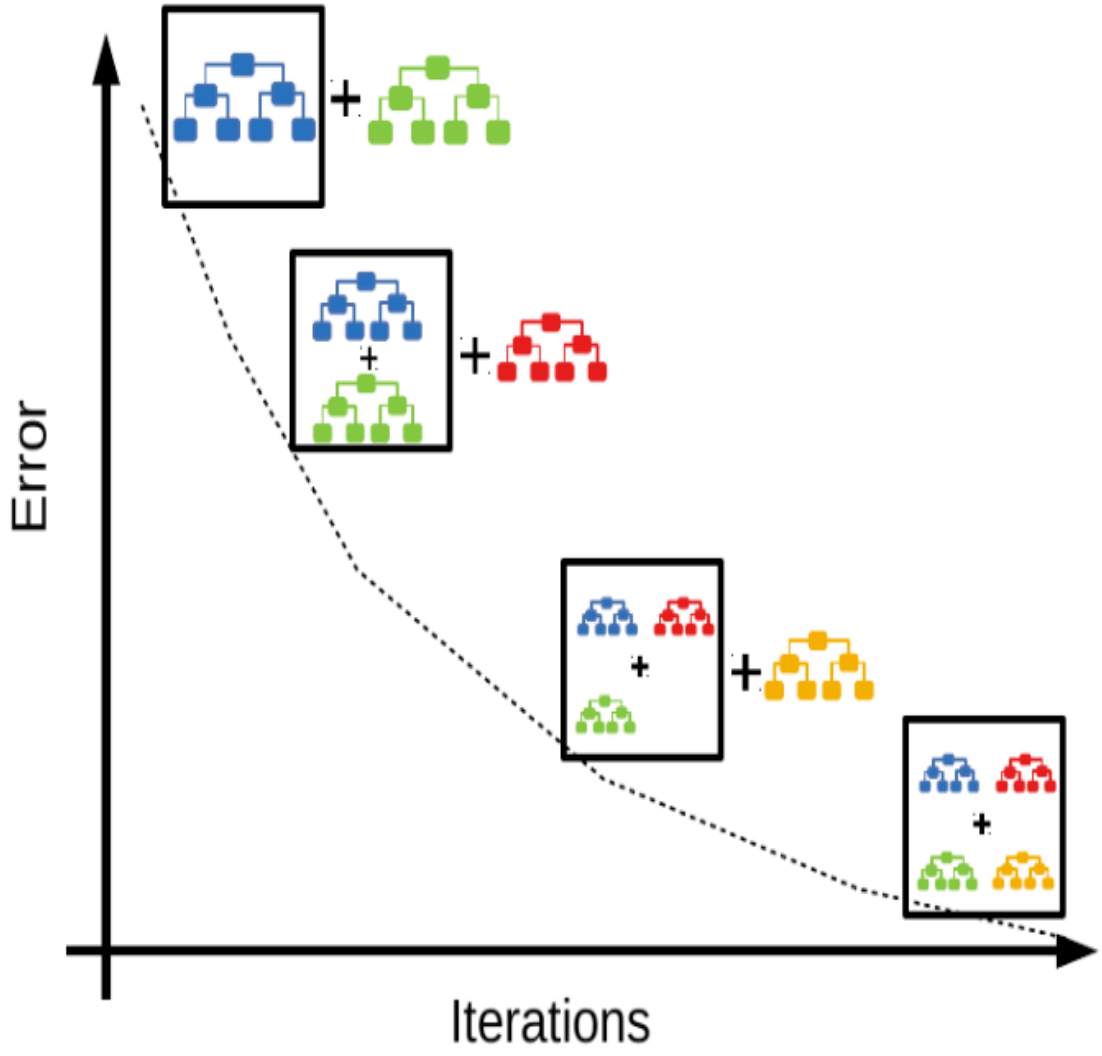
XG BOOSTING



XGBoost, which stands for Extreme Gradient Boosting, is a scalable, distributed gradient-boosted decision tree (GBDT) machine learning library.

So, let's start the XGBoost Algorithm Tutorial.

LG BOOSTING



This is a popular boosting algorithm in machine learning used for classification and regression tasks. Boosting is one kind of ensemble Learning method which trains the model sequentially and

each new model tries to correct the previous model. It combines several weak learners into strong learners.

- R2 value for the same data set in boosting algorithm

Boosting type	parameter	r2 value
ADA BOOST	random_state=0,n_estimators=100	0.860197717
LG BOOST	max_depth=-1, num_leaves=31	0.865360775
XG BOOST	n_estimators=100,max_depth=15	0.796548350

There for LG Boosting contain the highest r2 value.