BOOSTING

BOOSTING:

- Boosting is an ensemble learning method that combines a set of weak learners into a strong learner to minimize training errors.
- In boosting, a random sample of data is selected, fitted with a model and then trained sequentially.
- That is, each model tries to compensate for the weaknesses of its predecessor. With each iteration, the weak rules from each individual classifier are combined to form one, strong prediction rule.

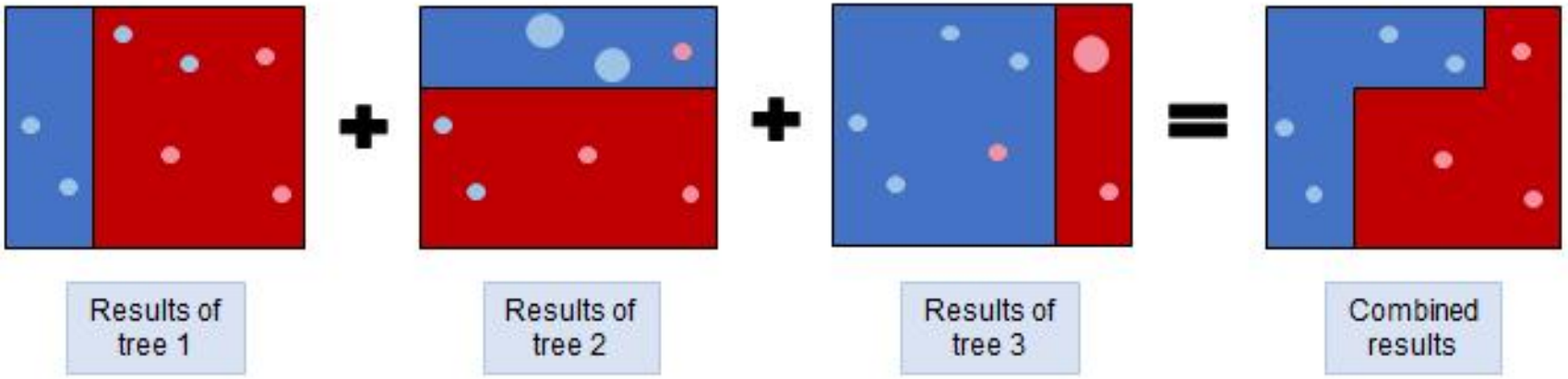
ADA BOOST

AdaBoost - Adaptive Boosting:

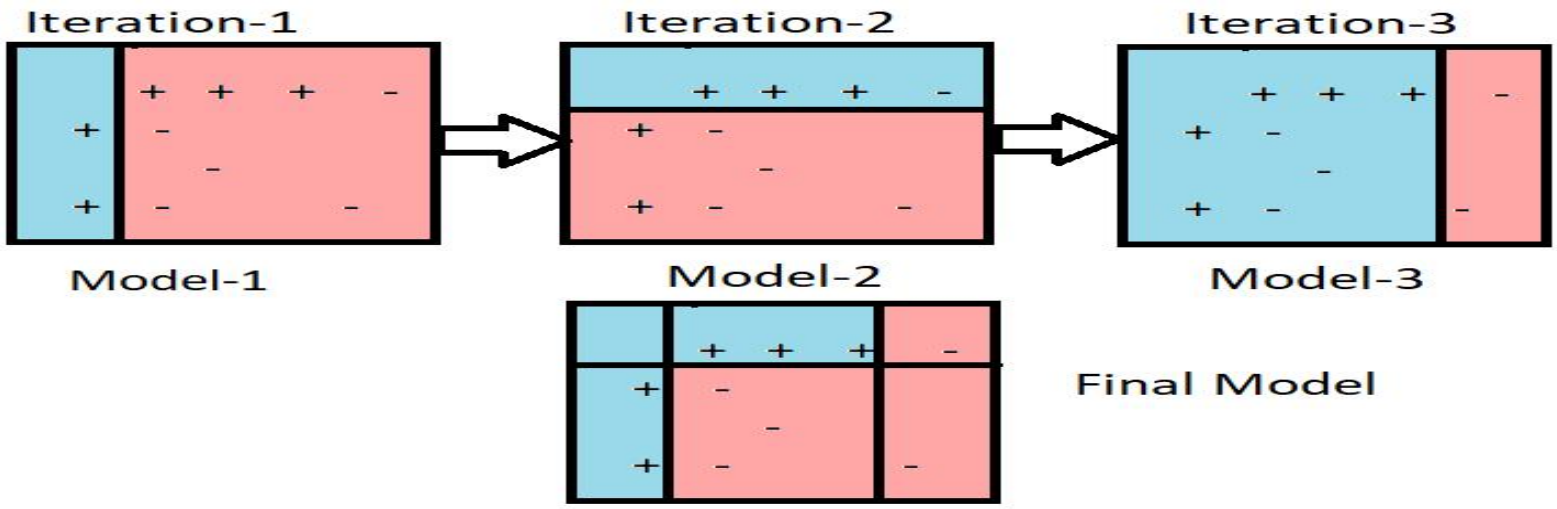
Adaboost has immunity from overfitting of data as it runs each model in a sequence and has a weight associated with them.it reduce the bais and varriance.

AdaBoost:

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



Example for Adaboost



- In actual Data combination of positive and negative values we are dividing them equally.
- In model-1,assigning weight at dataset. we getting some iteration result.
- From that iteration model-1 again we assign some weight at that iteration-1 we getting iteration-2 in it.
- From that iteration -2 model again we assign some more weight at iteration-3
- Now after combining this three iteration dataset we get equal weight of positive and negative values.

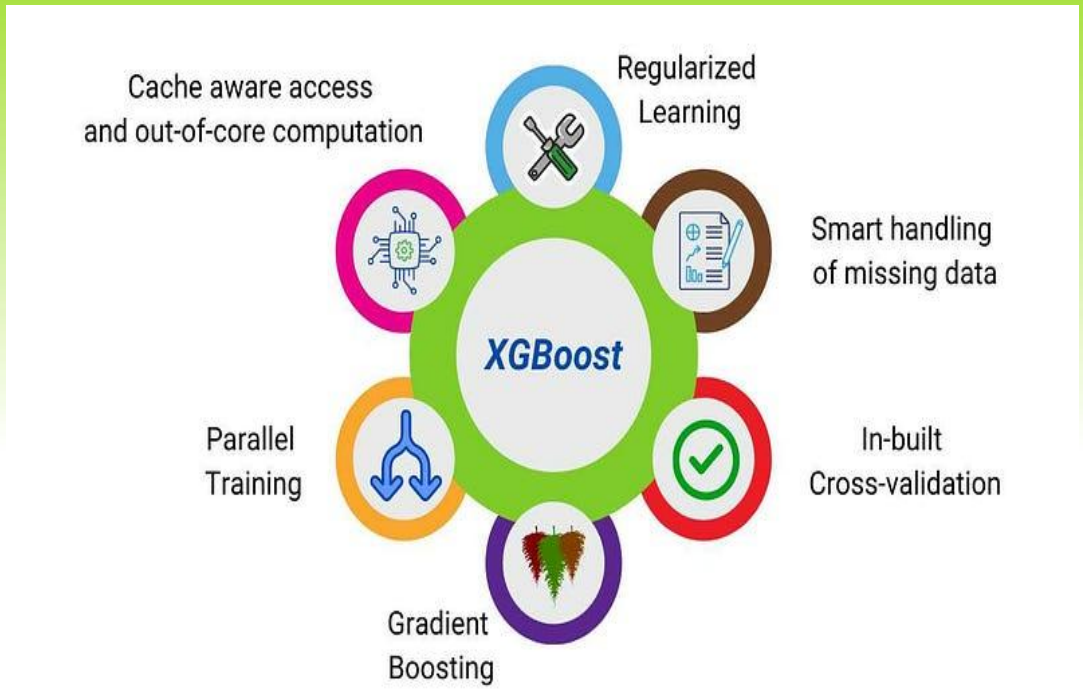
XG Boosting

XG Boosting-Extreme Gradient Boosting:

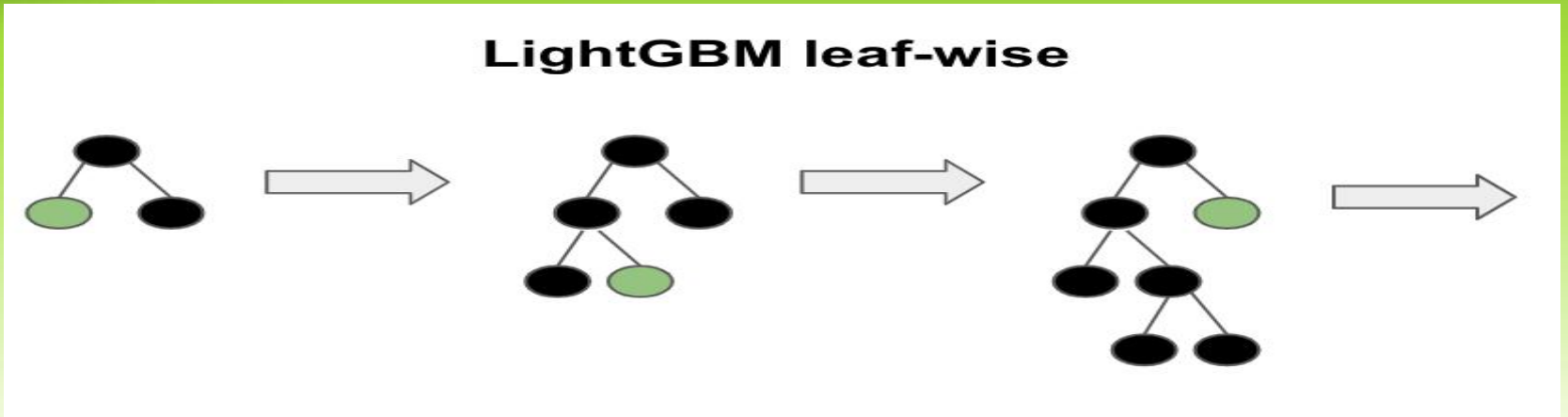
It provides parallel tree boosting and is the leading machine learning library for regression, classification, and ranking problems.

it is a speed and good performance.

it is implemented on top of gradient boost.



LG BOOST



LG BOOST-Lightgradiant Boosting

- it splits the tree leaf wise with the simplest fit whereas other boosting algorithms split the tree depth wise or level wise instead of leaf-wise. So when growing on an equivalent leaf in Light GBM,
- the leaf-wise algorithm can reduce more loss than the level-wise algorithm and hence leads to far better accuracy which may rarely be achieved by any of the prevailing boosting algorithms. Also, it's surprisingly in no time , hence the word 'Light'.