

Boosting:

- It is an ensemble ML Technique that combines the predictions of multiple base models in a sequential manner to create a strong learner.
- It focuses on training new models to correct the errors made by previous models.
- Boosting convert a system of weak learners into a single strong learning system.
- Boosting creates an ensemble model by combining several weak decision tree sequentially.

- It assigns weights to the output of individual trees.
- Then it gives incorrect classifications from the first decision tree a high weight and input to the next tree.

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- It is ensemble learning 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.] *

noiauger - Set of base models.

- It can be any machine ML algorithm to make prediction + decision.
- It simple + may have limit in predictive Power.

Diversity:

- One of the essential principles of EL to ensure diversity among the base models.
- The diversity can achieved through different means using:
 - + different algorithms
 - + different subset of training data
 - + different hyperparameters.

Ensemble Type:-

Bagging (Bootstrapp Aggregating):-

- Involves training multiple instances of the same base models on different subset of training data.

Eg:

Random Forest and Bagged Decision Tre.

Boosting:-

- Focuses on improving the performance of weak learning by giving more weight to misclassified examples during training.

Eg: Ada Boost, Gradient Boosting, and XG Boost.

Bootstrapping Aggregating:-

- Bootstrap refers to the statistical technique of randomly sampling from the original dataset to create multiple new datasets of the same size as the original. Each new dataset is called a "bootstrap sample".

- Randomly creating samples of data out of a population with replacement to estimate a population parameter.