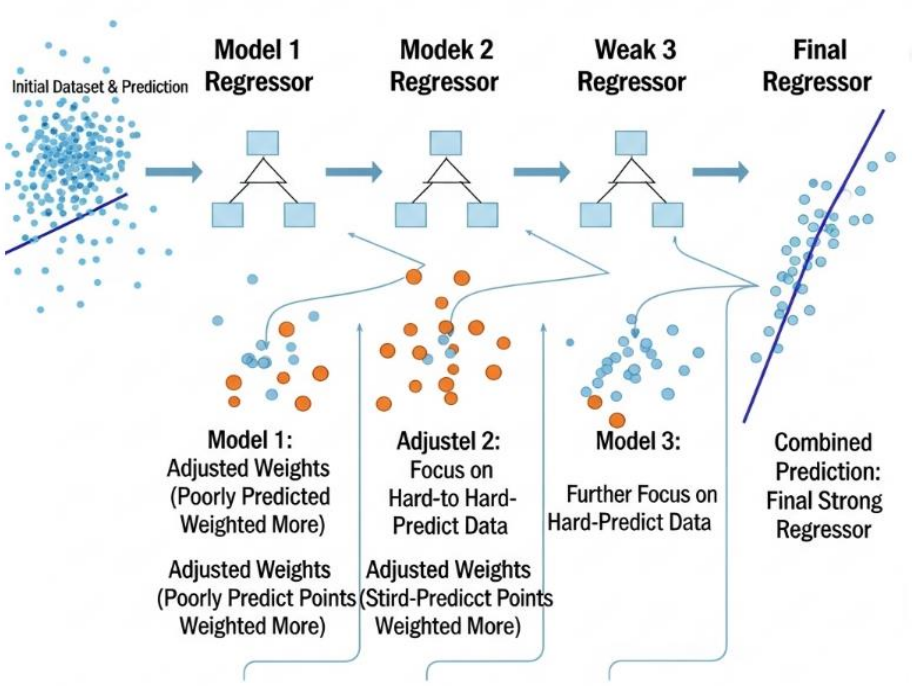
ADA BOOSTER ALGORITHM

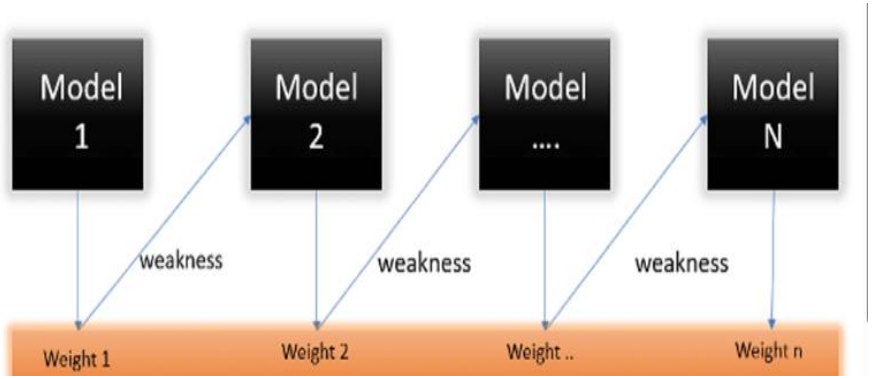
- AdaBoost stands for Adaptive Boosting.
- It’s an sklearn.ensemble learning technique — meaning it combines multiple weak learners (usually simple models like small decision trees) into one strong model.
- The core idea behind AdaBoost is to iteratively improve the model's performance by focusing on the most difficult data points

    - Train a weak model on the data, Look at where it makes large errors.
    - Give more “weight” to those difficult examples so the next model focuses on them.
    - Combine the predictions of all models into one weighted average.

✅ Works well when you have weak models that need to be boosted.

Source :- https://blog.gopenai.com/understanding-the-adaboost-algorithm-f384040baab9





XG BOOST ALGORITHM

- XG Boost, **Extreme Gradient Boosting**, is a powerful and efficient machine learning algorithm used for both **classification** and **regression** tasks.
- It builds a series of decision trees sequentially, where each new tree corrects the errors made by the previous ones. The "extreme" in its name refers to its enhanced performance and optimization compared to other gradient boosting methods.
- XG Boost is also an ensemble learning method, meaning it combines the predictions of several simpler models to produce a more accurate final prediction.
    - **Sequential Tree Building**: It builds a weak model (usually a simple decision tree) to predict ,then it builds a second tree for correcting the errors This process continues with each new tree correcting the mistakes of the combined predictions of all previous trees
    - The final prediction is the sum of the initial prediction and the predictions from all the individual trees.
    - XGBoost's strength lies in its ability to quickly and accurately build these trees, including features like regularization to prevent overfitting and parallel processing to speed up the training. It's often the top choice for competitive machine learning tasks involving structured, tabular data.