

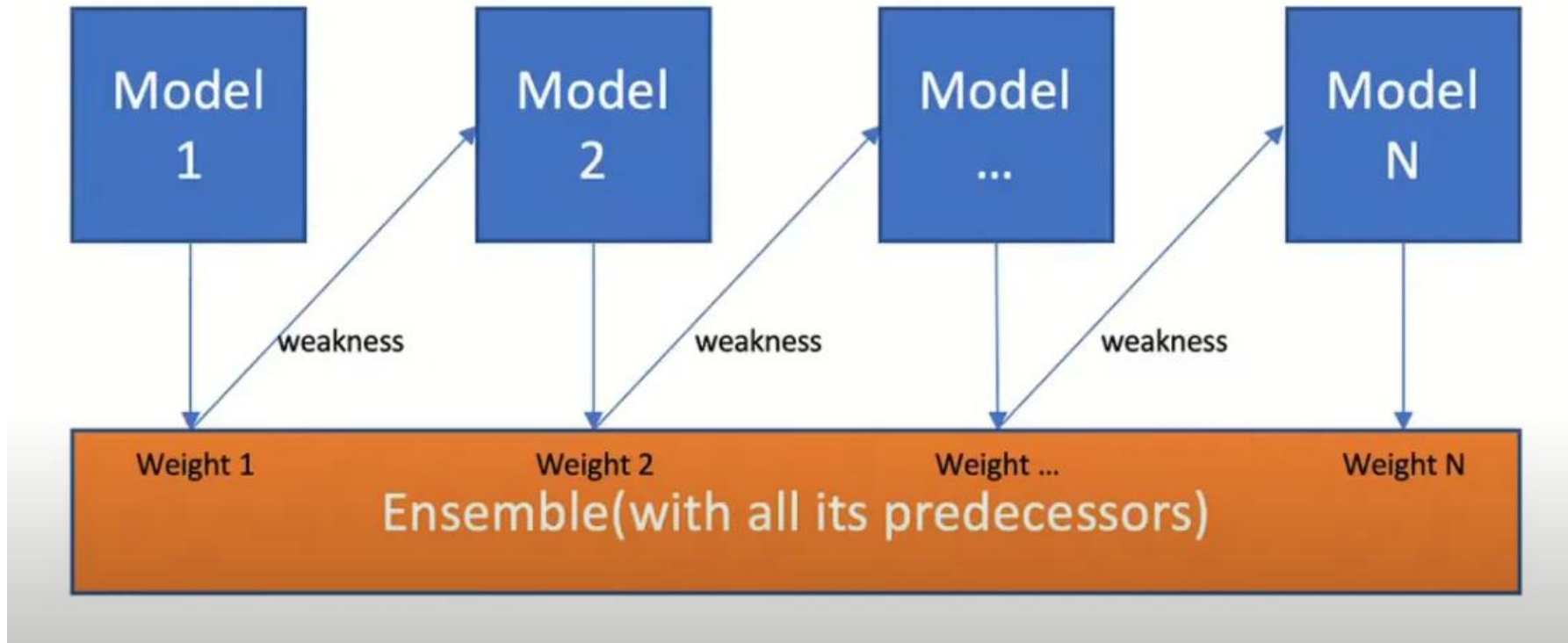
# Boosting Algorithms

BY

Asvin Kumar

# What is Boosting Algorithm:

- Boosting Algorithm works in sequential order.
- It focus on weak learners and increase weight for it until it become strong learner.

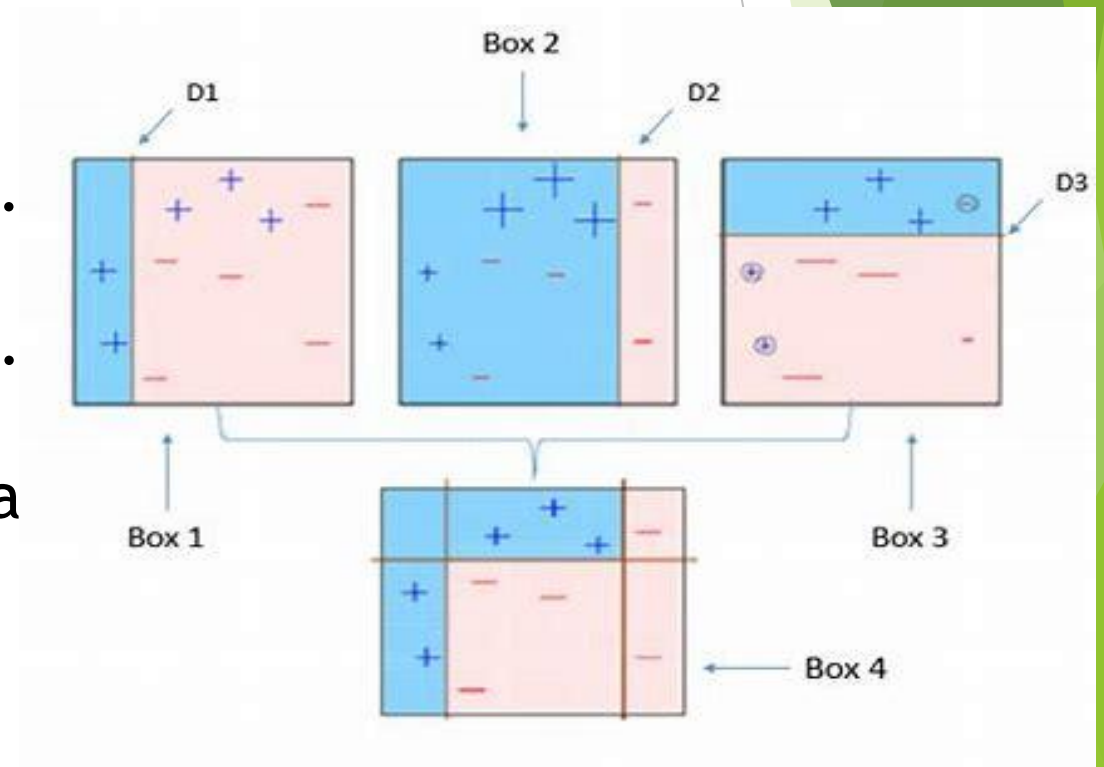


# Types of Boosting Algorithms:

- ▶ Ada Boost
- ▶ XG Boost
- ▶ LG Boost

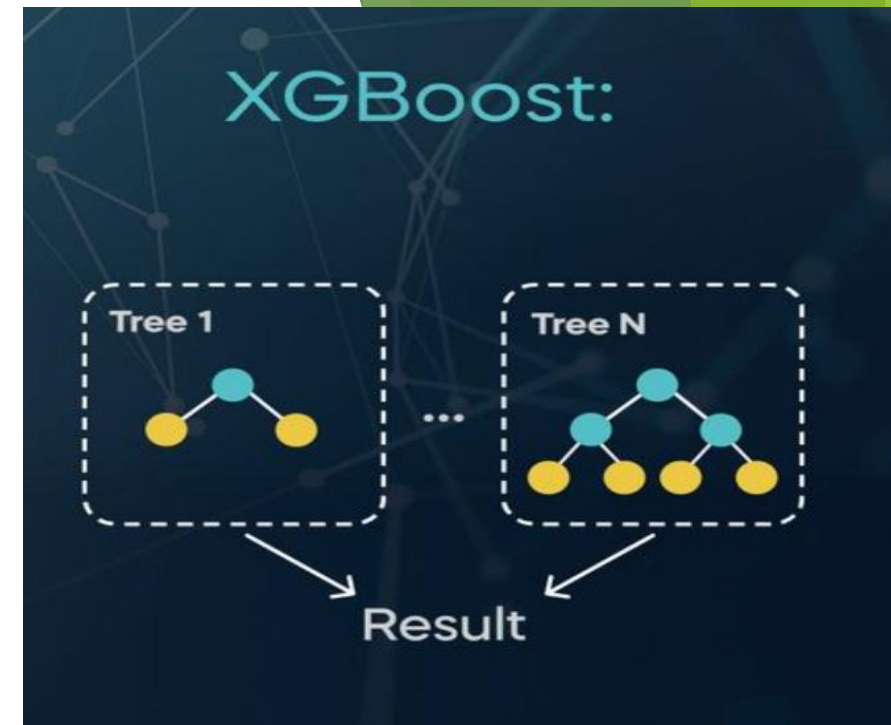
## Ada Boost :

- Ada Boost is called as adaptive boosting.
- It works in sequential order.
- Its target focus is only on weak learners.
- Teaches to learn from previous errors.
- Teach again and again until it becomes a strong learner.



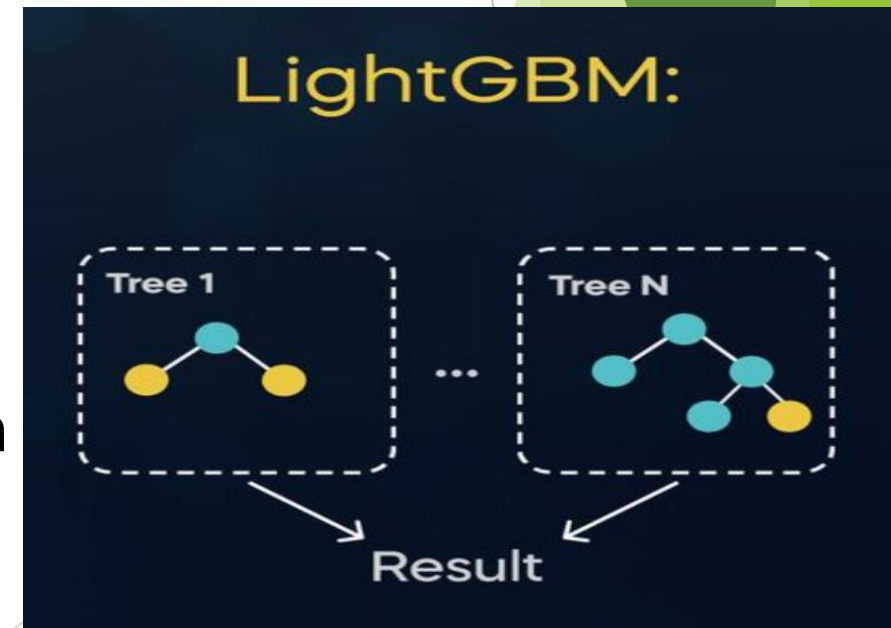
## XG Boost :

- XG Boost is called as extreme gradient boosting.
- Target focus is on the problem factors which affecting the weak learners not to become strong learner. And resolve those problems and then make them as a strong learners.
- It can perform parallel action for fast and accurate results.
- Level wise growth



## LG Boost :

- LG boost is called as light gradient boosting.
- It works better only on large datasets.
- It groups the weak learners based on different problems faced by them. And train them based on that. And then train them into strong learners.
- Works by Histogram method and leaf wise growth



# Real-time Example

A maths class a teacher need to prepare their students for public examination. Lets see how each boosting algorithms approaches this.

## Ada Boost:

Using ada boost algorithm the teacher teaches fraction and algebra topics and find out the weak learners by assessing them by conducting a mock test and give special class training for those weak learners alone and then asses them again and find out the next set of weak learners and then again teach & train them until they become a strong learner.

## XG Boost:

Using XG boost algorithm, this time instead of focusing on weak learners the teacher focuses on what are the factors which affecting them not to become a strong learner like what are the specific topics like fraction, algebra the students are weak and teach those topics specifically to overcome errors.

## LG Boost:

Using LG boost algorithm the teacher grouping the student based on the topics they are weak. Like grouping students weak in fraction as separate group, algebra as seperate group and teaches then particulary those topics to overcome the errors. This will give more accuracy of results.