



# **Boosting Algorithm in Regression**

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# Agenda

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- What is Boosting ?
- Adaptive Boosting
- XG Boosting
- LG Boosting



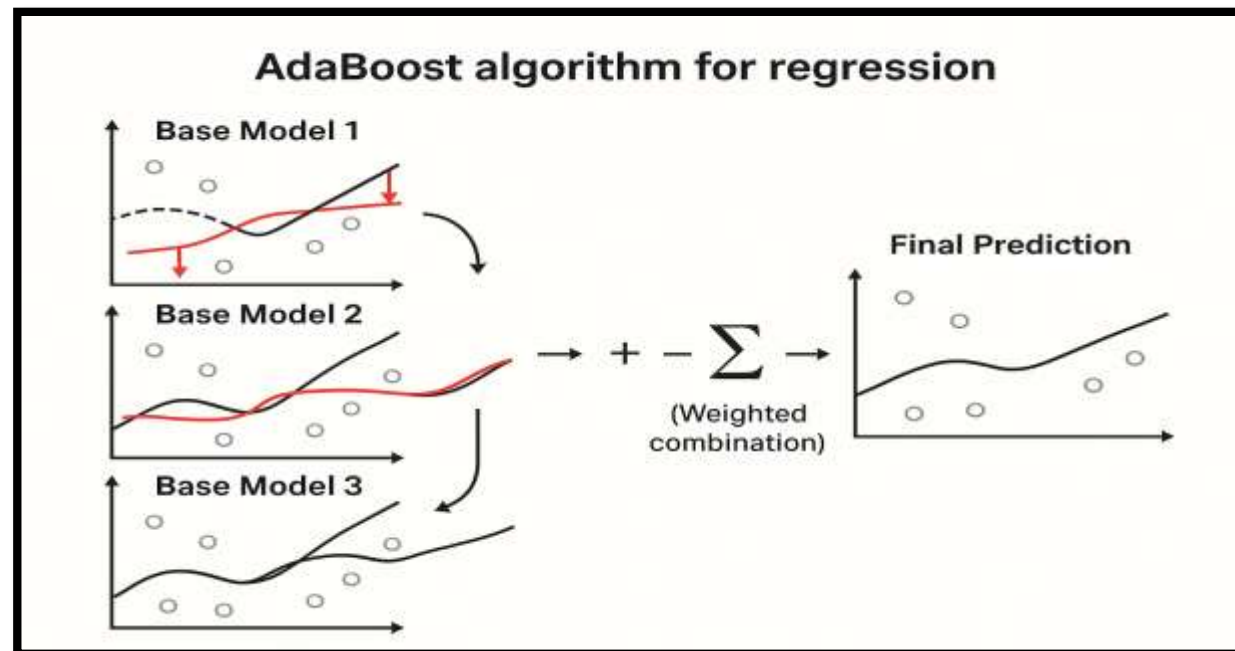
# What is Boosting ?

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- Boosting is a way to **combine many small models** to make one strong model that gives better predictions.
- Basically, It builds **multiple weak models** (usually decision trees with limited depth).
- Each new model focuses on **correcting the errors** made by the previous ones.
- The final prediction is a **weighted combination** of all these models.

# Adaptive Boosting

- It's a method that builds a strong prediction model by combining many **simple models** (like small decision trees). Each new model **focuses on fixing the mistakes** made by the previous ones.



# Extreme Gradient Boosting

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- **XGBoost (eXtreme Gradient Boosting)** is a supercharged version of gradient boosting—a machine learning technique that builds a strong model by combining many weak models (usually decision trees).
- It's especially popular for predicting numbers (regression) and categories (classification), and it's known for being **fast, accurate, and efficient**.

# Light Gradient Boosting

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- LightGBM is a super-fast machine learning tool made by Microsoft. It helps computers make smart predictions by learning from data, especially when the dataset is huge.
- It builds simple models (called “**weak learners**”) one by one.
- Each new model **fixes the mistakes of the previous one**.
- Together, they form a strong model that makes **better predictions**.

**Thank you**

