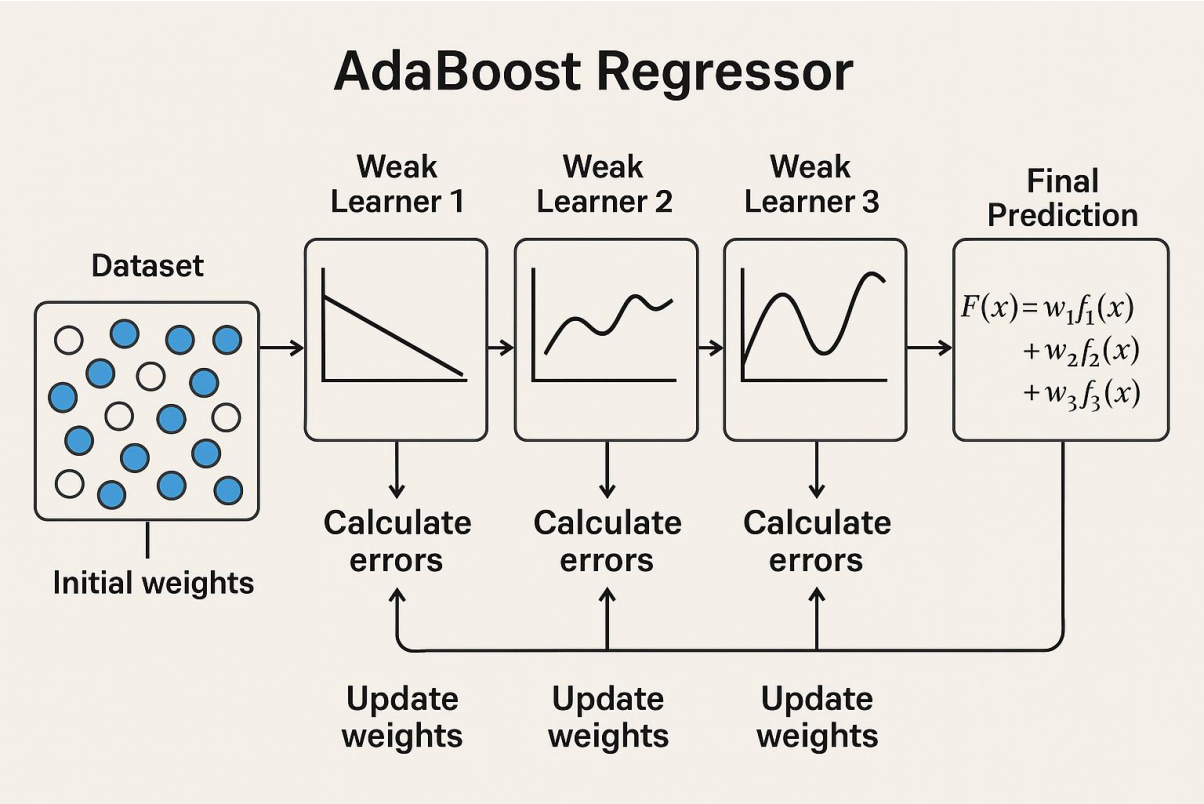
ADA BOOST REGRESSOR -ALGORTHIM:

AdaBoost (Adaptive Boosting) is an ensemble learning technique that improves the performance of weak learners by combining multiple models iteratively. In regression, AdaBoost assigns weights to data points and adjusts them based on prediction errors, focusing more on difficult-to-predict samples.



How AdaBoost Regressor Works

1. **Initialize Weights**: Each data point starts with equal weight.
2. **Train Weak Learners**: A weak model (often a decision tree) is trained on the weighted dataset.
3. **Calculate Errors**: The model's performance is evaluated, and misclassified points get higher weights.
4. **Update Weights**: The next weak model focuses more on difficult cases.
5. **Combine Models**: The final prediction is a weighted sum of all weak learners.

In the dataset visualization, the blue marker rounds typically represent the **weights assigned to data points**. Initially, all data points have equal weights, but as AdaBoost iterates, the weights of harder-to-predict points increase. This forces

subsequent weak learners to focus more on those difficult cases, improving overall accuracy.

Am using insurance_prediction dataset:

The number of weak learners is controlled by the parameter n_estimators.
The learning_rate parameter controls the contribution of the weak learners in the final combination. By default, weak learners are decision stumps. Different weak learners can be specified through the estimator parameter. The main parameters to tune to obtain good results are n_estimators

SNO	N_estimators	Random state	Learning rate	R value
1	150	0	1.0	0.844747
2	200	2	1.5	0.8224836
3	100	0	1.0	0.844747
4	100	50	1.0	0.848572
5	200	90	1.0	0.862539

Best model in ADABOOST REGRESSOR : 0.862539