

# XGBoost Regression Algorithm

An overview of the XGBoost regression model and its applications



# Overview of XGBoost

XGBoost (Extreme Gradient Boosting) is an efficient and scalable implementation of gradient boosting.

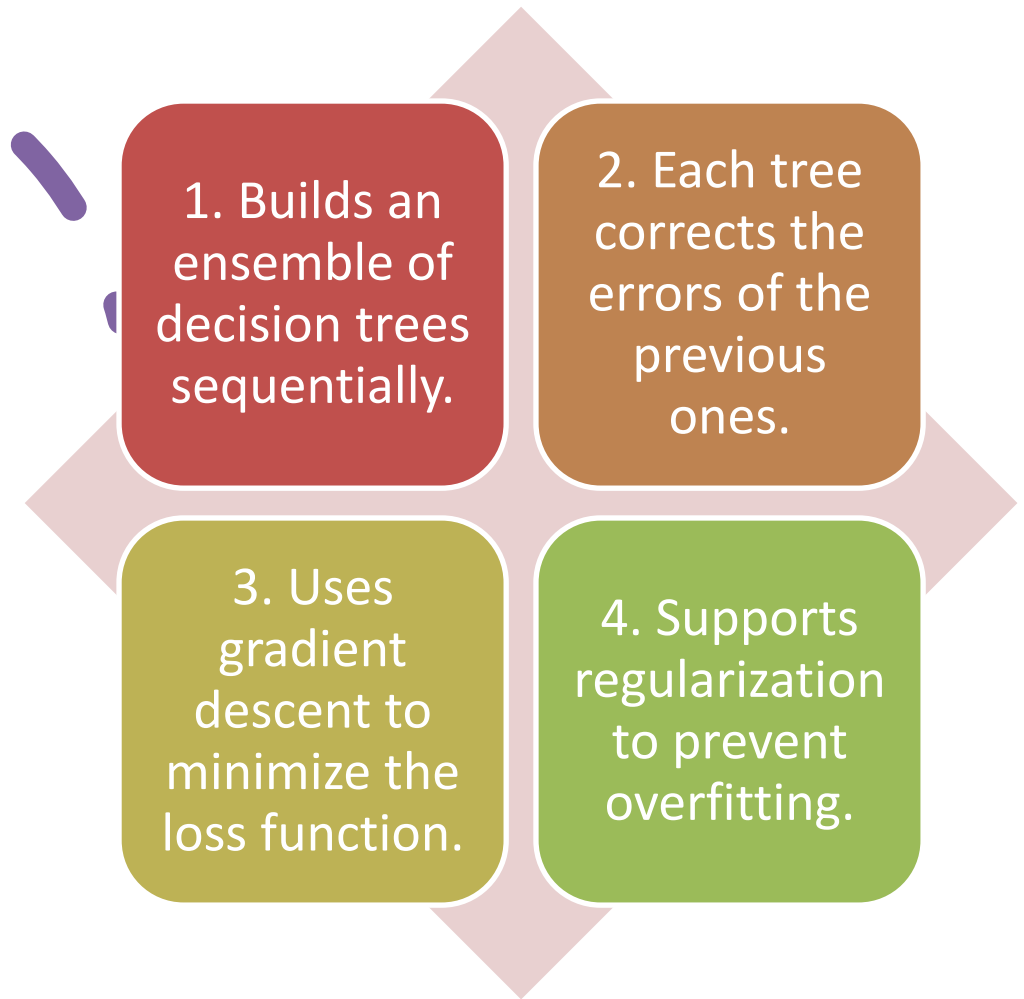


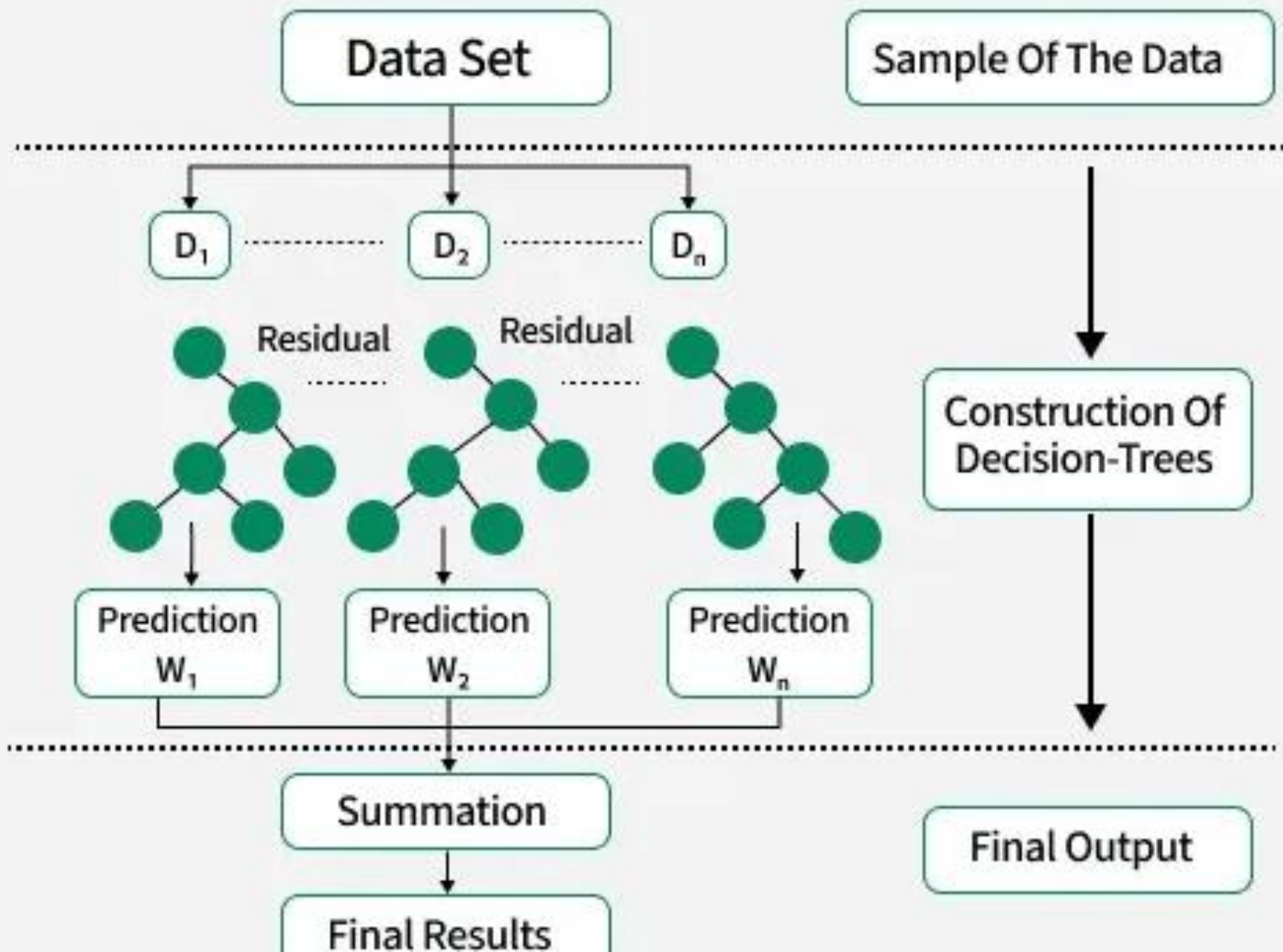
It is widely used for supervised learning tasks including regression, classification, and ranking.



Key features include regularization, parallel processing, and handling of missing values.

# How XGBoost Regression Works





# Key Parameters in XGBoost

- `n_estimators`: Number of boosting rounds (trees).
- `learning_rate`: Step size shrinkage.
- `max_depth`: Maximum depth of a tree.
- `objective`: Loss function (e.g., 'reg:squarederror' for regression).
- `subsample`: Fraction of samples used per tree.
- `colsample_bytree`: Fraction of features used per tree.

# Python Example



```
!pip install lightgbm
```



```
from lightgbm import LGBMRegressor
```



```
regressor = LGBMRegressor(n_estimators=100, learning_rate=0.1,  
                           max_depth=3, min_data_in_leaf=1, min_data_in_bin=1)
```



```
regressor.fit(X_train, y_train)
```

# Use Cases of XGBoost Regression



- PREDICTING HOUSE  
PRICES



- FORECASTING SALES  
AND DEMAND



- MODELING  
CUSTOMER LIFETIME  
VALUE



- FINANCIAL RISK  
MODELING



- ENERGY  
CONSUMPTION  
PREDICTION