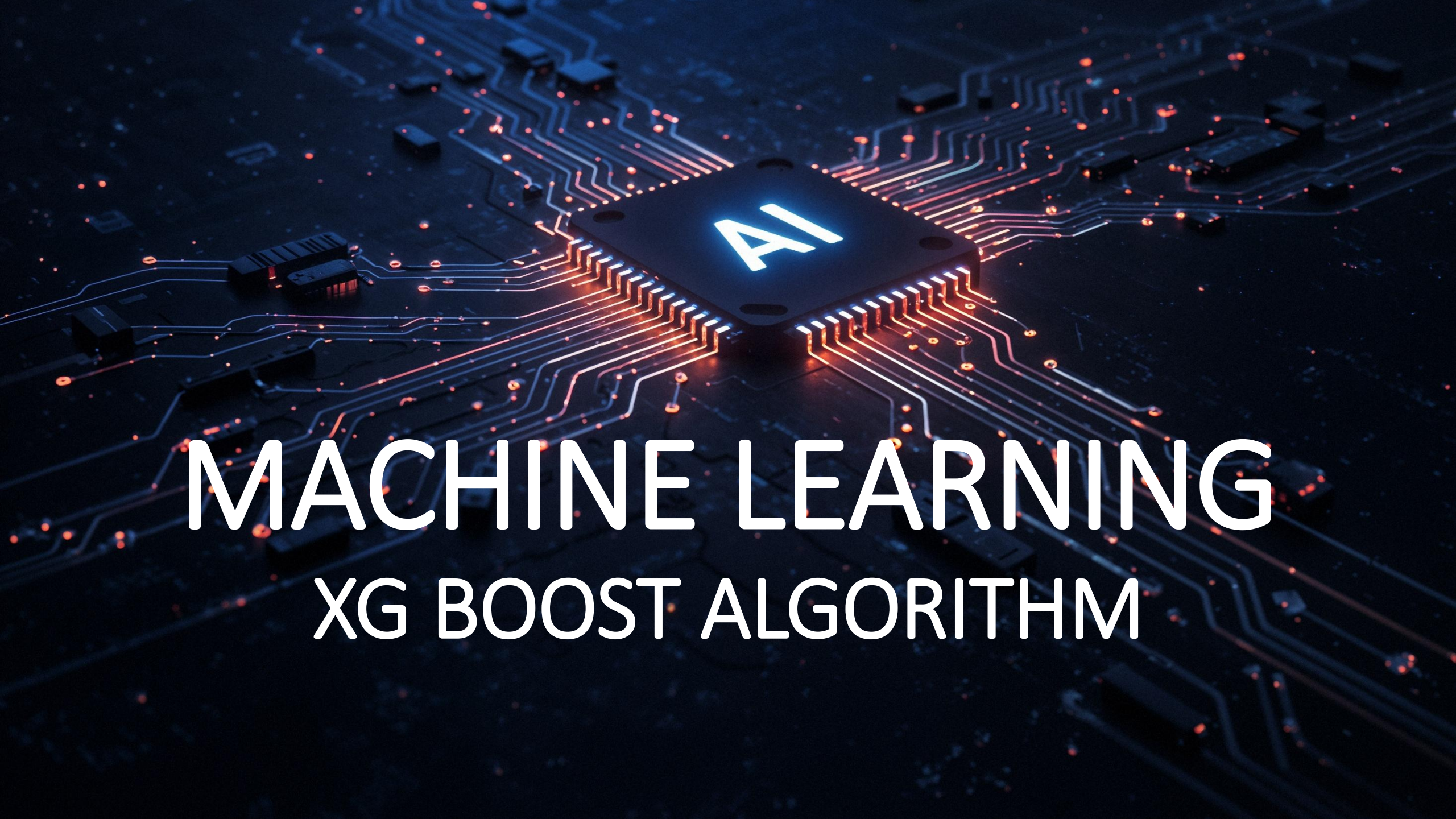
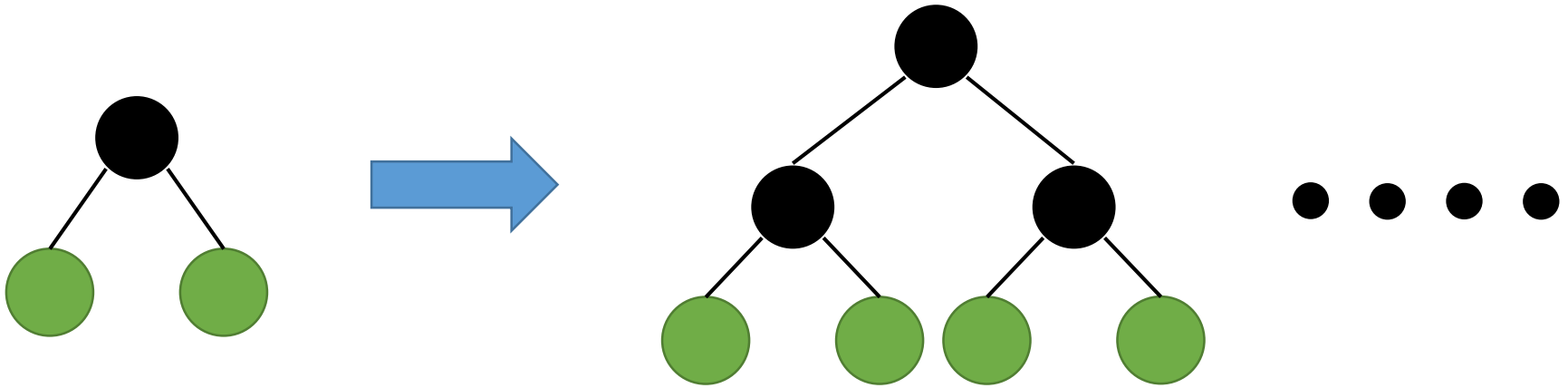


MACHINE LEARNING

XG BOOST ALGORITHM

What is XG Boost Algorithm?

- XGBoost (Extreme Gradient Boosting) is an advanced ML Algorithm
- Designed for structured data
- Incorporates regularization, parallel processing and efficient memory usage
- Faster than standard implementations



The algorithm combines multiple weak Decision tree models to create a strong model

How Does XGBoost Work?

- **Initial Prediction:** makes initial predictions using simple decision tree
- **Calculate Errors**: compares prediction with actual values
- **Train Weak Learner**: first weak learner trained and creates new DT
- **Iterate**: process repeats by improving previous tree
- **Final Model**: Decision tree predicting accurate output

Advantages of XGBoost

- Handle missing values
- Prevent Over fitting
- Fast processing and training
- Pruning aware split finding

Disadvantage of XGBoost

- Computational cost for large dataset
- Complex Hyper tuning parameter
- Not ideal for all datasets