

A close-up, high-angle shot of a central processing unit (CPU) or similar microchip mounted on a dark, complex circuit board. The chip itself is dark and rectangular, with the letters 'AI' glowing in a bright, cyan-blue light on its top surface. Numerous gold-colored pins extend from the sides of the chip, connecting it to the intricate network of circuitry on the board. The circuitry is composed of fine, glowing lines in shades of blue and orange, creating a sense of dynamic energy and technological sophistication. The background is dark, emphasizing the illuminated components.

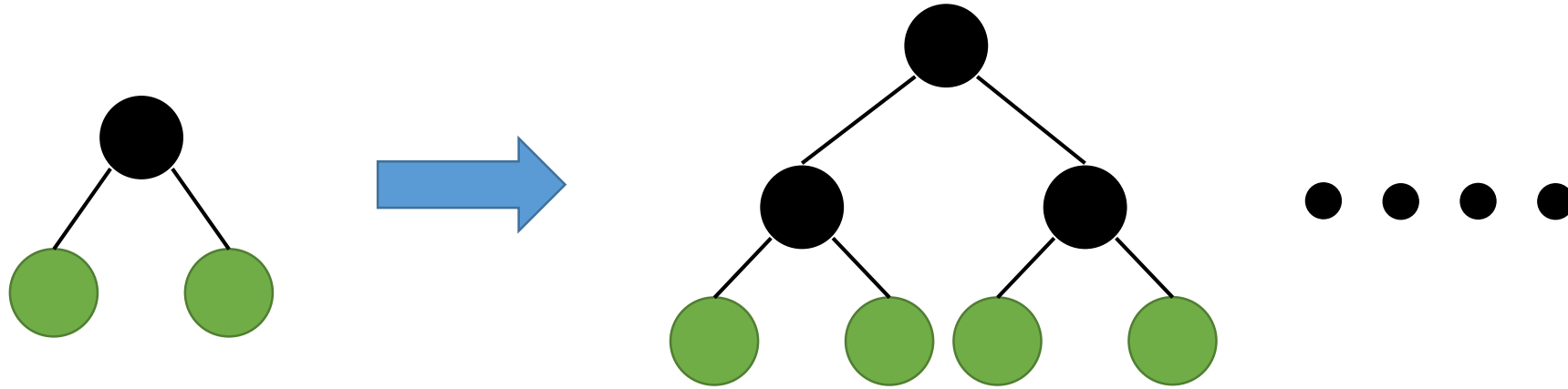
AI

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