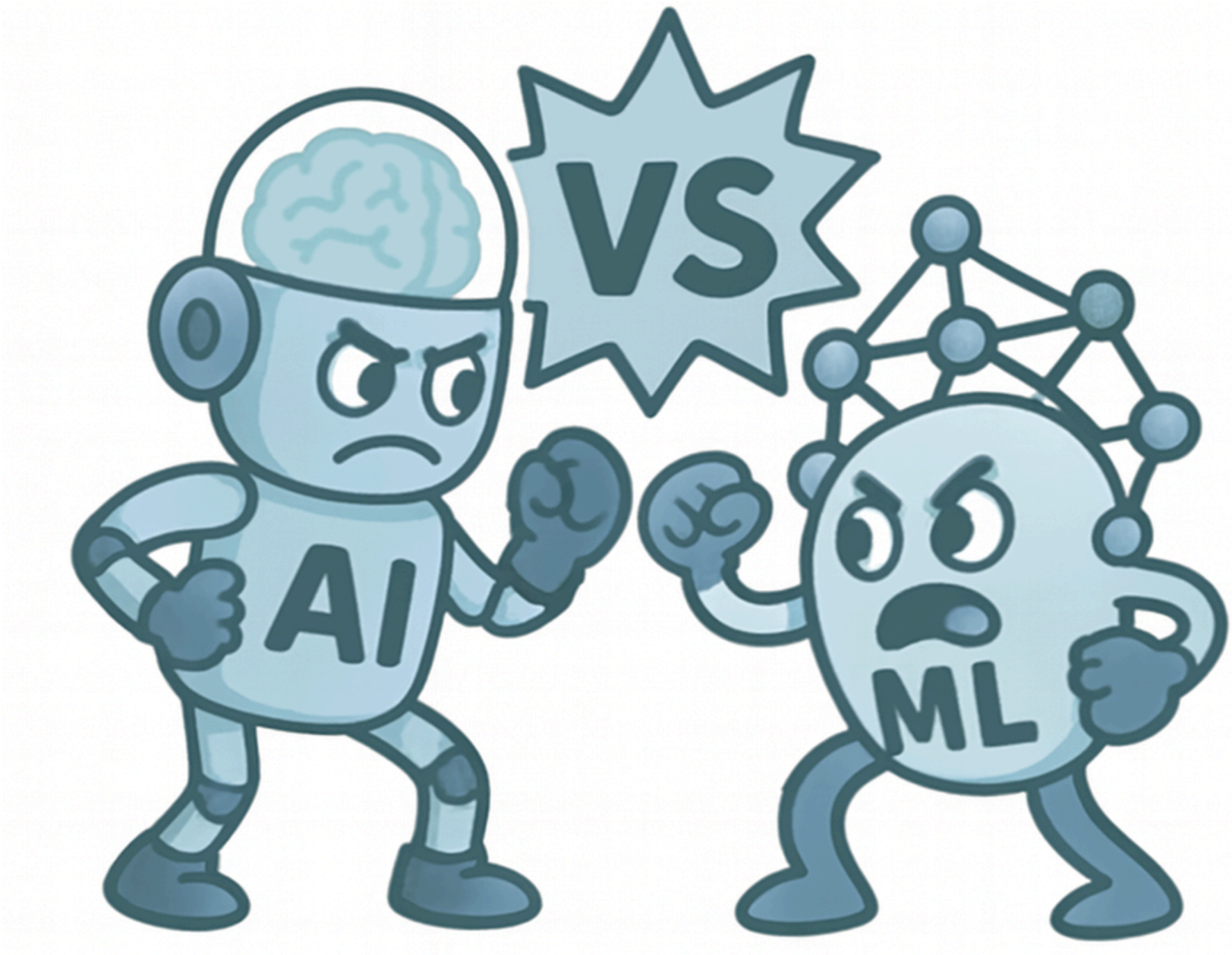
Analytics Vidhya

# AI vs ML

## Explained in 1 min



# Introduction

**Artificial Intelligence**

**Machine Learning**

**Are they same?**

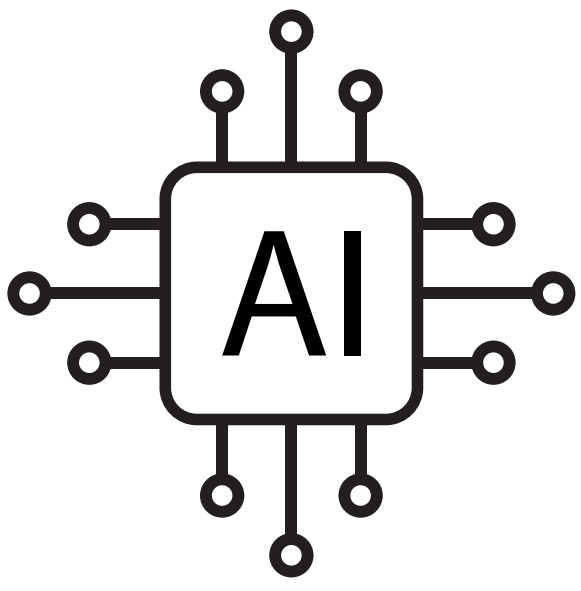
**Wrong!**

Let’s understand how
these two terms are
different from each other

# What is AI?

AI is when we teach computers to do things that normally need human intelligence like understanding language, recognizing images, making decisions, or learning from experience. Instead of giving them step-by-step instructions for every possible situation, we give them examples, rules, or goals, and they figure out patterns on their own.

It’s not magic or actual thinking it’s math, statistics, and algorithms that process huge amounts of data to mimic certain parts of human intelligence.



# What is ML?

Machine Learning is a way of making computers learn from data instead of following fixed instructions.

Think of it like this: instead of telling the computer “if X happens, do Y,” you give it lots of examples, and it figures out the rules by itself. The more examples it sees, the better it gets at guessing or deciding.

It’s like teaching a child to recognize cats not by giving them a detailed “cat checklist,” but by showing them hundreds of pictures and letting them pick up the pattern.

# How do machines learn?

Learning works like this:

- You give the machine some data.
- It figures out a mathematical function that captures the patterns in that data.
- Then it uses those patterns to make predictions or decisions in the real world.

# ML Algorithms

- **Linear Regression –** Predicts a numeric value by fitting a straight line to the data.
- **Logistic Regression –** Classifies data into categories using a probability-based approach.
- **Decision Tree –** Splits data into branches based on rules to make predictions.
- **Random Forest –** Combines many decision trees to improve accuracy and reduce overfitting.
- **K-Nearest Neighbors (KNN) –** Predicts based on the closest examples in the dataset.
- **Support Vector Machine (SVM) –** Finds the boundary that best separates different classes.
- **Naive Bayes –** Uses probability and the assumption of feature independence for classification.
- **K-Means Clustering –** Groups data into clusters based on similarity.
- **Gradient Boosting** (e.g., XGBoost, LightGBM) **–** Builds models in stages to correct previous errors.
- **Neural Networks –** Mimics the brain's interconnected neurons to learn complex patterns.