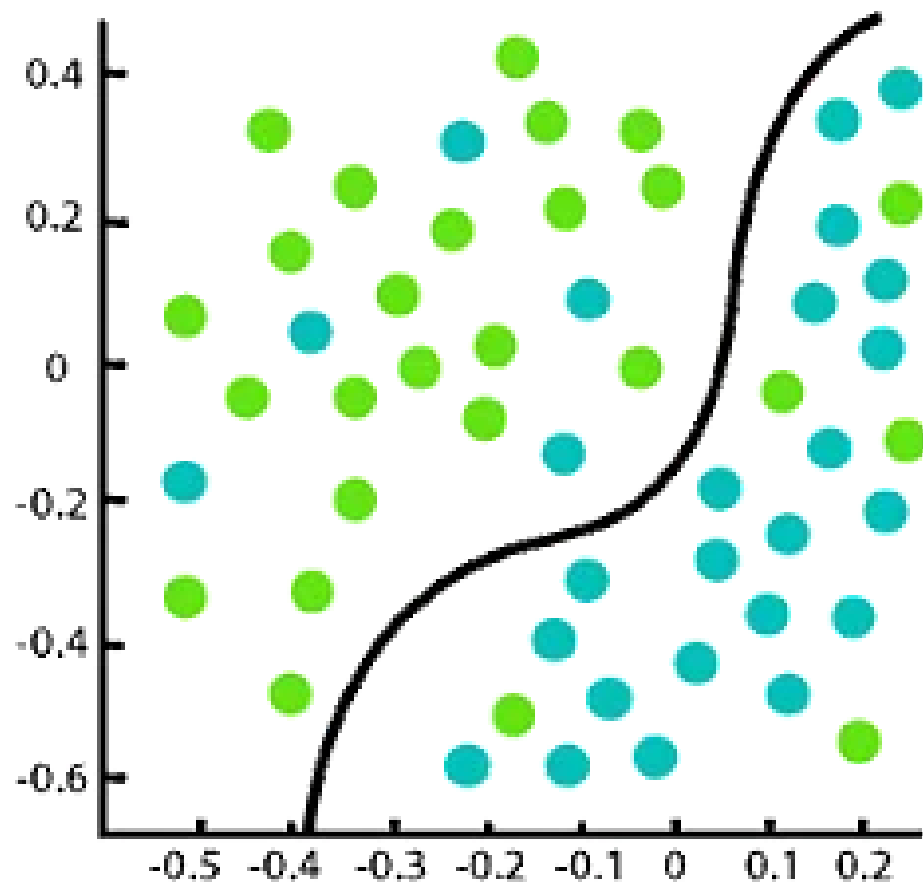
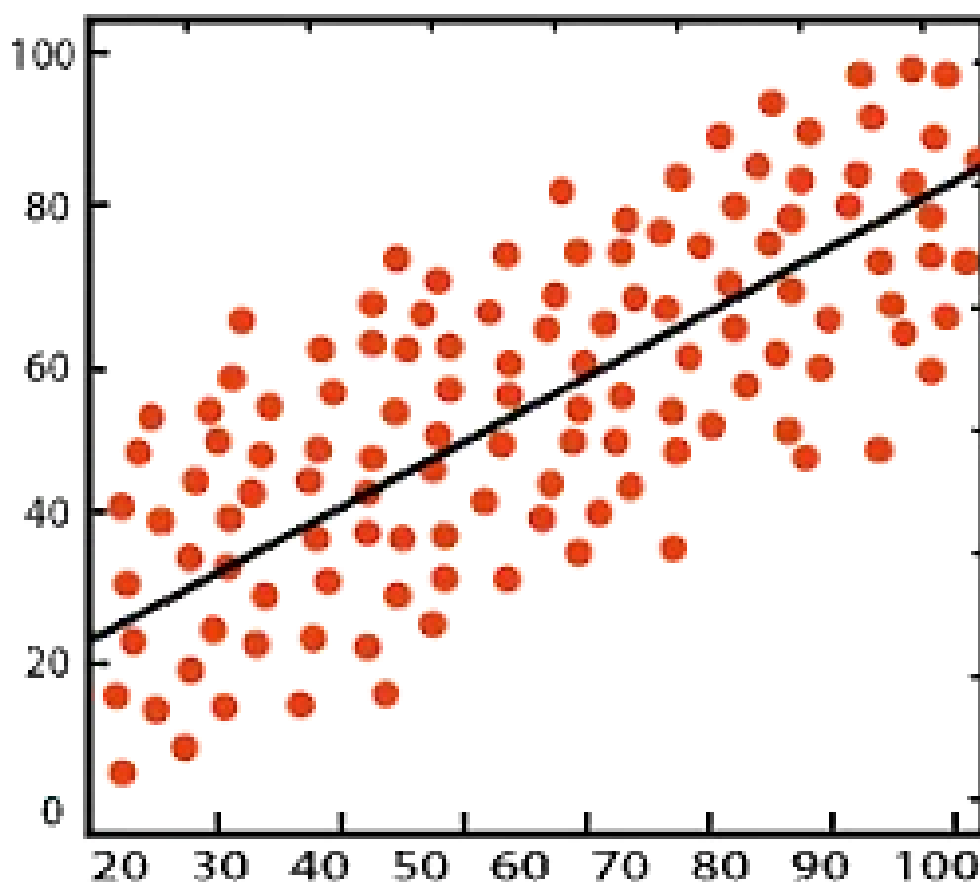


REGRESSION VS CLASSIFICATION

in Machine Learning Explained



Classification



Regression



In machine learning, understanding the difference between classification and regression is crucial for developing models and solving problems.



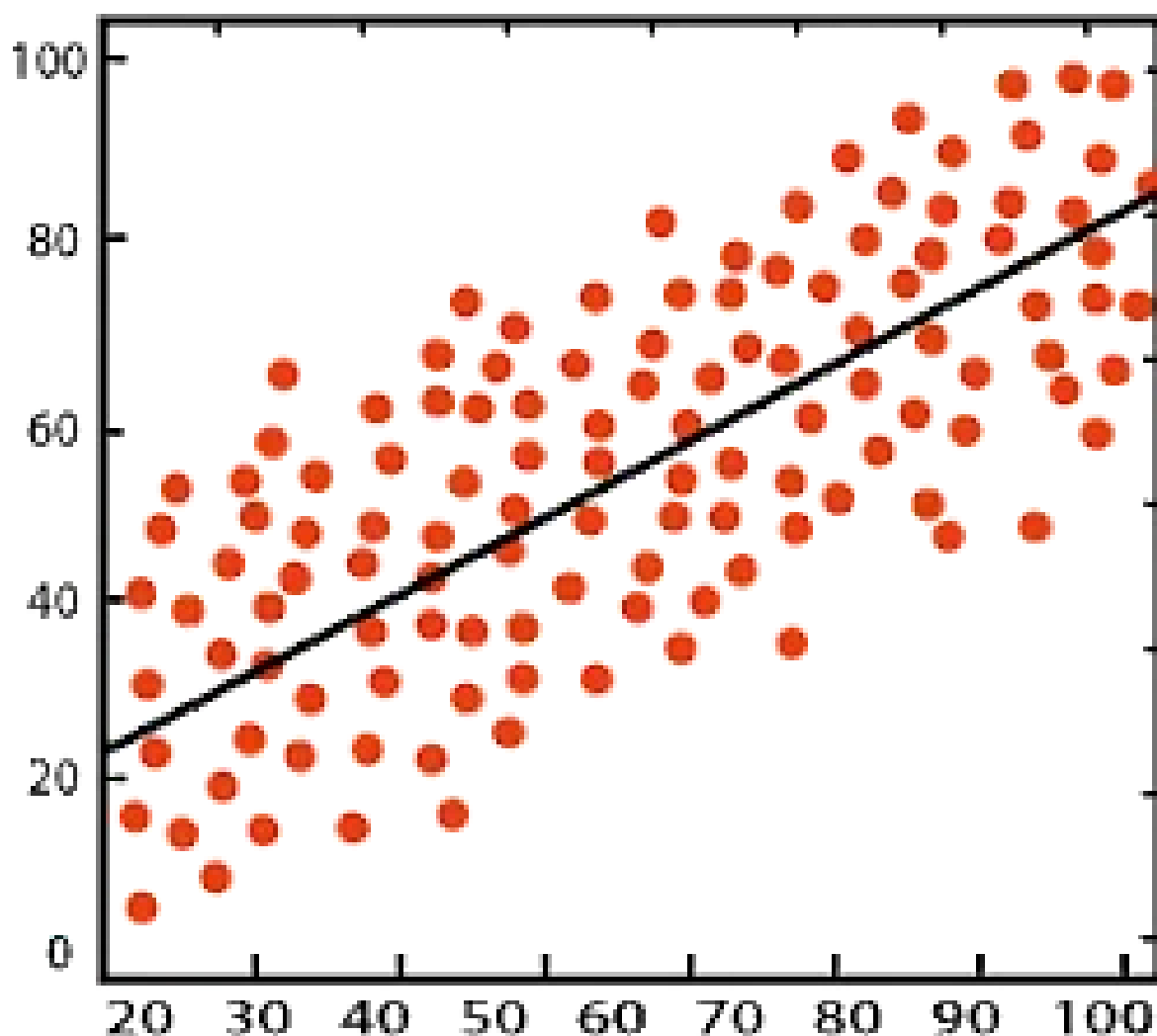
While both techniques serve different purposes, 90% of people don't know when to use what

Let's explore their disparity!



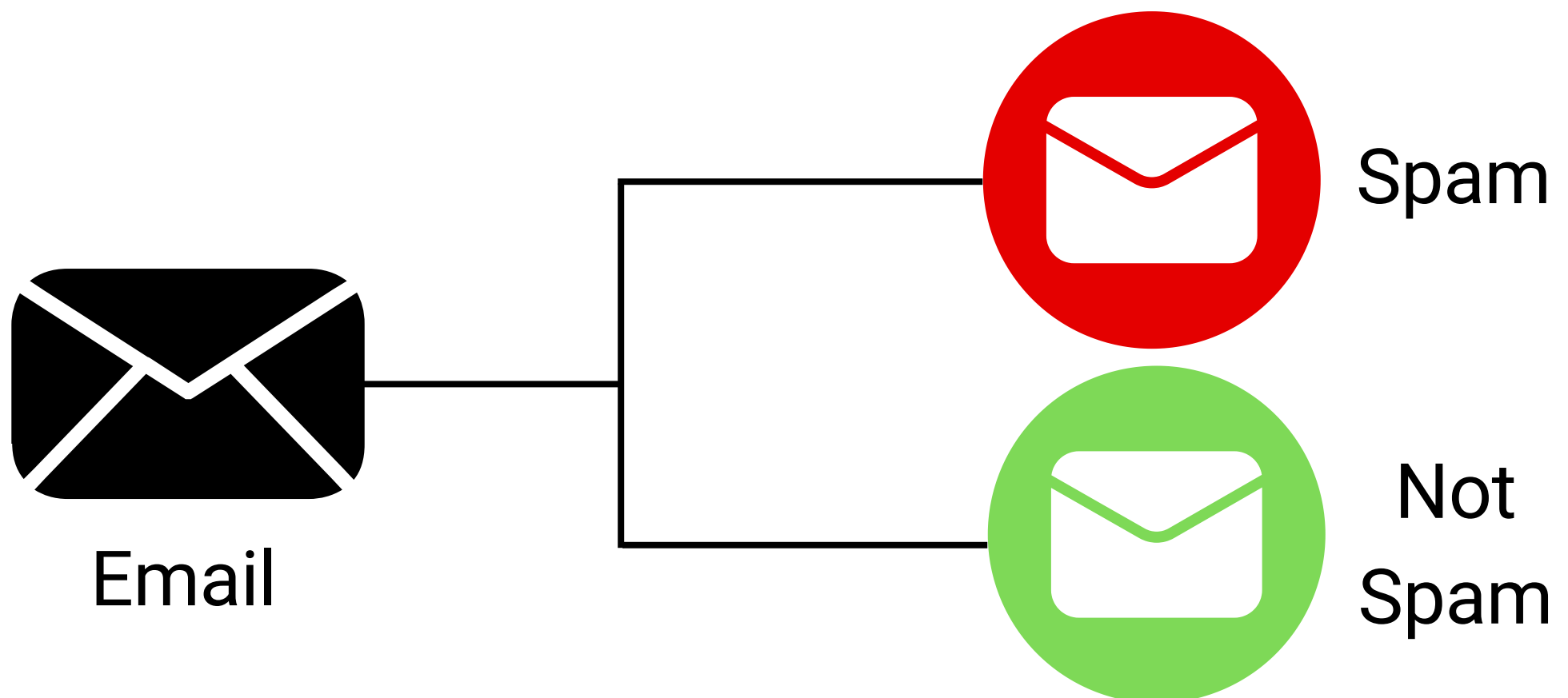
What is Regression

Regression algorithms predict continuous values from input data, making them ideal for supervised learning tasks. ML engineers and data scientists commonly use them to map estimations with labeled datasets.



What is Classification?

Classification is a method that categorizes data into distinct classes based on independent features. It uses If-Then rules to derive a mapping function, enabling the classification or prediction of values such as spam/not spam, yes/no, and true/false. For instance, it can predict the likelihood of an actor visiting a mall for a promotion based on historical events, resulting in labels like Yes or No.



Application of Classification and Regression



Application of Regression



Predicting Stock Prices

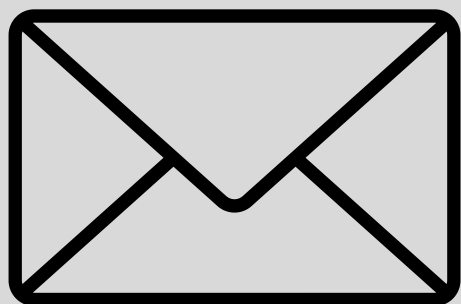


Sales Forecasting



Real Estate Valuation

Application of Classification



Email Spam Filtering



Credit Scoring



Image Recognition



Advantages of Regression



BENEFITS



1

Valuable Insights: Helps to analyze the relationships between distinct variables and comprehensively understand the data.

2

Prediction Power: Prediction of dependent variable values with high accuracy using independent variables.

3

Flexibility: Regression is a flexible algorithm used to find or predict models of a wide range, including logistic, linear, polynomial, and many more.



Disadvantages of Regression



Disadvantages



1



False Assumptions: There are many assumptions underlying regression algorithms, leading to false assumptions. It includes normality of errors, linearity, and independence.

2



Overfitting: Inadequate performance can be applied to new and unseen data because the regression models are overly customized for the training data.

3



Outliers: Regression models are sensitive to outliers, thus, can have a significant effect on analyzed prediction results.



Advantages of Classification



BENEFITS



1



Accuracy in Prediction: With fitting training, the classification algorithm achieves high accuracy in the model prediction.

2



Flexible: Classification algorithms have many applications, like spam filtering, speech, and image recognition.

3



Scalable Datasets: Easy to apply in real-time applications that can scale up huge datasets easily.



Disadvantages of Classification



Disadvantages

1



Bias: If the training data does not represent the complete dataset, the classification algorithm may get biased with certain trained data.

2



Imbalanced Data: If the classes of the datasets are not determined equally, the classification algorithm will read the majority and leave the minority class.

3



Selection of Features: Features must be defined in the classification algorithms, else the prediction of data is challenging with multiple or undefined features.



Difference between Regression and Classification

Features	Regression	Classification
Main goal	Predicts continuous values like salary and age.	Predicts discrete values like stock and forecasts.
Input and output variables	Input: Either categorical or continuous Output: Only continuous	Input: Either categorical or continuous Output: Only categorical
Types of algorithm	Linear regression Polynomial regression Lasso regression Ridge regression	Decision trees Random forests Logistic regression Neural networks Support vector machines
Evaluation metric	R2 score Mean squared error Mean absolute error Absolute percentage error (MAPE)	Receiver operating characteristic curve Recall Accuracy Precision F1 score



Frequently Asked Questions



Q1. Who is eligible for data science?

A. People with relevant graduate degrees, like one in computer science, statistics, or mathematics, are a good fit for data science roles. However, with appropriate data science skill training and courses, ones without these degrees can also venture into the field easily.

Q2. Is data science an IT job?

A. Data science is an “IT-enabled” job. As IT jobs focus on using software-related technologies, data science focuses on using “data” to organize them. However, having a fundamental understanding of IT adds a significant advantage.



Q3. Do you need coding for a data science job?

A. A major part of data science is coding workflows that use data to give insights. Consequently, you must be able to code in languages like Python. However, many low-code or no-code tools and platforms are available today for non-technical professionals who want to utilize data science.



For more **deeper comprehensive** understanding, you can read our full article

**REGRESSION
V/S
CLASSIFICATION**

Regression vs Classification in Machine Learning Explained!

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