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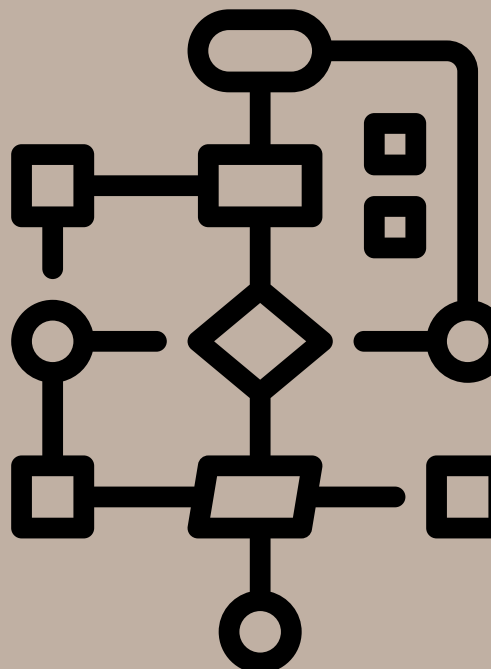0   1

Machine learning

Algorithms

Cheat Sheet

Algorithm	Supervised/ Unsupervised	Use Case	Strengths	Weaknesses	Real-World Example
Linear Regression	Supervised	Predicting continuous values	Simple, interpretable	Sensitive to outliers	Predicting house prices based on features like square footage, location, etc.
Logistic Regression	Supervised	Binary classification	Easy to implement	Struggles with non-linear relationships	Email spam detection (spam or not spam).
Decision Tree	Supervised	Classification, regression	Easy to visualize	Prone to overfitting	Customer churn prediction in telecom companies.
Random Forest	Supervised	Classification, regression	Reduces overfitting	Less interpretable	Predicting loan approvals in banking based on historical data.
SVM (Support Vector Machine)	Supervised	Complex boundaries	Effective in high dimensions	Computation ally expensive	Image classification (e.g., handwritten digit recognition).
KNN (K-Nearest Neighbours)	Supervised	Classification, regression	Non-parametric	Slow with large datasets	Recommender systems (e.g., suggesting similar movies).
Naive Bayes	Supervised	Text classification	Fast	Assumes independence	Sentiment analysis of customer reviews (positive /negative).

Algorithm	Supervised/ Unsupervised	Use Case	Strengths	Weaknesses	Real-World Example
K-Means	Unsupervised	Clustering	Simple	Sensitive to initialization	Customer segmentation in marketing for targeted ads.
PCA (Principal Component Analysis)	Unsupervised	Dimensionality reduction	Reduces complexity	Loses interpretability	Reducing features in image compression algorithms.
Gradient Boosting	Supervised	Classification, regression	High accuracy	Prone to overfitting	Fraud detection in credit card transactions.
Neural Networks	Supervised	Complex problems	Handles non-linear data	High data requirements	Predicting stock prices using historical and external features.
Reinforcement Learning	Neither	Decision-making	Learns optimal policies	Computationally intensive	Training AI agents in games like Chess and Go.