ML Models

🧠 Model Type	📌 What it's Best At	💡 Real-World Use Case
Supervised Learning	Learns from labeled data	Email spam detection
Unsupervised Learning	Finds hidden patterns in data	Customer segmentation
Semi-Supervised Learning	Uses a small amount of labeled data	Medical image classification
Reinforcement Learning	Learns by rewards and penalties	Self-driving cars, game AI
CNN (Convolutional NN)	Excels with image data	Face recognition, object detection
RNN / LSTM	Works well with time-series or sequences	Stock prices, chatbots
GAN	Generates synthetic data	Deepfakes, AI art
Decision Tree	Simple logic-based decisions	Loan approval, basic classification
Random Forest	Combines multiple decision trees for accuracy	Credit scoring, risk analysis
XGBoost / LightGBM	Fast + powerful for structured data	Kaggle winners, fintech apps
SVM	Best for small/clean datasets	Image classification, handwriting OCR
Naive Bayes	Probabilistic, fast, and simple	Sentiment analysis, spam detection
K-Means	Divides data into K	Customer groups,

	groups	image compression
K-NN	Compares to closest neighbors	Product recommendations
Autoencoder	Learns to compress + reconstruct data	Anomaly detection, denoising
Transformer	Processes long sequences efficiently	ChatGPT, translation
Ensemble Learning	Combines models for better performance	Voting systems, complex predictions
Isolation Forest	Detects outliers efficiently	Fraud detection, intrusion detection
PCA / t-SNE	Reduces dimensions for better visuals	Data visualization, preprocessing
ARIMA / Prophet	Time-series forecasting	Sales, stock, temperature trends
CatBoost	Fast, handles categorical data easily	Finance, marketing, real-world datasets
BERT	Pre-trained language understanding	Search engines, chatbots, summarization
Deep Belief Network	Layer-wise unsupervised learning	Image recognition, pattern detection
T5 / GPT	Text-to-text generation & understanding	Content writing, summarization, translation
LDA (Latent Dirichlet)	Topic modeling in text data	News categorization, document clustering
Neural Collaborative Filtering	Recommender systems	Netflix, Amazon recommendations

Bayesian Network	Probabilistic relationships	Risk prediction, medical diagnosis
Markov Models	Probabilities over sequences	Predictive typing, behavior modeling