

Machine Learning Models

1. Linear Regression

Definition: A model that predicts a continuous output by finding the best linear relationship between input features and the target.

Use Case: Predicting housing prices based on square footage, location, and number of bedrooms. It is used by several companies.

2. Logistic Regression

Definition: A classification algorithm that predicts probabilities and is used to model binary outcomes.

Use Case: Email spam detection, determining if an email is spam or not. Used by gmail.

3. Decision Tree

Definition: A model that splits data into branches based on feature values to make predictions.

Use Case: to catch credit card frauds. Used in companies like Capital one.

4. Random Forest

Definition: An ensemble of decision trees that improves prediction accuracy by averaging multiple tree outputs.

Use Case: Product Recommendation system. Used by amazon

5. Support Vector Machine (SVM)

Definition: A model that finds the optimal hyperplane to separate different classes with the maximum margin.

Use Case: Face recognition for secure logins. Used by Facebook

6. Convolutional Neural Network (CNN)

Definition: A deep learning model specialized in processing grid-like data such as images.

Use Case: Google photos recommendation system

7. Recurrent Neural Network (RNN)

Definition: A neural network designed for sequential data, where outputs depend on previous steps.

Use Case: Predicting stock market trends based on time-series data.

8. Transformers

Definition: A deep learning architecture based on attention mechanisms, ideal for sequential and textual data.

Use Case: OpenAI's ChatGPT

9. Generative Adversarial Networks (GANs)

Definition: A system of two neural networks (generator and discriminator) competing to produce realistic synthetic data.

Use Case: Creating photorealistic images of non-existent people for video games or movies. Used by Deepfake

10. Diffusion Models

Definition: A generative model that creates data by reversing a gradual noise process.

Use Case: Text-to-image generation e.g., in DALL·E or Stable Diffusion

11. Large Language Models (LLMs)

Definition: Massive transformer-based models trained on large text corpora to understand and generate human language.

Use Case: GitHub Copilot for Code Completion