

A neural network is a machine learning model inspired by the human brain, designed to recognize patterns and make predictions. It consists of:

Layers: Input (data), hidden (processing), and output (result).

Neurons: Units that process inputs using weights and biases.

Activation Functions: Add non-linearity for learning complex patterns.

Learning: Forward propagation (data flows) and backpropagation (adjusts weights to reduce error).

Types:

Feedforward: Basic classification.

CNNs: Image analysis.

RNNs: Sequential data.

Transformers: NLP tasks.

Uses:

Image recognition, language processing, autonomous vehicles, and predictive analytics.