



Module 5 : Evolution of Neural Networks

Neural Networks are computational models that mimic the complex functions of the human brain. The neural networks consist of interconnected nodes or neurons that process and learn from data, enabling tasks such as pattern recognition and decision making in machine learning. The article explores more about neural networks, their working, architecture and more.

Evolution of Neural Networks

Since the 1940s, there have been a number of noteworthy advancements in the field of neural networks:

- **1940s-1950s: Early Concepts**

Neural networks began with the introduction of the first mathematical model of artificial neurons by McCulloch and Pitts. But computational constraints made progress difficult.

- **1960s-1970s: Perceptrons**

This era is defined by the work of Rosenblatt on perceptrons. Perceptrons are single-layer networks whose applicability was limited to issues that could be solved linearly separately.

- **1980s: Backpropagation and Connectionism**

Multi-layer network training was made possible by Rumelhart, Hinton, and Williams' invention of the backpropagation method. With its emphasis on learning through interconnected nodes, connectionism gained appeal.

- **1990s: Boom and Winter**

With applications in image identification, finance, and other fields, neural networks saw a boom. Neural network research did, however, experience a "winter" due to exorbitant computational costs and inflated expectations.

- **2000s: Resurgence and Deep Learning**

Larger datasets, innovative structures, and enhanced processing capability spurred a comeback. Deep learning has shown amazing effectiveness in a number of disciplines by utilizing numerous layers.

- **2010s-Present: Deep Learning Dominance**

Convolutional neural networks (CNNs) and recurrent neural networks (RNNs), two deep learning architectures, dominated machine learning. Their power was demonstrated by innovations in gaming, picture recognition, and natural language processing.