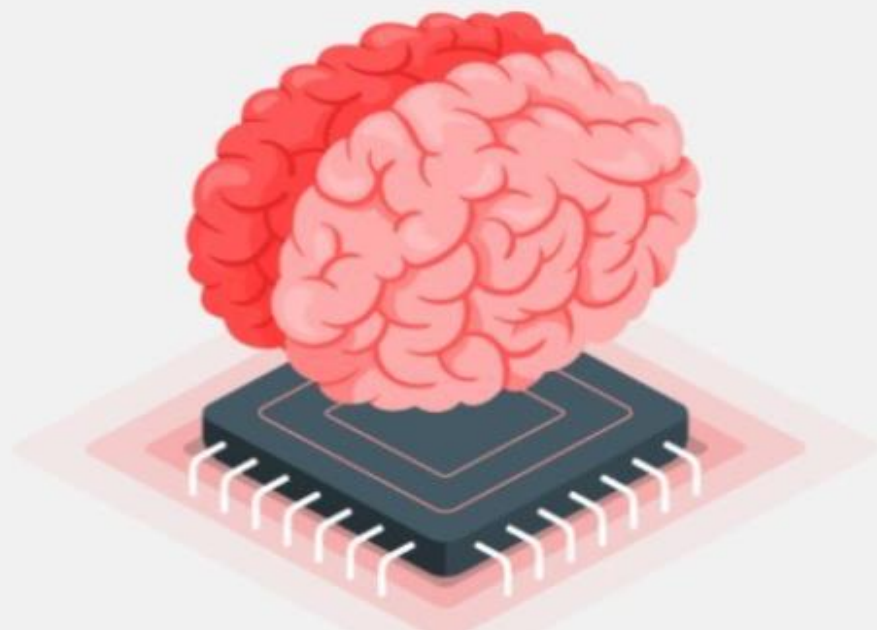


# Deep Learning Algorithms

*& its Use Cases*



# Deep Learning Algorithms & its Use Cases



1. **Convolutional Neural Networks (CNNs):** Used for image recognition tasks like object detection and classification.
2. **Recurrent Neural Networks (RNNs):** Suitable for sequential data processing, such as natural language processing and time series prediction.
3. **Long Short-Term Memory Networks (LSTMs):** A type of RNN designed to better capture long-term dependencies in sequential data, often used in text generation and speech recognition.
4. **Generative Adversarial Networks (GANs):** Employed for generating realistic synthetic data, image-to-image translation, and enhancing image quality.
5. **Autoencoders:** Utilized for unsupervised learning tasks like data compression, denoising, and anomaly detection.
6. **Deep Reinforcement Learning (DRL):** Applied in decision-making processes, such as game playing, robotics, and autonomous driving, to learn optimal policies through trial and error.
7. **Transformers:** Primarily used for natural language processing tasks such as machine translation, text summarization, and language modeling. (ChatGPT)
8. **Capsule Networks (CapsNets):** Introduced for handling hierarchical relationships within data, promising better performance in image recognition with fewer training examples.
9. **Deep Belief Networks (DBNs):** Useful for tasks like collaborative filtering, feature learning, and semi-supervised learning.
10. **Siamese Networks:** Employed in tasks like face verification, image similarity detection, and one-shot learning by comparing similarity between pairs of inputs.
11. **Attention Mechanisms:** Integral component in various deep learning architectures, enhancing model performance by focusing on relevant parts of input data, used in machine translation, image captioning, and speech recognition.
12. **Memory Augmented Neural Networks (MANNs):** Combines neural networks with external memory for tasks requiring complex reasoning and long-term memory retention, such as question answering and reasoning tasks.
13. **Deep Q-Networks (DQN):** Employed in reinforcement learning tasks, particularly in environments with discrete action spaces, such as game playing and robotics.
14. **Variational Autoencoders (VAEs):** Used for generating new data samples with similar characteristics to the training data, and for semi-supervised learning tasks.
15. **Self-Organizing Maps (SOMs):** Applied in clustering and visualization tasks, such as dimensionality reduction and exploratory data analysis.
16. **Graph Neural Networks (GNNs):** Used for tasks involving graph-structured data, such as social network analysis, recommendation systems, and molecule property prediction.