Types Of ANNs and Their Applications

Artificial Neural Network (ANN) Types	Description	Application
Feed Forward Networks	Feed Forward networks are the simplest forms of ANNs where information flows in one direction from left to right. Data enters at the inputs and passes through the network, layer by layer, until it arrives at the outputs. During normal operation, that is when it acts as a classifier, there is no feedback between layers. Feed forward networks learn through supervised learning. Here, the output values are compared with the correct answer to compute the error. The error is then fed back through the network basis which the algorithm adapts.	Feed forward neural networks are applicable to many spaces where the supervised learning techniques are applied. Mostly applied in computer vision and speech recognition.

Convolutional Networks	Convolutional Neural Networks are like artificial neural networks but with one or more convolution layers made up of independent filters at the beginning.	CNNs are widely used in image processing.
Self-organizing neural network	A self-organizing neural network also called a self-organising map or SOM is a specialised type of feedforward network trained on unsupervised learning models to create two dimensional abstractions of the input data called maps.	SOMs are applied in meteorology to study geographical terrains, seismic analysis for oil and gas exploration etc.

Recurrent Neural Networks (Also called Long Short Term Memory or LSTM)	Recurrent neural networks denote the next generation evolution of neural networks - networks that can remember. As humans we do not reinvent the wheel every time - we do not think from scratch. We have a memory basis which we understand and contextualise things. Traditional neural networks have lacked this memory referencing giving tem only limited powers while interpreting data. Recurrent networks solve this problem. They are networks with loops in them, allowing information to persist. Architecturally they are made of sequences and lists with feedback loops that allow information to be passed from one node to another.	RNNs to be applied to a number of problems such as speech recognition, image classification and captioning and so on.

Modular Neural Network	Modular neural network, as the name suggests it is made up of independent Artificial neural networks connected by an intermediary. Modular neural networks are modelled on the segmentation and modularization found in the brain. The brain divides complex tasks like vision into many subtasks which is how Modular Networks work too.	A MNN can be used to deliver a variety of complex tasks. For example – independent ECG recognition or real-time stock price prediction algorithms.
Radial Basis Function Neural Network	Radial basis function network is an artificial neural network that uses radial basis functions as activation functions. These layered feedforward neural networks (NN) are capable of approximating any continuous function with a certain precision level.	Radial basis function networks are applied to problems such as Sales Forecasting and Fault Diagnosis in high voltage power lines.