

# Machine Learning - Artificial Neural Networks

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The idea of artificial neural networks was derived from the neural networks in the human brain. The human brain is really complex. Carefully studying the brain, the scientists and engineers came up with an architecture that could fit in our digital world of binary computers. One such typical architecture is shown in the diagram below –

There is an input layer which has many sensors to collect data from the outside world. On the right hand side, we have an output layer that gives us the result predicted by the network. In between these two, several layers are hidden. Each additional layer adds further complexity in training the network, but would provide better results in most of the situations. There are several types of architectures designed which we will discuss now.

## **ANN Architectures**

The diagram below shows several ANN architectures developed over a period of time and are in practice today.

Source:

<https://towardsdatascience.com/the-mostly-complete-chart-of-neural-networks-explained-3fb6f2367464>

Each architecture is developed for a specific type of application. Thus, when you use a neural network for your machine learning application, you will have to use either one of the existing architecture or design your own. The type of application that you finally decide upon depends on your application needs. There is no single guideline that tells you to use a specific network architecture.

References

- [https://www.tutorialspoint.com/machine\\_learning/](https://www.tutorialspoint.com/machine_learning/)