Machine Learning In Python

Subject: Deep Learning

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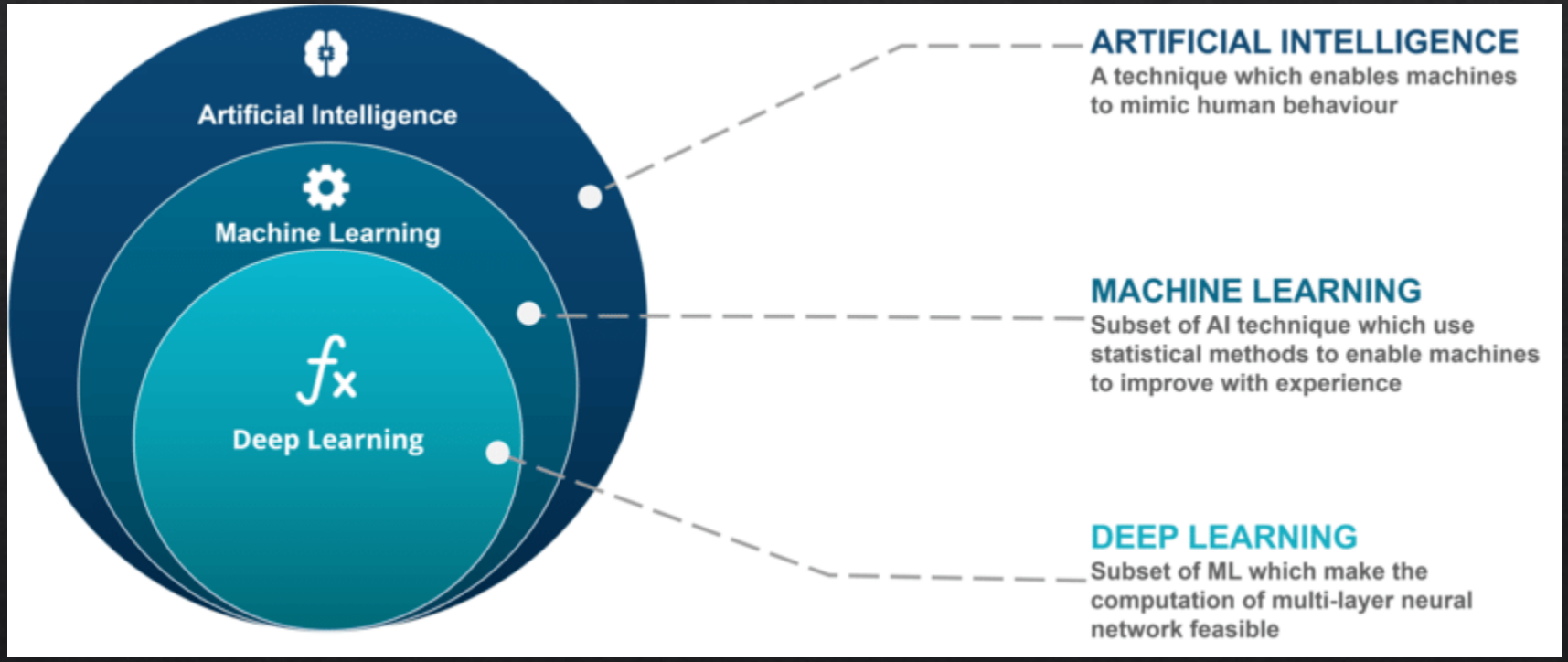
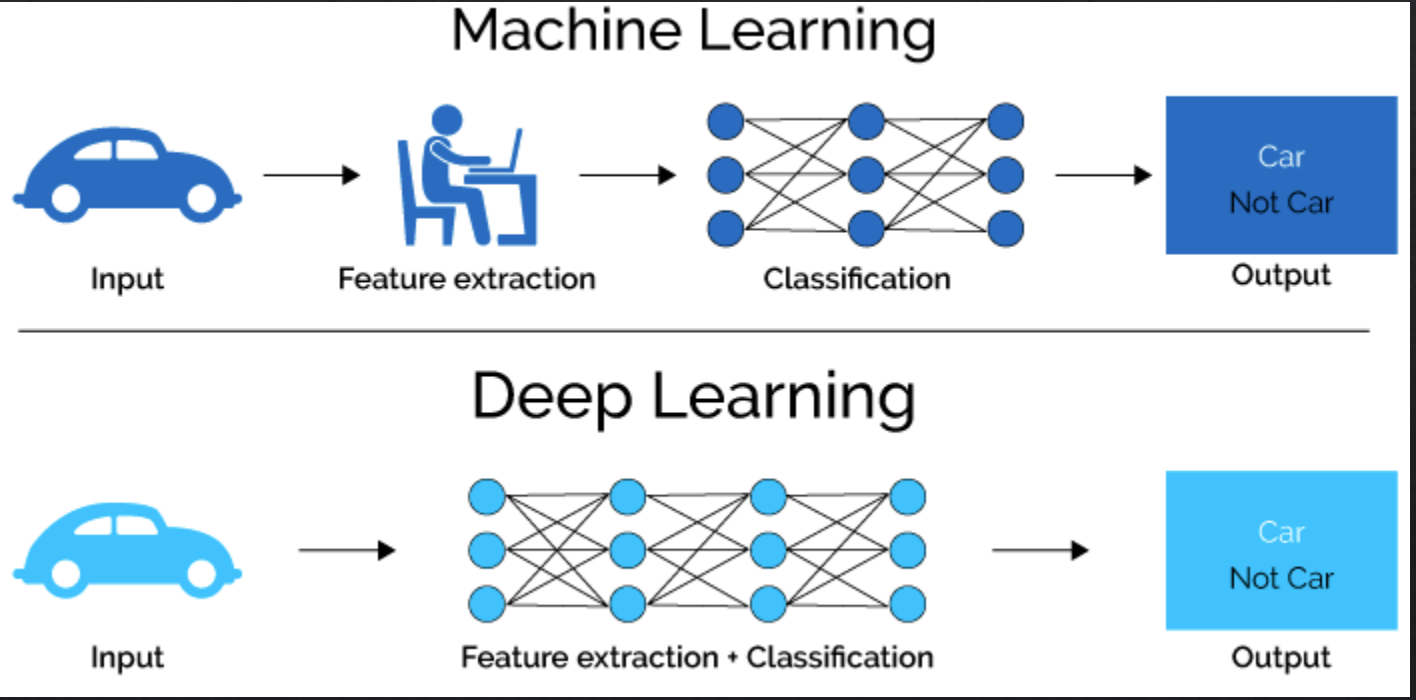
Deep Learning

- Deep learning is a subset of machine learning in artificial intelligence which is used as a developed supervised learning techniques for classification and regression problems.
- The basis of all deep learning methods is the artificial neural network.

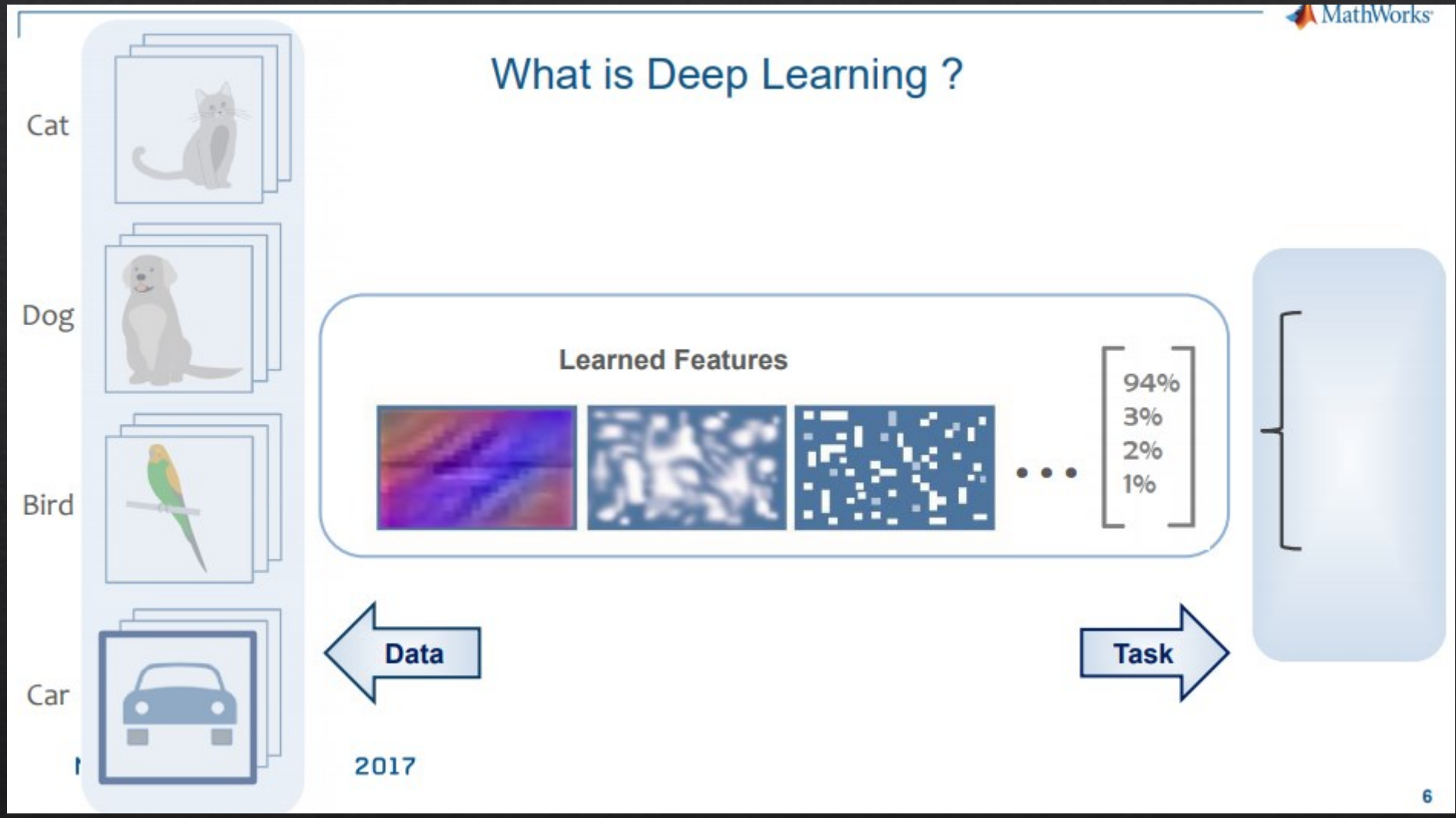


Deep Learning Vs Machine Learning

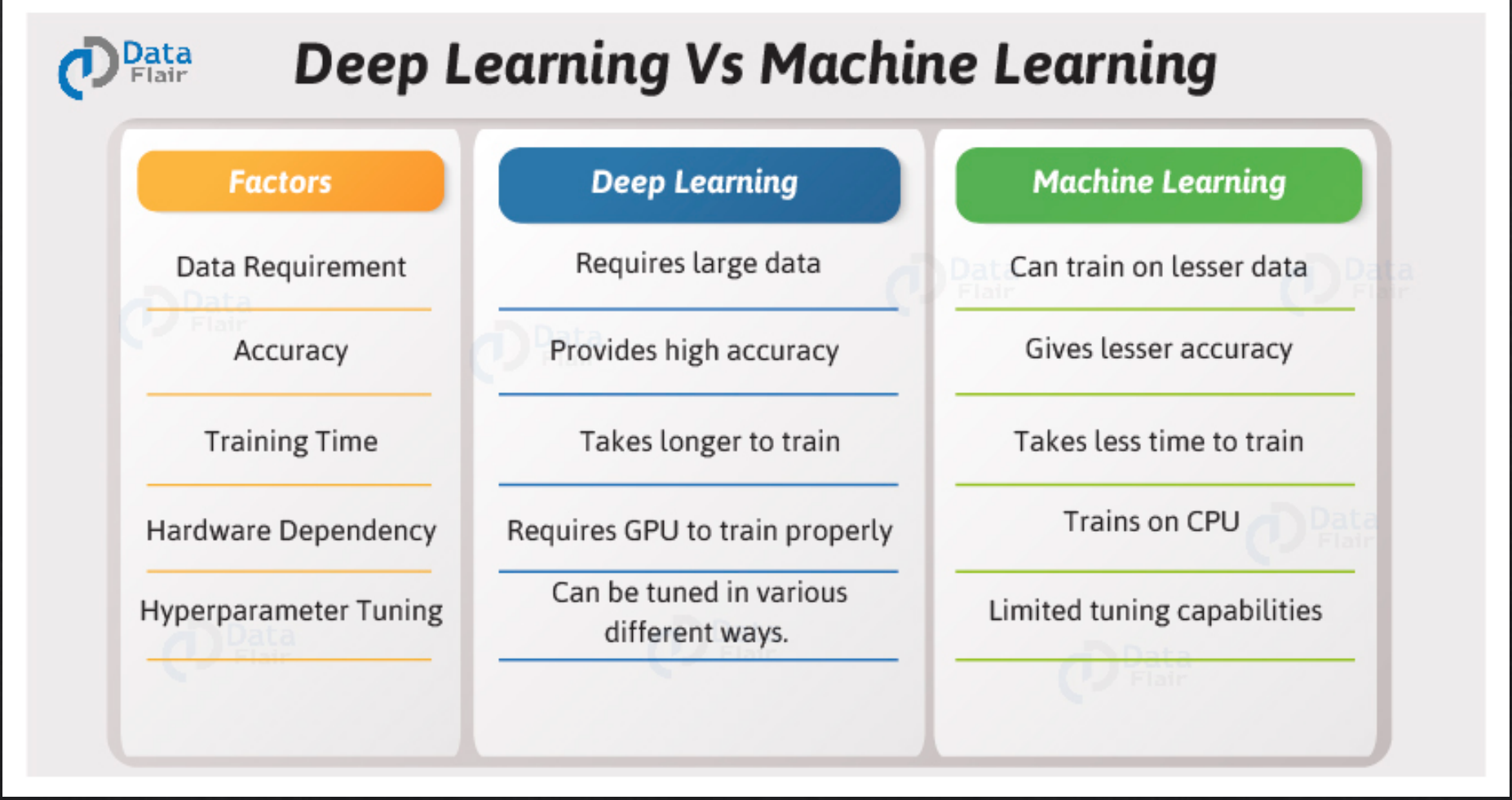
- The deep learning techniques use different layers to progressively extract higher level features from the raw input, therefore these techniques don't require feature extraction before training and testing steps.



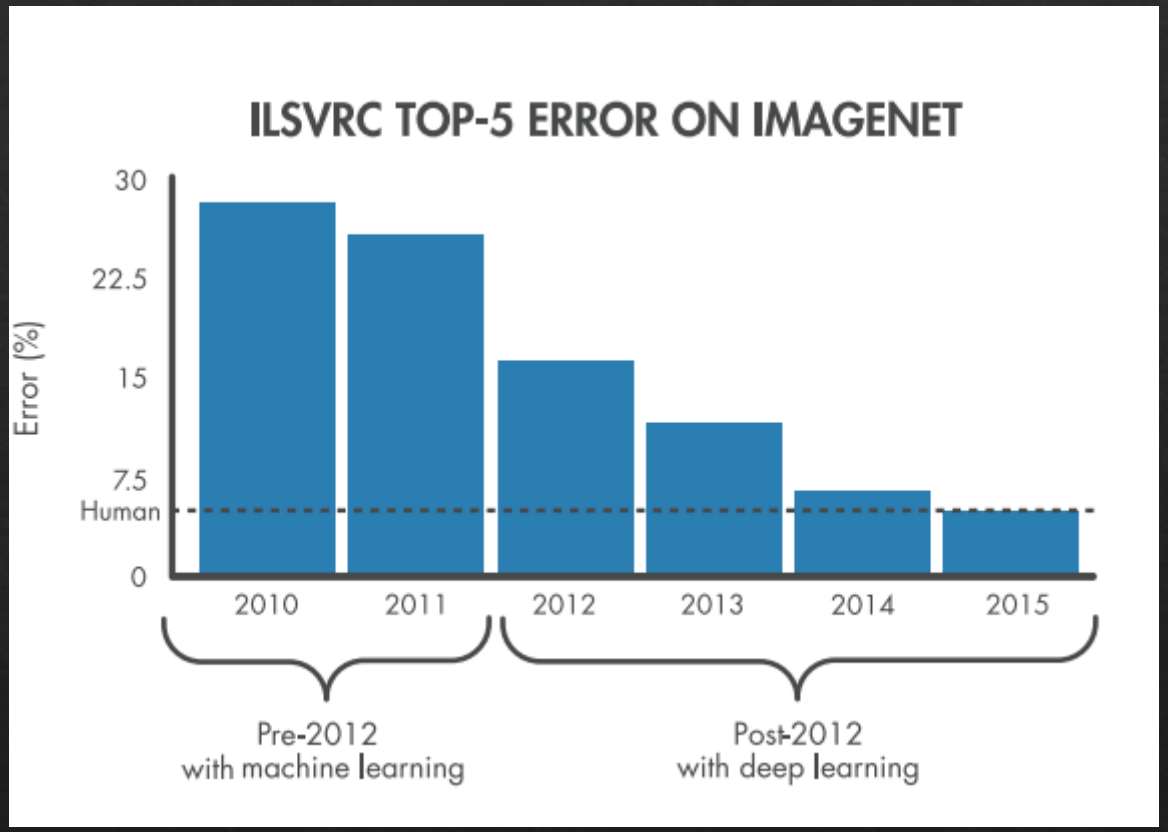
Deep Learning Vs Machine Learning



Deep Learning Vs Machine Learning



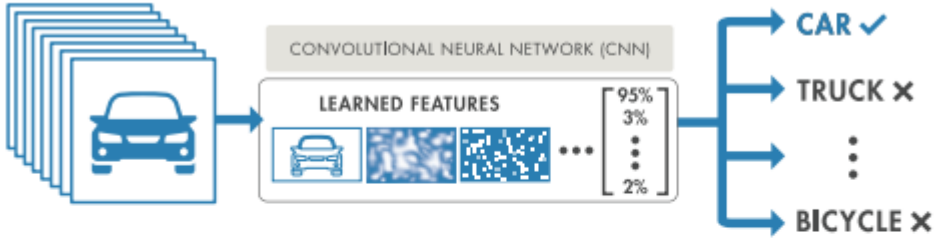
What makes deep learning state-of-art?



What makes deep learning state-of-art?

Three technology enablers make this degree of accuracy possible:

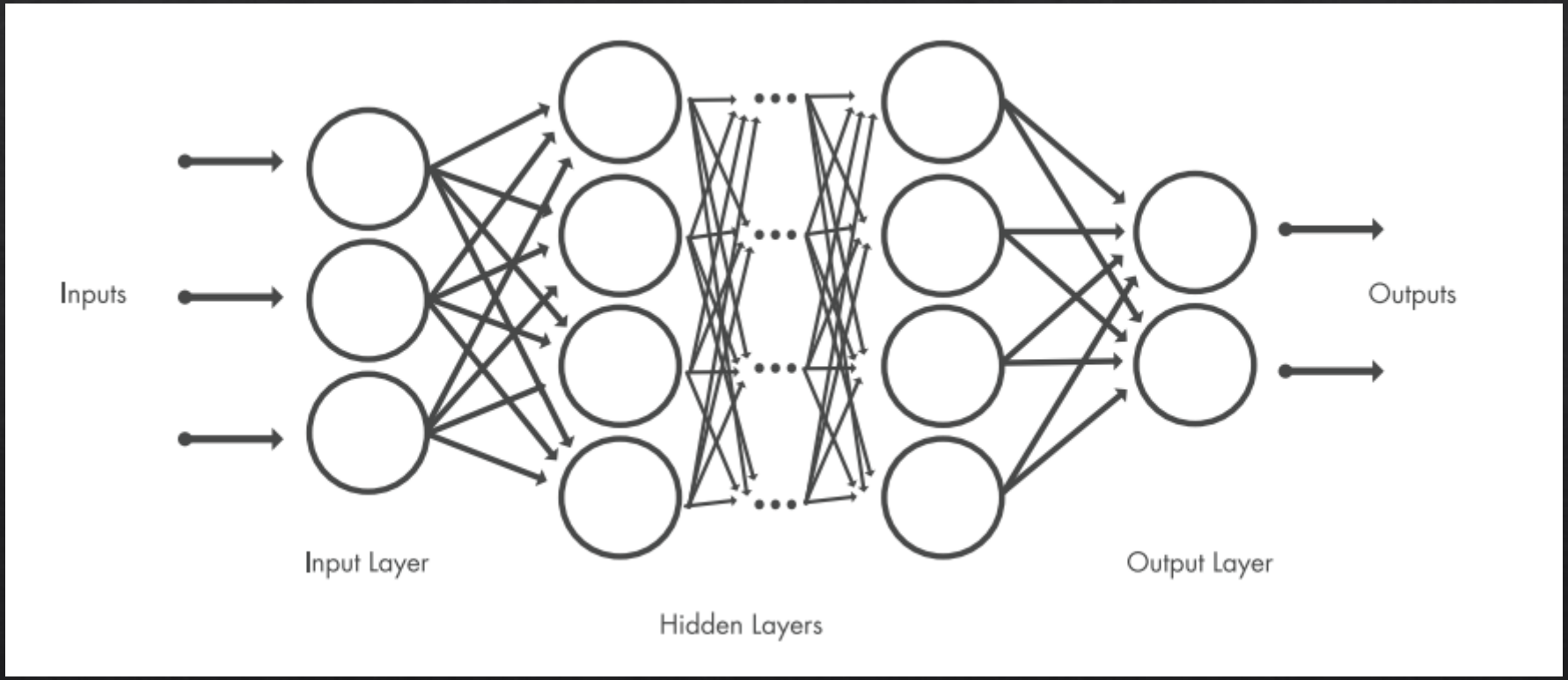
Easy access to massive sets of labeled data
Data sets such as ImageNet and PASCAL VoC are freely available, and are useful for training on many different types of objects.



Increased computing power
High-performance GPUs accelerate the training of the massive amounts of data needed for deep learning, reducing training time from weeks to hours.

Deep Learning Techniques

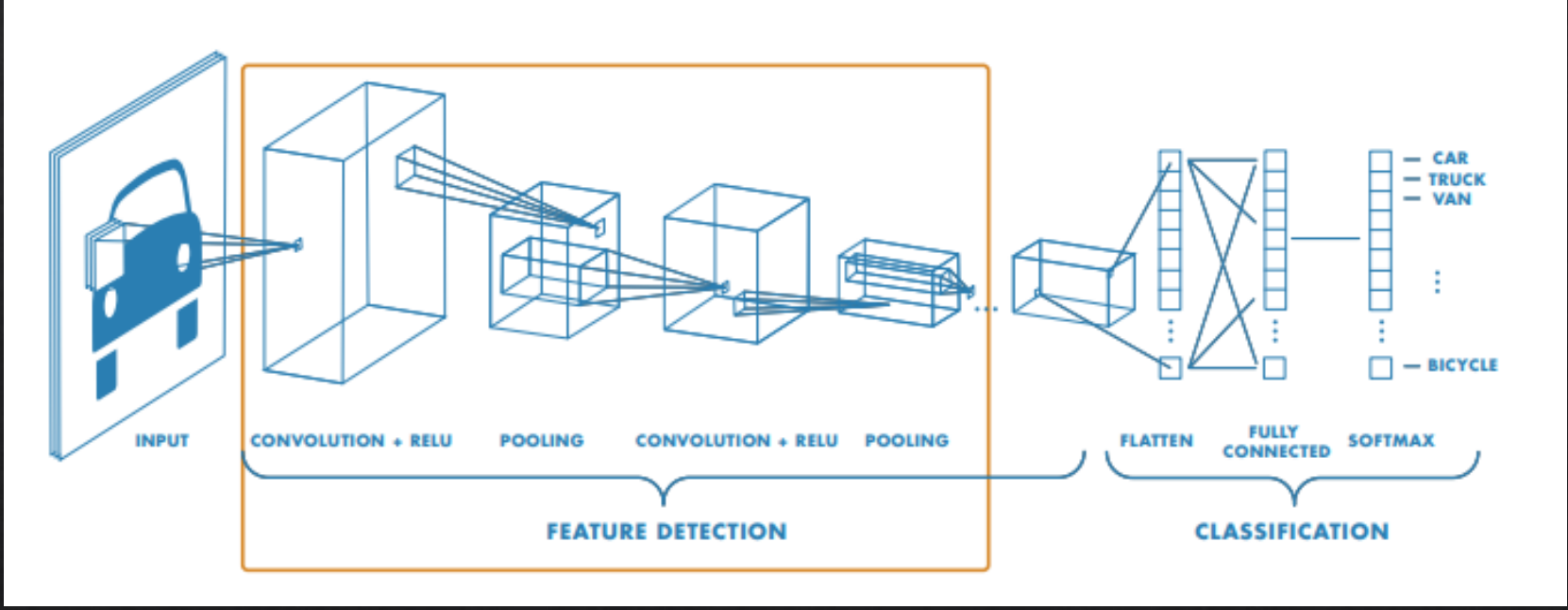
Multilayer Perceptron



Deep Learning Techniques

Convolutional Neural Network

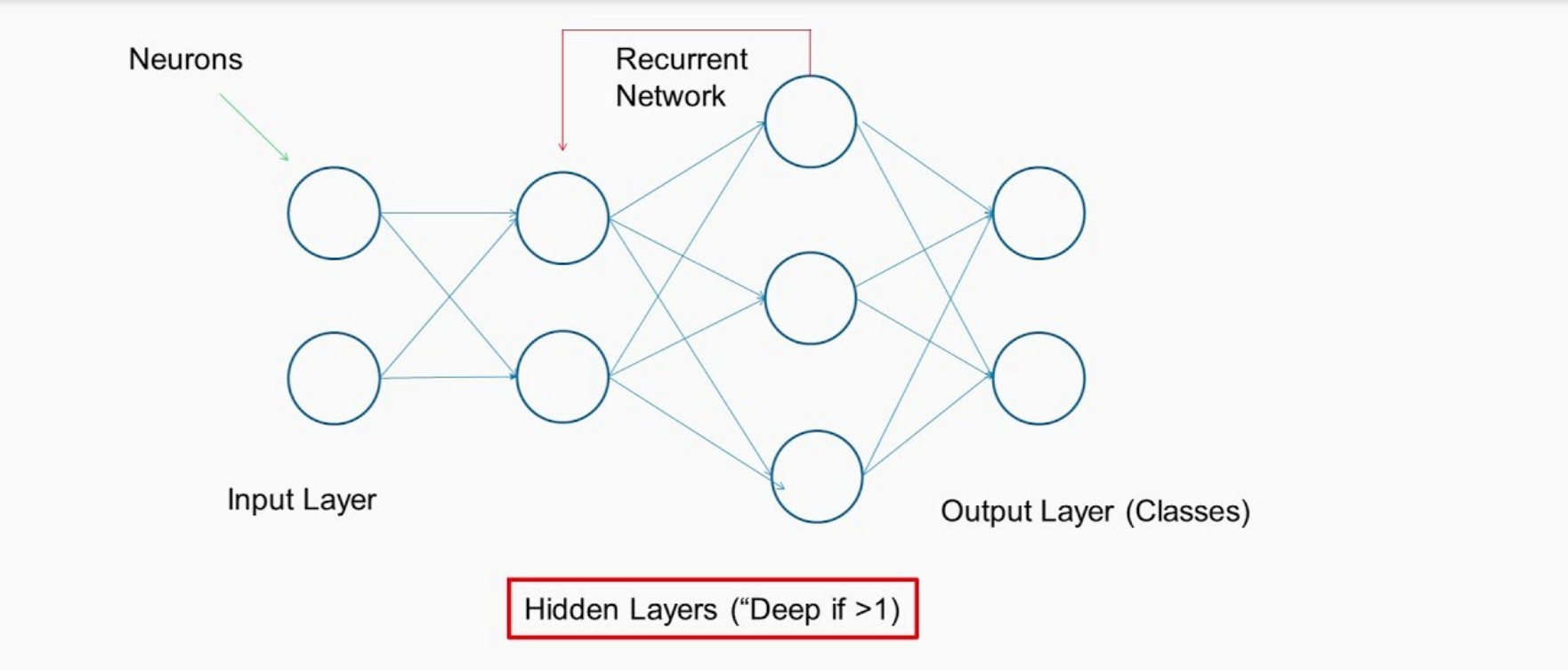
- A Convolutional Neural Network (CNN) is a Deep Learning technique which can take in an input image, assign importance (learnable weights and biases) to various aspects/objects in the image and be able to differentiate one from the other.



Deep Learning Techniques

Recurrent Neural Network

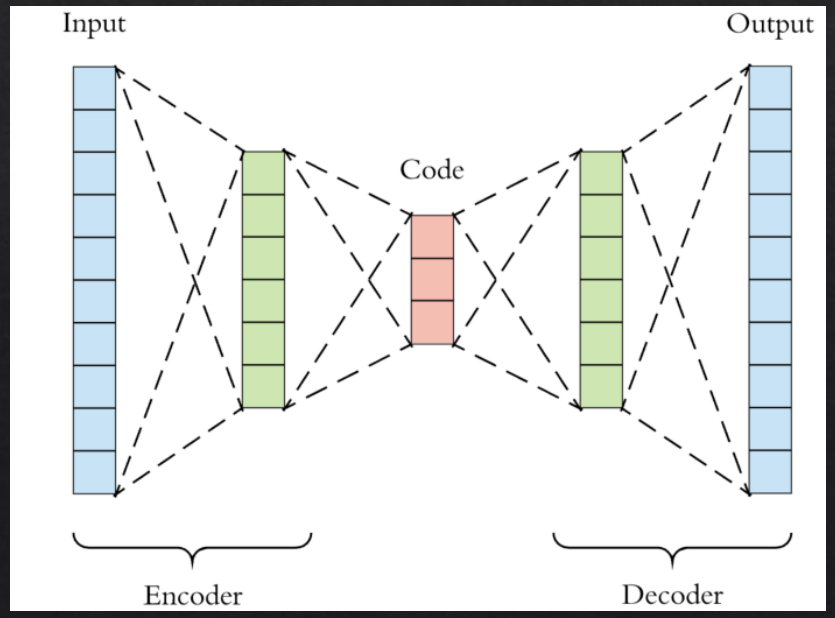
- A recurrent neural network (RNN) is a class of deep learning techniques which can learn the order of inputs.



Deep Learning Techniques

Autoencoder

- an autoencoder is a type of artificial neural network used to learn efficient data codings in an unsupervised manner.
- The aim of an autoencoder is to learn a representation (encoding) for a set of data, typically for dimensionality reduction, by training the network to ignore signal “noise”.



Deep Learning Techniques

Generative Adversarial Network

- A generative adversarial network (GAN) is a class of deep learning frameworks which can generate new data.