**Deep learning** (also known as deep structured learning, hierarchical learning or deep machine learning) is a branch of machine learning based on a set of algorithms that attempt to model high level abstractions in data. In a simple case, you could have two sets of neurons: ones that receive an input signal and ones that send an output signal. When the input layer receives an input it passes on a modified version of the input to the next layer. In a deep network, there are many layers between the input and output (and the layers are not made of neurons but it can help to think of it that way), allowing the algorithm to use multiple processing layers, composed of multiple linear and non-linear transformations.[1][2][3][4][5][6][7][8][9]

**DEEP LEARNING ARCHITECTURE**

1. **Generative deep architectures**, which are intended to characterize the  
   high-order correlation properties of the observed or visible data for  
   pattern analysis or synthesis purposes, and/or characterize the joint  
   statistical distributions of the visible data and their associated classes. In  
   the latter case, the use of Bayes rule can turn this type of architecture  
   into a discriminative one.
2. **Discriminative deep architectures**, which are intended to directly provide discriminative power for pattern classification, often by characterizing the posterior distributions of classes conditioned on the visible data; and
3. **Hybrid deep architectures**, where the goal is discrimination but is  
   assisted (often in a significant way) with the outcomes of generative  
   architectures via better optimization or/and regularization, or  
   discriminative criteria are used to learn the parameters in any of the  
   deep generative models in category 1) above. [13]

Despite the complex categorization of the deep learning architectures, the  
one’s that are in practice are **deep feed-forward networks, Convolution  
networks**and**Recurrent Networks**.