

GoogLeNet Architecture

Architecture: The GoogLeNet, also known as the Inception architecture, gained its name from a line in the film *Inception*. Its architecture is a combination of great ideas previously introduced by other architectures. The idea for each inception block is that inputs would be split off into four different paths which all extract the data in its own ways using different convolution sizes. Then the paths are joined together through a filter concatenation. The whole network would be built from nine of these blocks. In the end of the network is a softmax layer, however, there are two side paths that branches from the middle of the network and both ends in softmax layers. These side paths use hidden layers from the network to predict a final label. The extra predictions make a regularization effect to prevent overfitting for the network.

Advantages: Significant increase in accuracy performance with a cost of small increase in computational requirements.

Disadvantages: Newer versions of networks have been released that build on top of the Inception network idea with possibly better combination of layers with more preferred use.

Achievements: Winner of ImageNet Large-Scale Visual Recognition Challenge 2014 (ILSVRC14).