ImageNet Classification with Deep Convolutional Neural Networks

November 22, 2023

1 Summary

0. The paper trains a large data set with high resolution images using a Convolutional Neural Network (CNN). In doing so, it combines techniques effectively to obtain high accuracy.

1. The specific contributions from the paper include:

   (a) It was the largest CNN at that time and achieves highest rank in an imgae recognition competition.

   (b) Highly optimized GPU implementation using two parallel GPUs.

   (c) Introduction of ReLU which is still widely used.

   (d) Other minor improvements include overlapping pooling layers and local response normalization.

   (e) Overfitting is reduced by using existing data augmentation techniques and recently proposed Dropout technique.

2 Analysis

Now dubbed as AlexNet it is one of the most influential papers in Machine Learning. This paper first showed that by combining the right techniques (which are still used today) one can train large neural networks with a high success rate in complex image classification problems.