

Analysis of "Learning Internal Representations by Error Propagation"

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1 Discussion

The paper, "ImageNet Classification with Deep Convolutional Neural Networks" works to show that a large and deep convolutional neural network is capable of having great success in learning and classifying from challenging data sets. In my objective opinion, I found the writers' results to be trustworthy, while their conclusions seemed to be flawed. In the paper, the writers claim several times that the neural network that they developed outperformed the networks developed by others, which are given reference to. The issue I have with this is expressed by the writers themselves on page seven where they state, "Since there is no established test set, our split necessarily differs from the splits used by previous authors, but this does not affect the results appreciably." I find it hard to believe that using different data sets wouldn't effect the difference in error rate between the work of the authors of this paper and the work of others.

The only other issue I have with the results stated in the paper is also from page 7 where the authors trained one CNN, with an extra sixth convolutional layer over the last pooling layer, to classify the entire ImageNet Fall 2011 release and then they "fine-tuned" it on ILSVRC-2012 in order to get a better error rate. My issue with this is the "fine-tuning" part of their method. The authors never explain what this "fine-tuning" is and they don't state if the neural network does this or if they needed to edit the weights themselves. If the authors edited the weights on their own then it defeats the purpose of the experiment since they are trying to show that with a sufficiently large and deep neural net it can be trained to outperform other neural networks of a smaller size, with only supervised learning. Their intervention should invalidate their claim.

Beyond these issues the authors stated their experimentation and findings accurately.