READING REPORT 4

On the Origin of Deep Learning

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INFO 5082 Section 020 - Seminar in Research and Research Methodology

DATE: Nov 2,2022

VERY DEEP CONVOLUTIONAL NETWORKS FOR LARGE-SCALE IMAGE RECOGNITION

Summary:

In this paper the author has explained the importance and working of deep convolutional networks for large-scale image recognition . By using ConvNets architectures the author has finalized it has more accurate and efficient with less error rate.

Extensive outline:

Out of all the other machine learning techniques CNN is the best model for analyzing high-level image resonance data and also video data which was not posable in any other ML techniques . A stack of non-linear transformations that are learned from data make up a convolutional neural network (CNN). CNNs were first proposed for digit recognition (LeCun, Y.,). In this computer vision field CNN plays an important role in classification and localization. In ConvNet there are different layers where each and every layer has its own role of responsibility. Here convolutional layers has three fully-connected layers where it perform ILSVRC classification and the final layer is soft-max layer. Coming to training and evaluation it uses multinomial logistic regression for training an image and it will crop the input image for better execution.in multi-scale training all the images are rescaled. The system can learn all layers end-to-end from data using the suggested training strategy without using plant-specific methods. We think that adding more subject expertise to the system's design can help to increase accuracy(LeCun, Y.,). LeNet, AlexNet, and GoogLeNet are some of the other used to provide results(Simonyan & Zisserman, 2014).

Limitations and Extensions:

CNN is one of the best ML technique to analyze high-resonance data with better error rate still researchers are going on in developing CNN for better accuracy

Opinion:

In my opinion I agree with the author argues that for image classification CNN classification is best for training the high resonance images with better accuracy and test score.

References:

LeCun, Y., Boser, B., Denker, J.S., Henderson, D., Howard, R.E., Hubbard, W., Jackel, L.D.: Backpropagation applied to handwritten zip code recognition. Neural computation 1(4), 541–551 (1989)

Simonyan, K., & Zisserman, A. (2014). Very deep convolutional networks for large-scale image recognition. arXiv preprint arXiv:1409.1556.

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Deep Residual Learning for Image Recognition

Summary:

In this article the author tells about the image recognition using deep residual learning(DRL).This technique is used to ImageNet detection with better showing.

Extensive outline:

DLL(Deep Residual Learning) is one of the fast growing deep learning technique used for high level data set execution.DLL trains data in deeper layers for better image recognition .compared to other image recognition layers deep residual learning has more layers for the execution of the dataset. In DLL we have a activation decay problem while execution so to keep away from this problem we use STM cells .High level data sets like ILSVRC can be performed better in this residual learning methodology .all the data that was used for training in DLL is subjected to train on 1000 layers.it will save all the data inputs and outputs for certain time in short-term memory(STM) for further usage. While working on the ILSVRC dataset it performs better execution out of all machine learning methods. Coming to the test accuracy it perform better than any other techniques available in the market.

Limitations and Extensions:

Deep residual learning is used mostly for agricultural purposes for detecting the plant disease detection image recognition, such as vehicle detection and street view recognition (Goodfellow et al., 2013) are also using DRL.

Opinion:

In this study, Deep residual learning is used for detecting complex backgrounds and accuracy score is higher than any other neural networking method.

References:

Goodfellow, I. J., Bulatov, Y., Ibarz, J., Arnoud, S., & Shet, V. (2013). Multi-digit number recognition from street view imagery using deep convolutional neural networks. *arXiv preprint arXiv:1312.6082*.