Peer review of Group 46 @DD2424

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Contents

1 One sentence summary

The project is about building and exploring regularization techniques on Convolutional Neural Networks(CNNs) specifically VGG models. The report for the main part replicates the results from a blogpost.[1]

2 Most clear part

Since we also did this project with extensions, everything is clear and easy to follow given our background. Had we not done the same project then I believe it would have been more difficult. The structure of the report is easy to follow. Their conclusion makes their results a lot more clear and adds more context to the results.

3 Least clear part

The subsections below cover parts which could have been improved. At first glance it may seem that we were harsh with our criticism however most of it is just us being nit-picky with the structure of the report and certain sentences belonging in the wrong parts of the report. The report seems to be a draft thereby figures were missing and certain sections of the reports were not thoroughly reviewed.

3.1 Section 1.1 The problem

Here they describe what they are going to do rather than describing what actually is the problem. The problem description they could have used given their report: *VGG models are prone to overfitting so we are trying to test which regularization techniques are the most useful etc...* or something else.

3.2 Section 1.2 Why is it important

We believe most of the text should have been under the introduction rather than here. The message of why it is important is not really conveyed here. They also mention in the conclusion that certain models are able to reach 99% but do not elaborate on them in this section.

3.3 2-Related work:

This is us being nit-picky however we feel as if this part was rushed. In the introduction, they mentioned a bit about why Computer Vision is important but didn't really elaborate on it. We feel like they could have done it here and given a brief history of Computer Vision and what makes VGGs "groundbreaking" or unique.

3.4 Their 3.2 Section

They have their Neural Network section under section 3 data. This section seems to talk about related work and should not be here in our opinion.

3.5 4-Metods:

In section 4.1 they talk about the baseline VGG-based model. Without reading the blog, it would be difficult to build the models. More was spent describing Keras and how the model learns than actually explaining how to build the model. Also they seem to have added their results under methods by mentioned the results they got at each model.

[1] https://machinelearningmastery.com/how-to-develop-a-cnn-from-scratch-for-cifar-10-photo-classification/

3.6 Presentation of the results:

In addition, it was difficult to quickly get an overview of the results and compare them easily. Currently, the results of all the models are in the report but implementing tables and graphs would make the results clearer and simpler for the reader to understand.

4 Did the report give you a better understanding

No, it didn't. This is because we did the same project with extensions and not because the report was unclear or written in a bad way. This project covers everything we did meaning we did not learn anything new here.

5 What was the most impressive experimental result

What I found super interesting is that this group reached a test accuracy of 89.25% by adding warm-up with Consine annealing as the learning rate and using batch normalization as" the main" regularizer. We trained several ResNet models with several layers, epochs and maxed-out parameters found in the literature. Only a few of our ResNets managed to get better than 89.25%. I believe the group may have posted their training results and not test results as the highest we got when we tested different regularization models with VGG3 models was roughly 87-88%. Then again their results are quite reasonable although a bit surprising. Overall they got the same results as we did when they strictly followed the blog.

6 Which experiment would you like the group to complete if they continued with this project

They mentioned that weight decay was not the result of a regularization technique. During their presentation, we asked them if they conducted a large search for a good weight decay number and they replied that they only followed the blog. We'd suggest they optimize weight decay regularization and try it with cyclic learning which seemed to produce good results according to the literature.

7 Two things that we liked about the report and video

1. Their video + presentation was easy to understand and follow. Their conclusions were logical and based on the results. The results were presented in a clear manner and they had nice slides. The presentation did not feel rushed as compared to ours.

2. Besides what has already been mentioned under (section 3) we would like to address the quality and clarity of the report´s conclusion. We liked it because it gave the reader a necessary overview of the results and answered .