DD2424 Group 118:
Peer-Review of Group 25

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1

The project examines Covid-19 detection in X-ray images using so called Siamese Neural Networks where they use X-ray data from Pneumonia patients in order to combat the lack of publically available X-rays of Covid-19 patients.

2

A very well written part of the report is the part that discusses the preprocessing of the images.

3

A part of the report which was a bit confusing was the discussion regarding how the data was split into, training, validation and test sets. The decisions made here could have been motivated better as we feel that some were a bit unconventional, for example the usage of Pneumonia data in the case of validation when the ultimate goal is to detect the prevelance of Covid-19.

4

Yes, as we had not previous knowledge of Siamese Neural Networks. The Method section which covers the architechture of the Siamese Neural Network thorougly explains it and also includes some pictures which helps with the understanding.

5

The most impressive result was what was shown in Figure 6 where the accuracise with and without batch normalization are shown.

6

The mentioning of the symptom similarities between Pneumonia and Covid-19 which is mentioned in the Abstract as well as the usage of Pneumonia data in the training of a network that aims at detecting Covid-19 does to us signifiy that a network trained for Pneumonia detection should also perform well for Covid-19 detection. This does not turn out to be the case as we can see in Table 2 where the testing accuracy for Pneumonia is about 80% and about 57% for Covid-19.

7

Our initial thought was that the main experiments should be redone with Covid-19 data in the validation set as the hyperparameter would have been tuned towards Covid-19 detection instead of towards Pneumonia detection.

Secondly it would have been interesting to examine if there are any differences between Covid-19 X-rays and Pneumonia X-rays that a CNN can pick up on even though the symptoms are assumed to

be very similar. Given our newfound understanding of Siamese Neural Networks we believe that this could have been done by seeing if such a network could be able to distinguish between Covid-19 X-rays and Pneumonia X-rays.

8

We like the quite novel and very unique approach to problem of Covid-19 detection used in this project which differs quite a bit from most other Covid-19 projects that simply used different classifiers.

We also like the fact that the group was very thorough and detailed in the explanation of their working process.