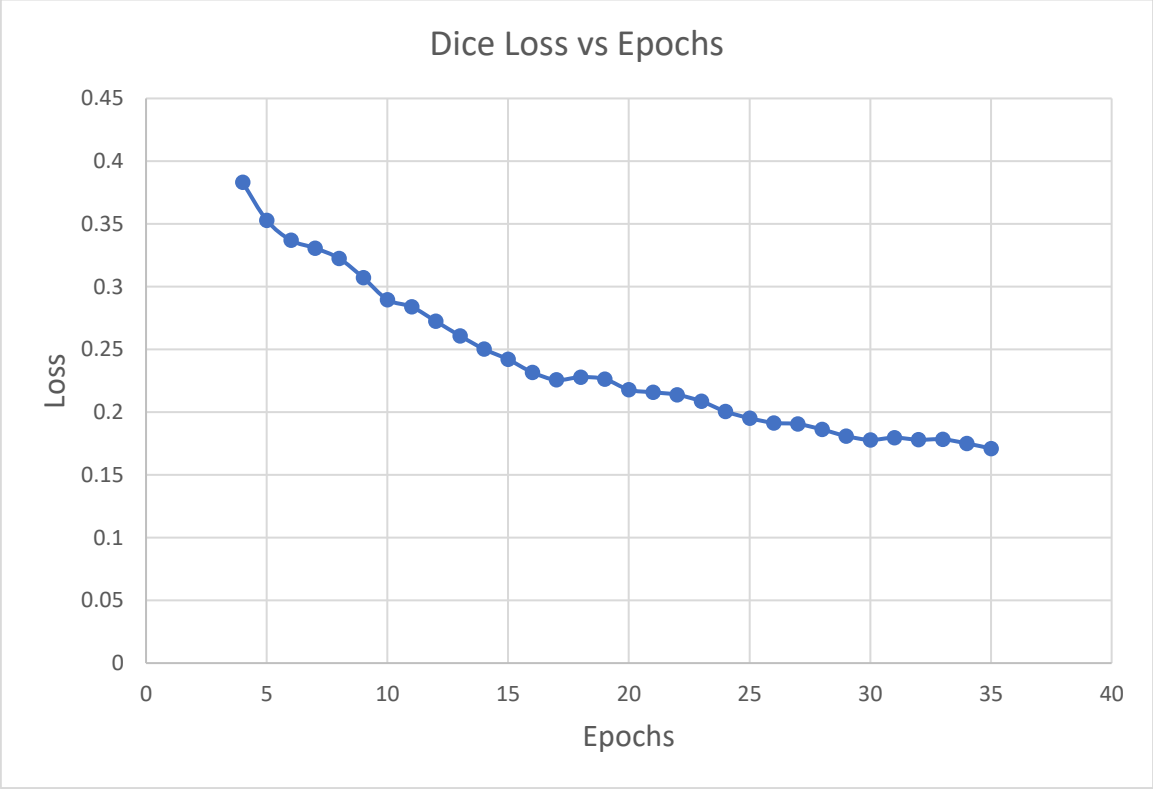
1-Overview:

The model was finetuned on the CMP base dataset with a train-test split of 80% and 20% respectively. The model was finetuned over 35 epochs with a very small learning rate. This report will contain the results of this finetuning and my thoughts on how to improve set results.

2-Statistics:

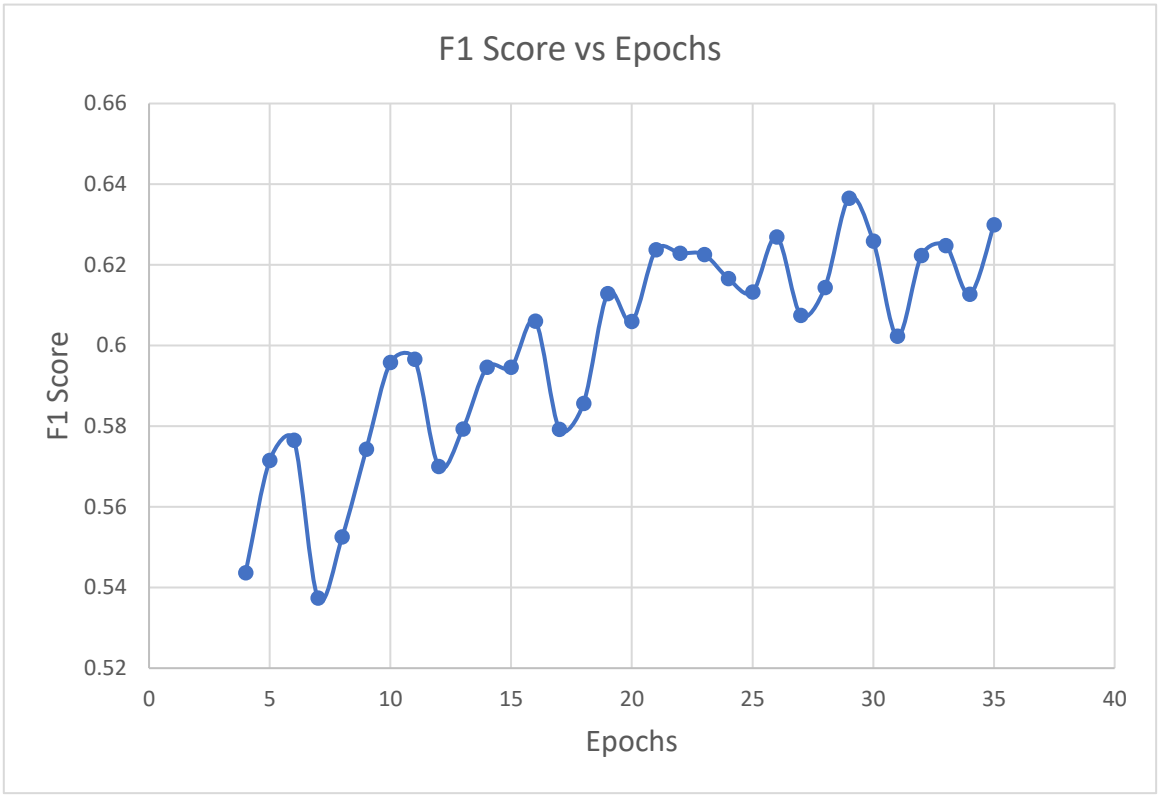
a. Loss:

Dice loss was used in finetuning and the chart below shows how the loss changed over 35 epochs. We will notice that the loss value gradually decreases as the number of epochs increase.



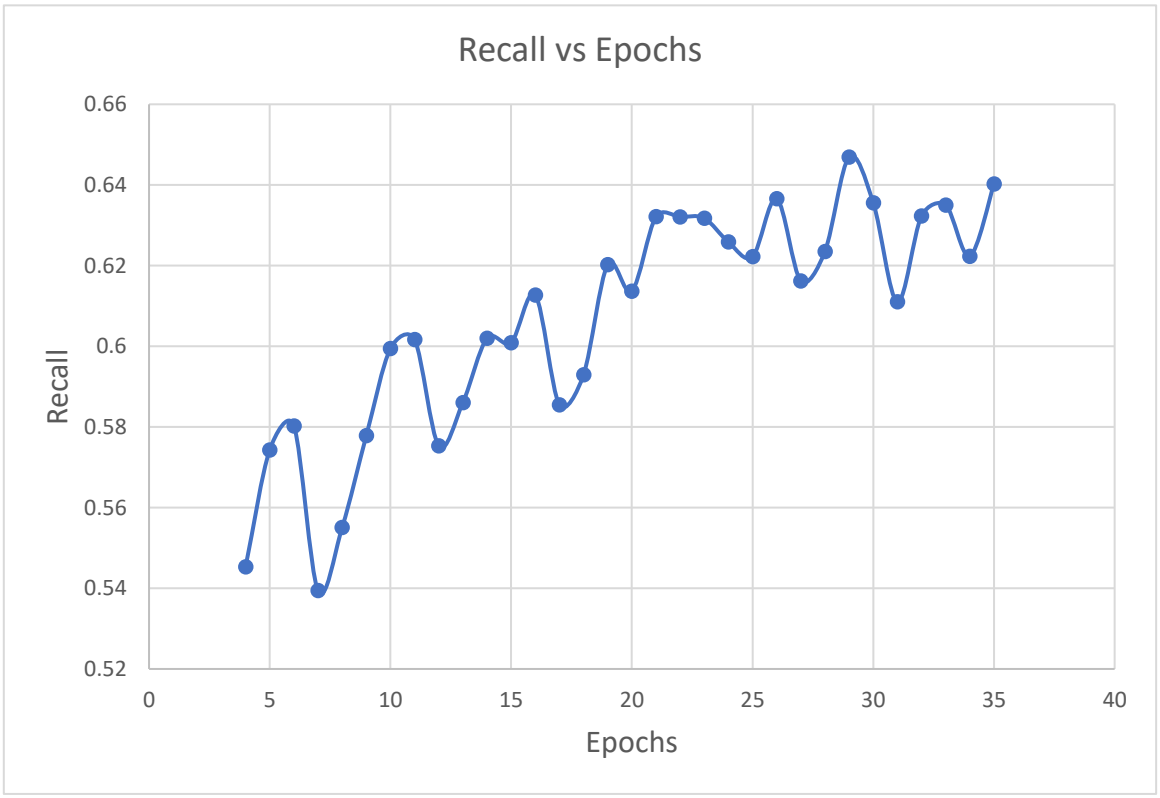
b. F1 Score:

The chart below shows how the F1 score changed over 35 epochs. We can see that the overall F1 score increases as the number of epochs increase.



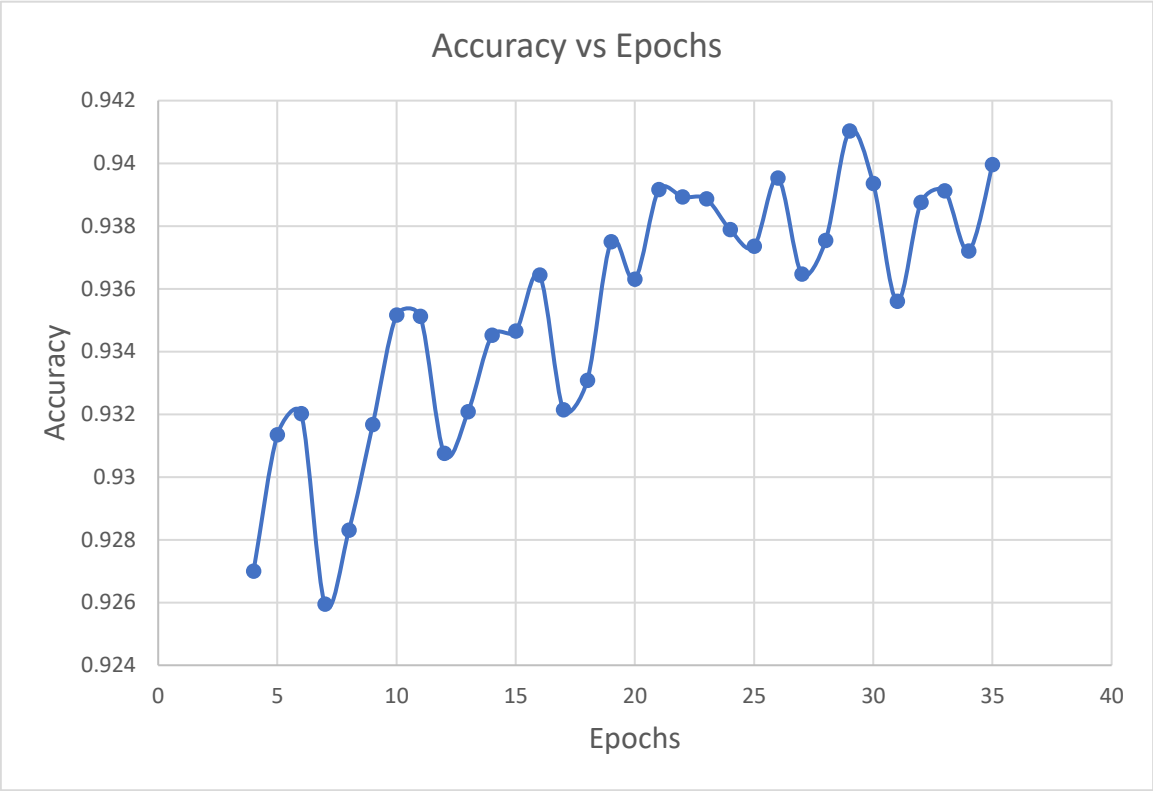
c. Recall:

The chart below shows how the recall changed over 35 epochs. We can see that the overall recall increases as the number of epochs increase.



d. Accuracy:

The chart below shows how the accuracy changed over 35 epochs. We can see that the accuracy gradually increases as the number of epochs increase.



3-Results:

The images below show how the model performs after fine tuning throughout different epochs.

Image A on Epoch 1

Image A on Epoch 10

Image A on Epoch 20

Image A on Epoch 35

Image B on Epoch 1

Image B on Epoch 10

Image B on Epoch 20

Image B on Epoch 35

We can clearly see that the segmentation becomes better as the number of epochs increases.

4-How To Improve:

I believe that there are several things we could do to improve. First things first, we could increase the number of epochs; as we can see that the loss decreases and the segmentation becomes better as the number of epochs increases. We could try going to 70 – 100 epochs. Another thing we could do is change the loss function. There are several loss functions that can be used in the segmentation problem, some of which could be found in this link: https://github.com/shruti-jadon/Semantic-Segmentation-Loss-Functions. Other loss functions could give us an improvement in performance. One other way to improve is to increase the dataset. We could add the extended dataset to the base one. Unfortunately, due to the time constraints, I was not able to try these improvements.