

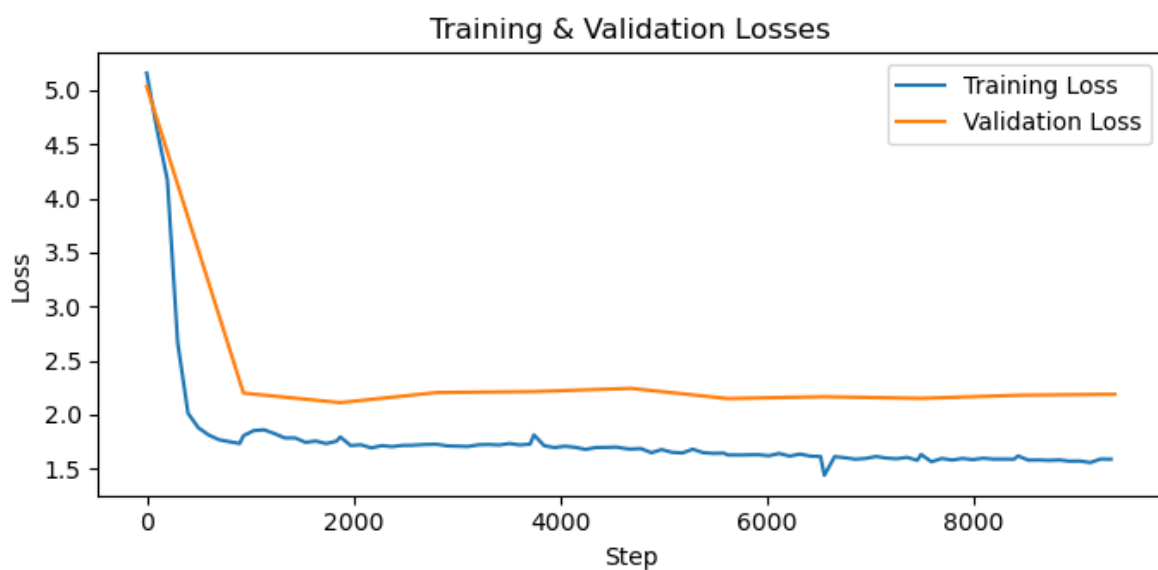
Deep Learning Lab

Exercise 3

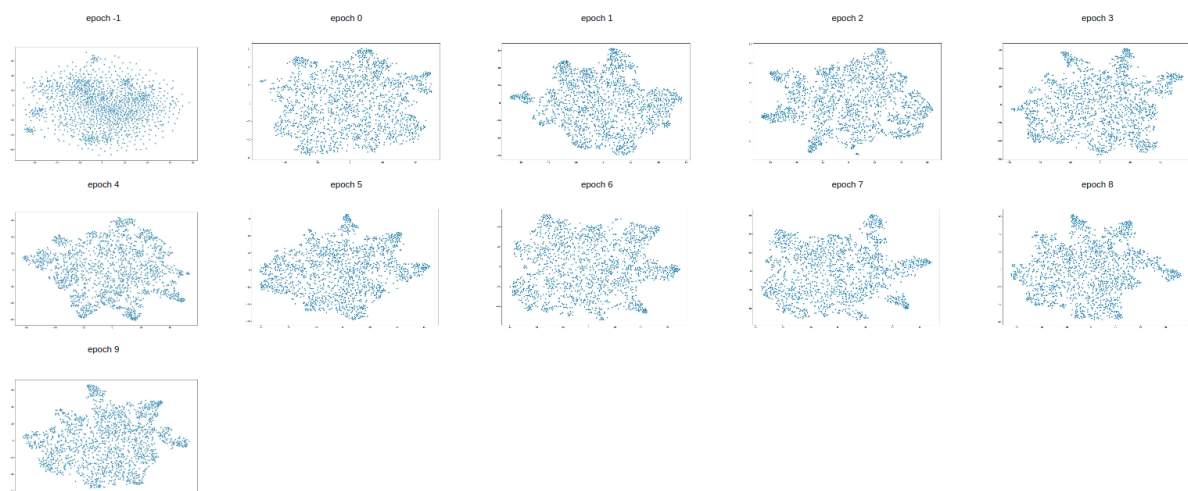
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Task 1

In the figure below you could see the plots for the training and validation losses plotted on the same chart. The results could definitely be improved since the losses are high. Also, you could see that the model over trained, since there is a gap between the validation loss and the training loss.



The figure below shows the t-SNE plots for each epoch. After the first epoch, the distribution seems to be similar and the plot's quality does not really improve a lot, since the loss is almost constant after the first epoch. This could be seen in the losses figure above.

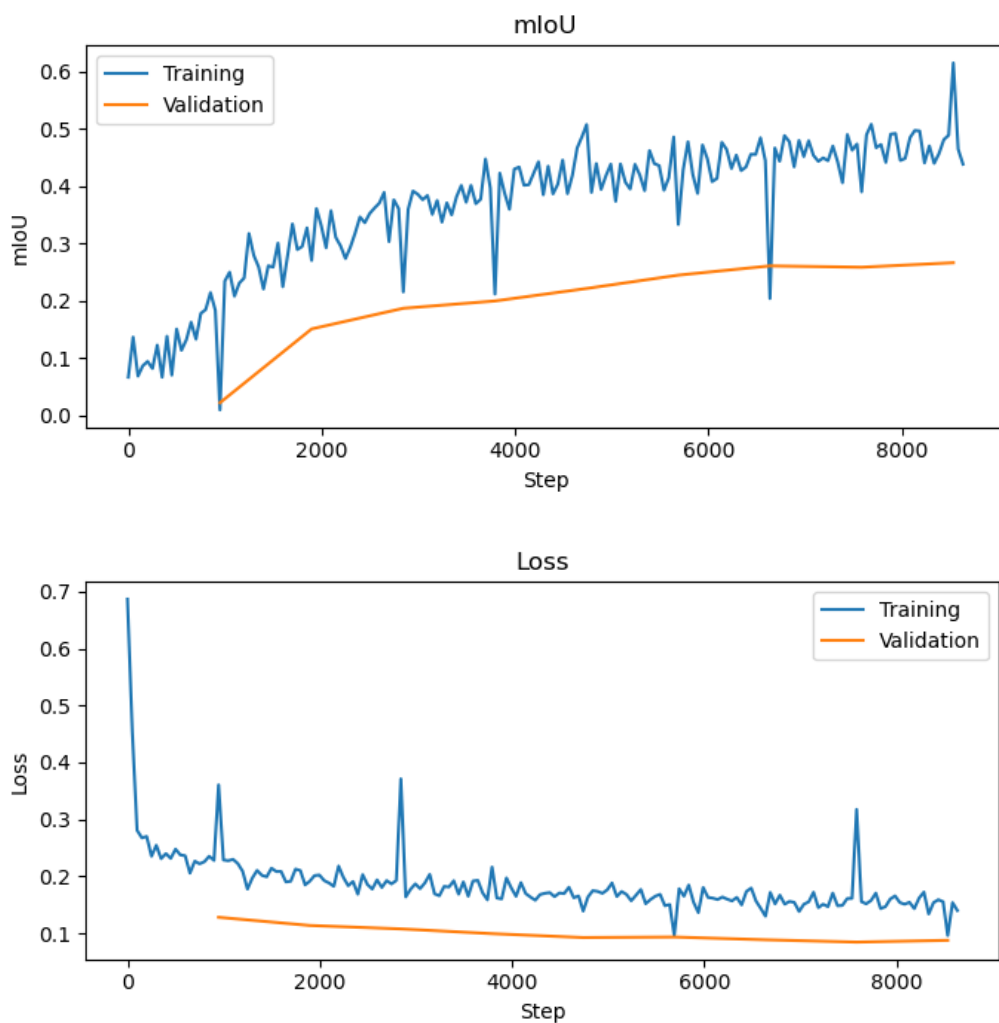


The network has definitely learned some meaningful feature representations. The figure below shows the output of the KNN analysis for a certain image. The first image is a randomly selected image and the others are its nearest neighbours. The first image shows the body of a person without their head and legs. The nearest 3 neighbours are quite similar images, but as you go further away the images start to vary. The last image should definitely not be included, but my conclusion for why it was included is that the semantic segmentation of the two cars in the image would be similar to a human's body.

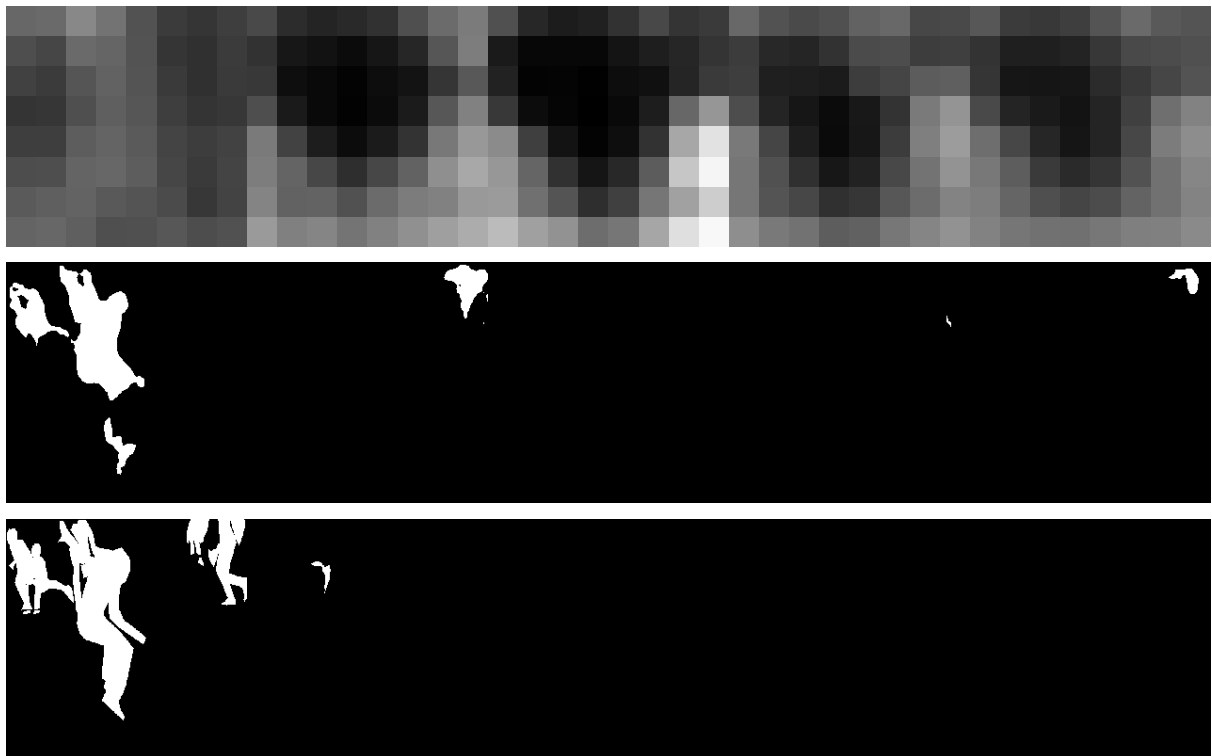


Task 2

In the figure below you could see the plots for the losses and the mIoU for the attention based method(I was able to run the training for only 9 epochs)



In the figure below you could see the attention map, ground truth and prediction.



In the figure below you could see an example of the semantic segmentation from the first model



As you could see the first image in the results of the attention based method is the same one used for the classical pixel wise method. The mIoU for the classical method was 22.95% while for the attention based method it was 22.1%. However, I could not compare the results because I could not train the two different methods for the same amount of epochs due to GPU issues.