Assignment 1 Report

20/04/2021
Deep Learning

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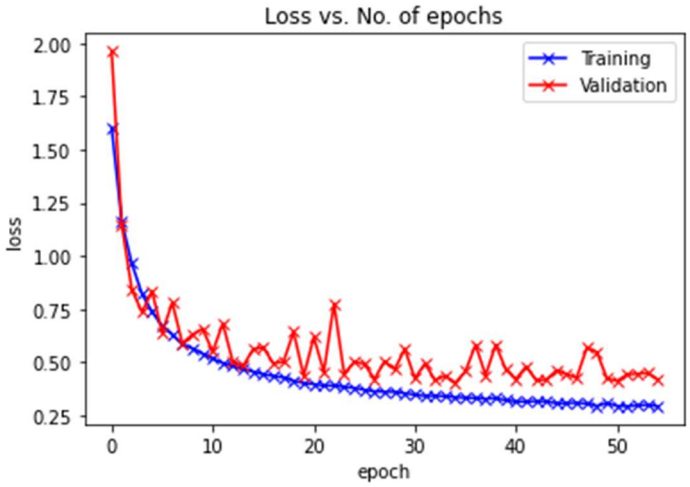
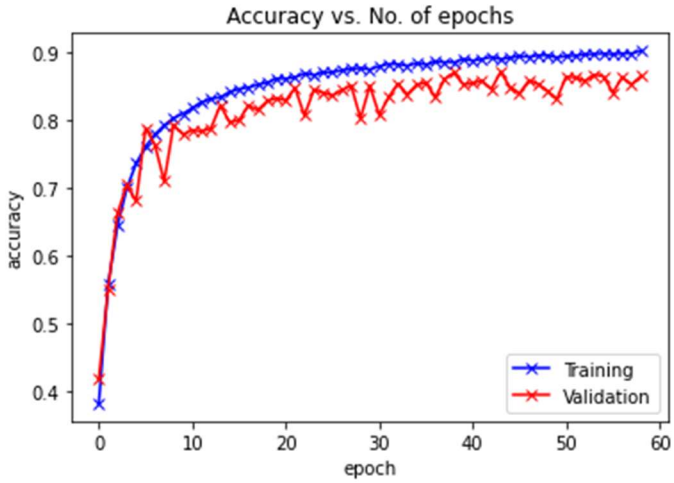
Pretrained model files available here

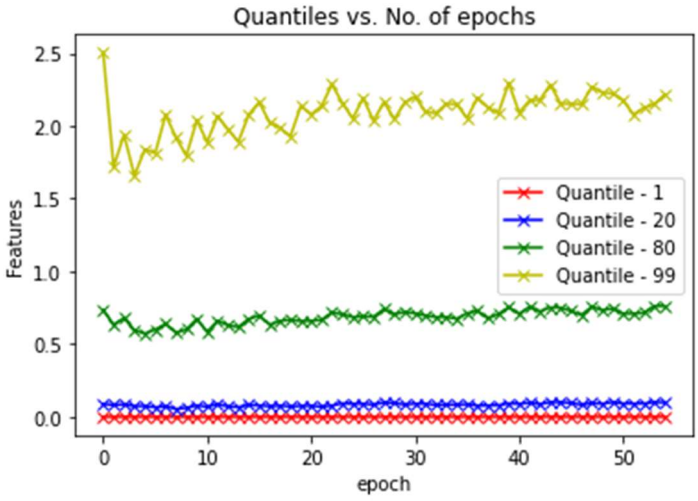
PART 1

1.1) PyTorch Batch Normalization Layer

	Accuracy	Micro F1	Macro F1
Train	84.22	83.22	84.21
Validation	84.19	84.19	83.18
Test	84.15	84.15	84.12

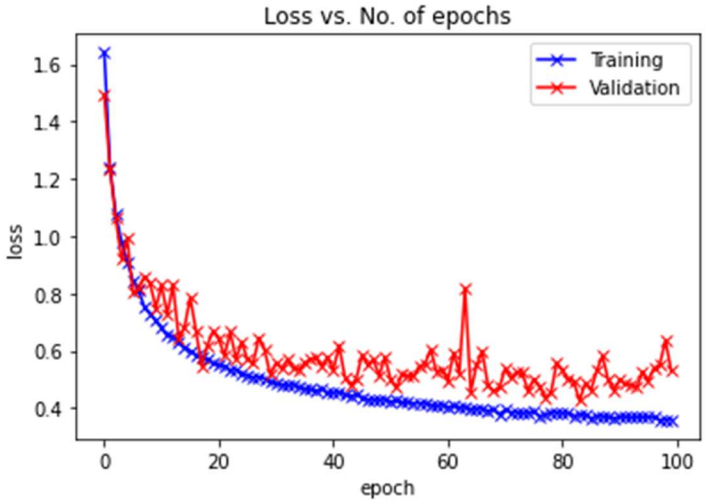


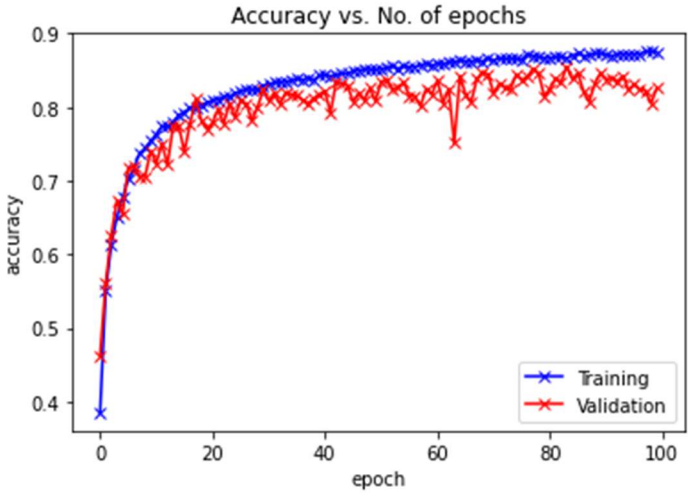


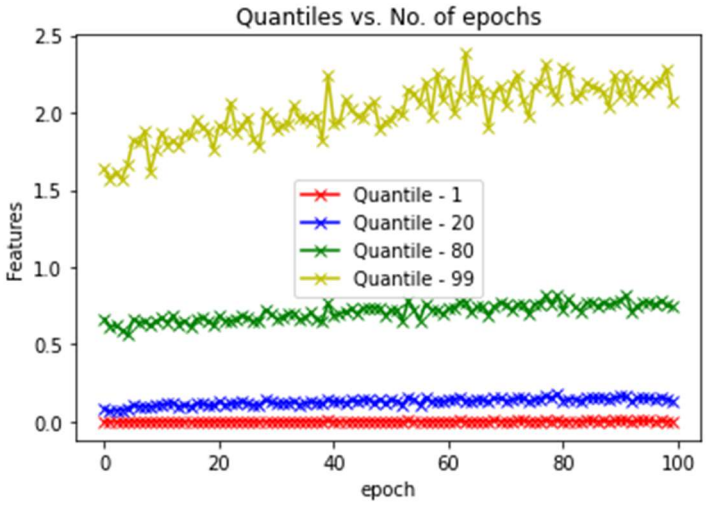


1.2 Custom BatchNorm Layer

	Accuracy	Micro F1	Macro F1
Train	86.63	86.63	86.63
Validation	85.50	85.50	85.20
Test	84.66	84.66	84.44

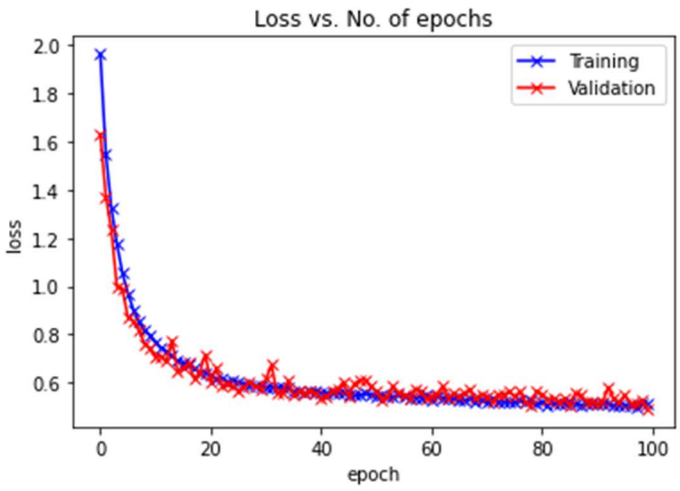


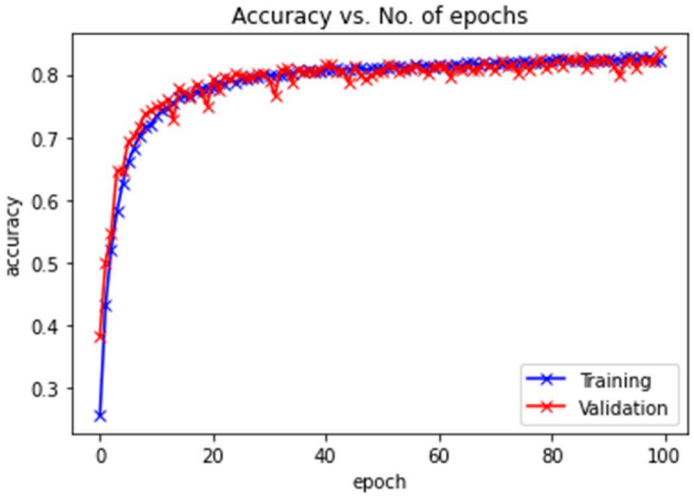


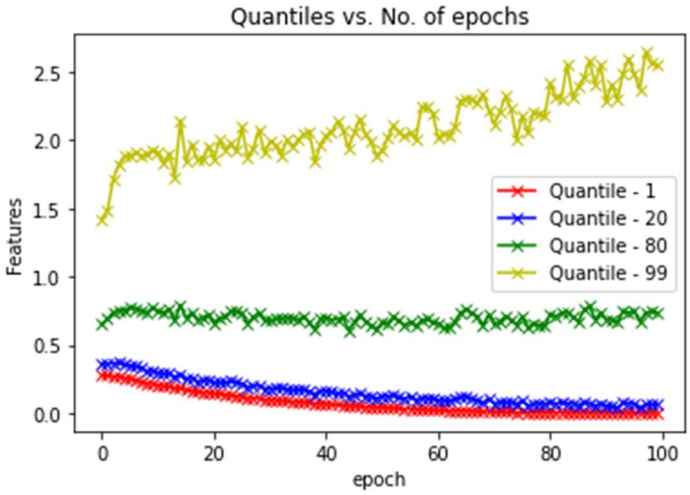


1.3 Custom InstanceNorm Layer

	Accuracy	Micro F1	Macro F1
Train	82.13	82.13	82.13
Validation	82.96	82.96	82.80
Test	83.32	83.32	83.29

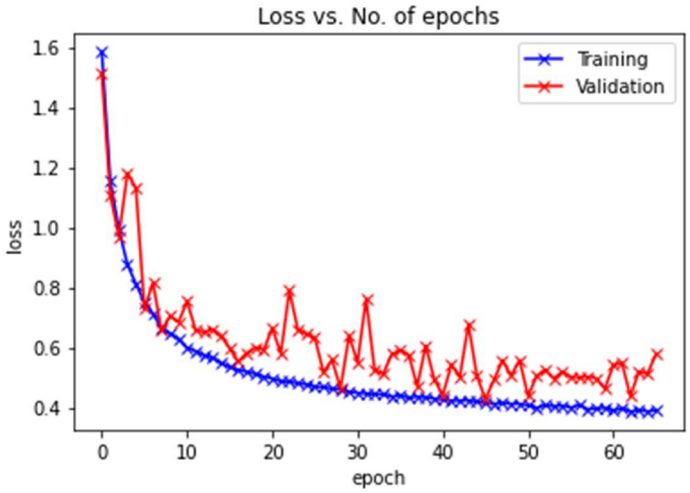


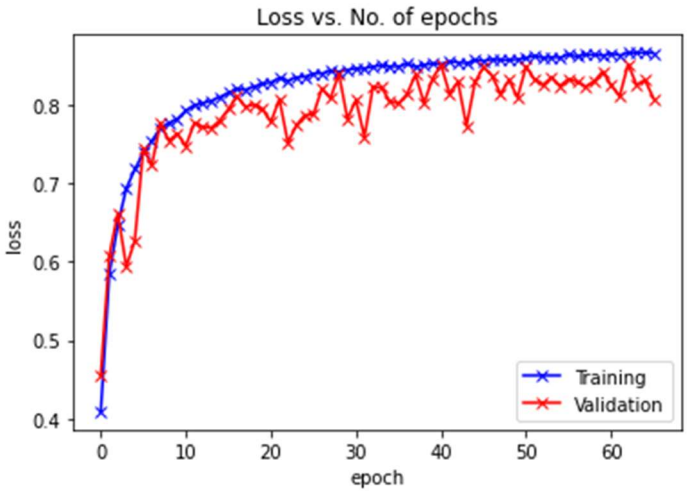


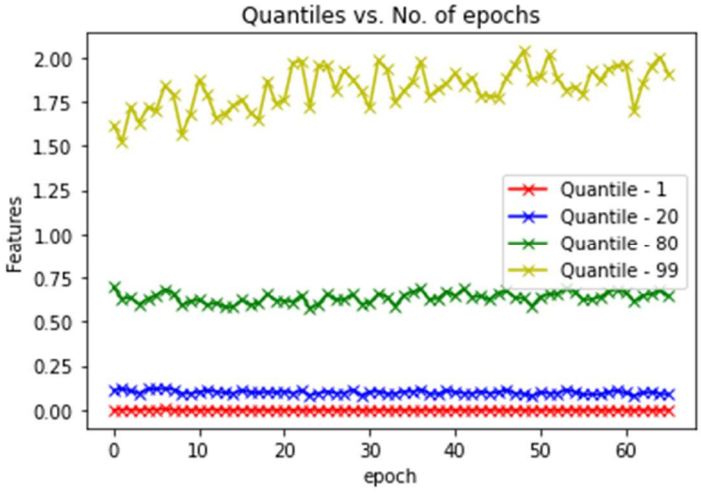


1.4 Custom Batch Instance Layer

	Accuracy	Micro F1	Macro F1
Train	85.53	85.53	85.53
Validation	84.72	84.72	84.56
Test	84.65	84.65	84.53

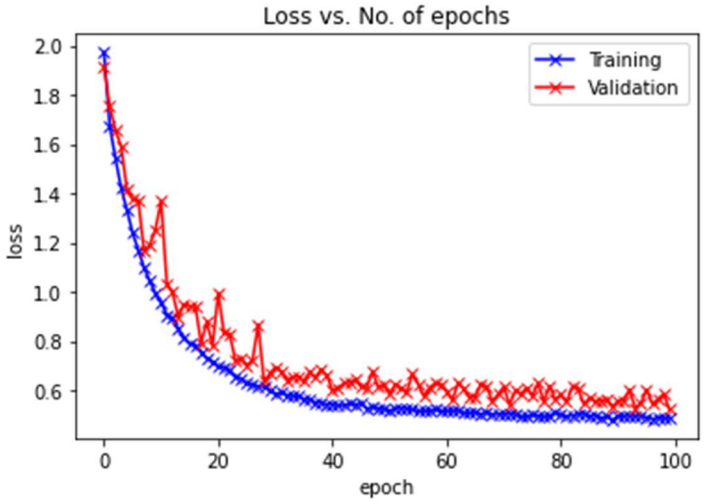


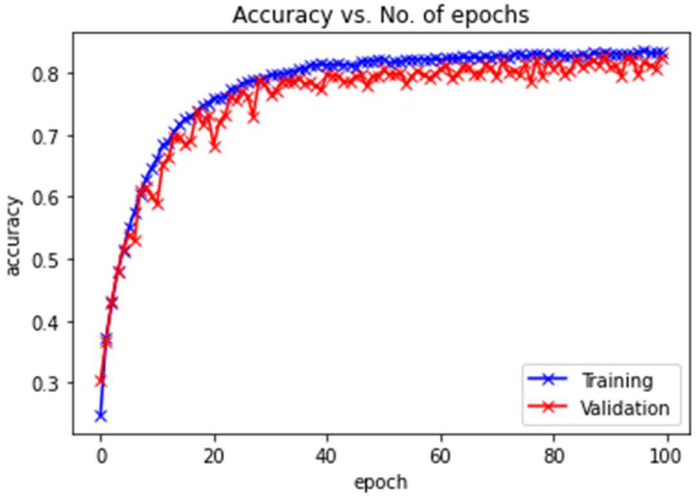


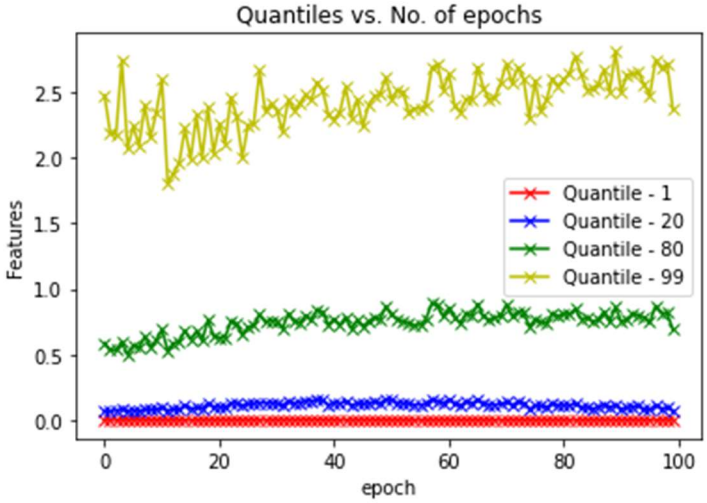


1.5 Custom LayerNorm Layer

	Accuracy	Micro F1	Macro F1
Train	83.22	83.22	83.22
Validation	82.46	82.46	82.27
Test	82.16	82.16	81.98

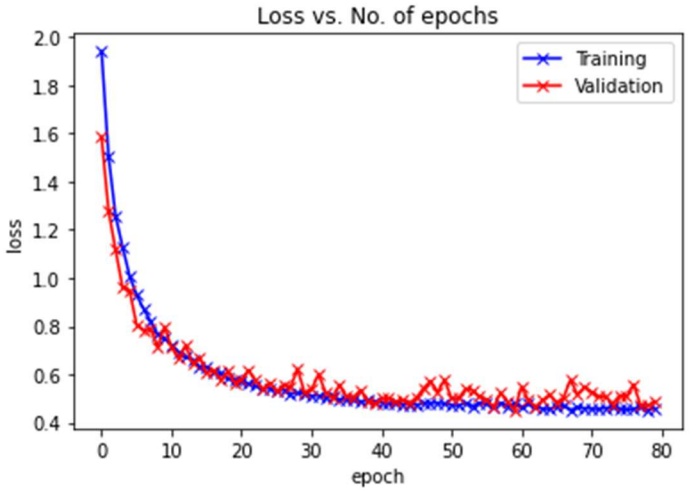


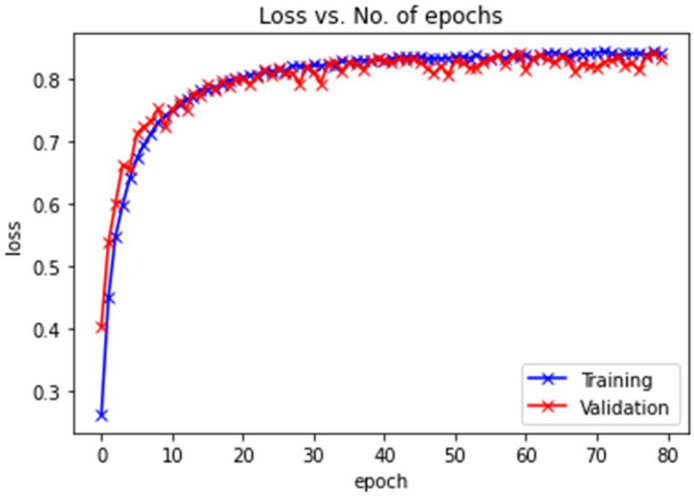


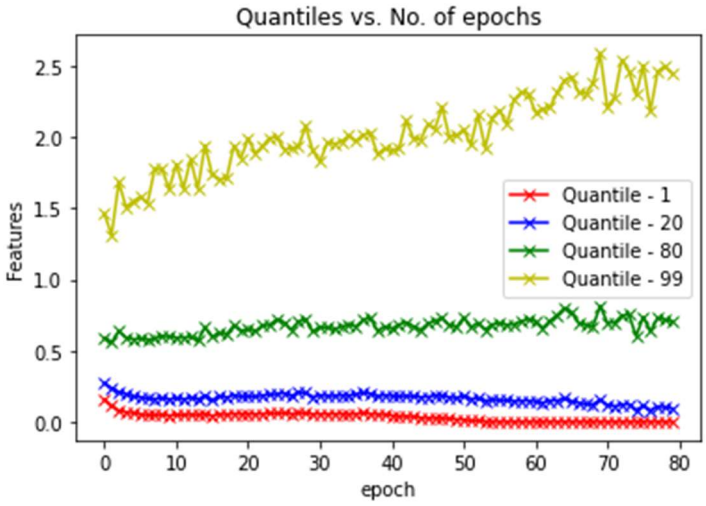


1.6 Custom GroupNorm Layer

	Accuracy	Micro F1	Macro F1
Train	83.63	83.63	83.63
Validation	84.20	84.20	84.02
Test	84.52	84.52	84.37

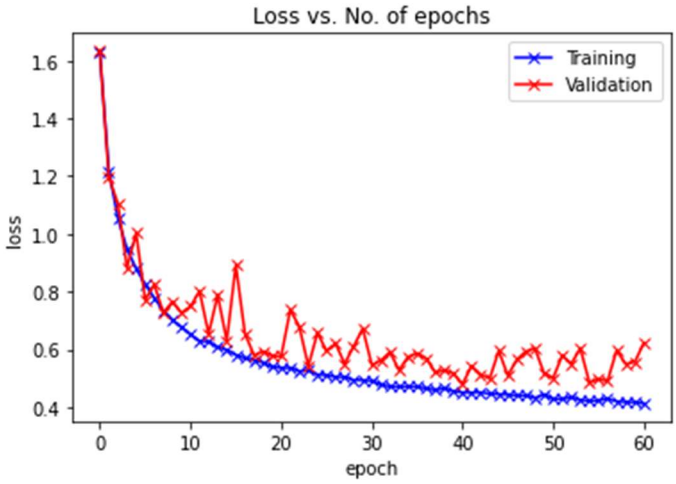


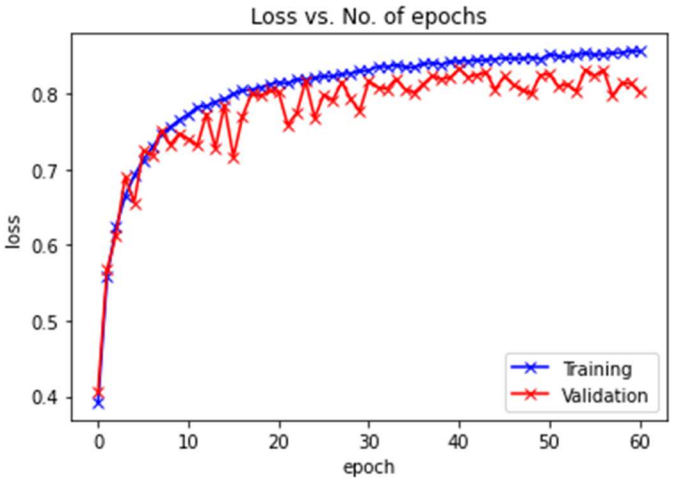


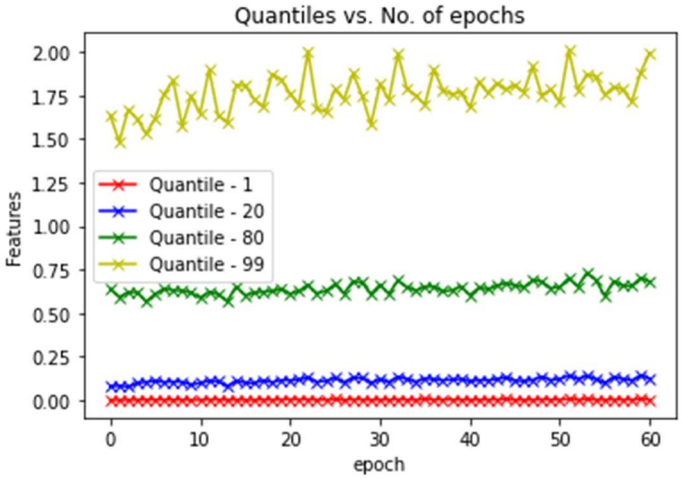


1.7 No Normalization

	Accuracy	Micro F1	Macro F1
Train	84.32	84.32	84.32
Validation	83.31	83.31	83.22
Test	83.25	83.25	83.16



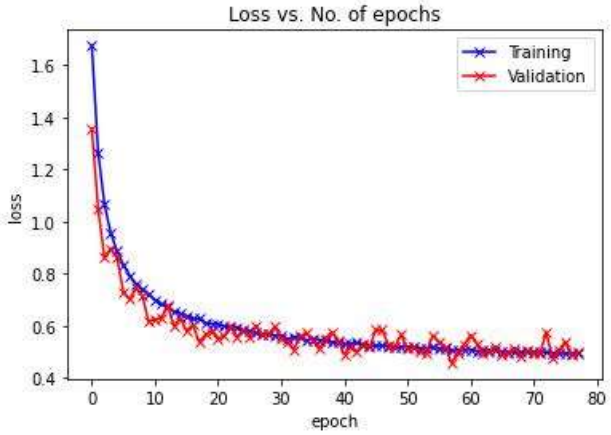


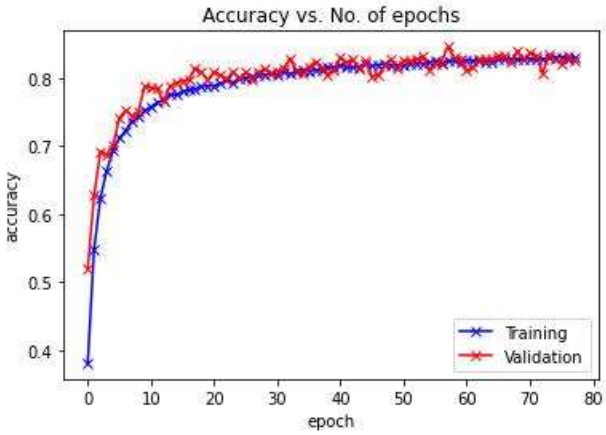


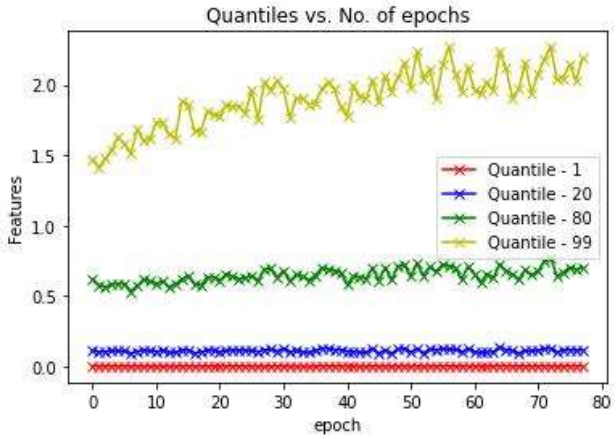
1.8 Impact of batch Size

Batch Norm with Batch Size 8

	Accuracy	Micro F1	Macro F1
Train	82.54	82.54	82.54
Validation	84.63	84.63	84.49
Test	83.73	83.73	83.65

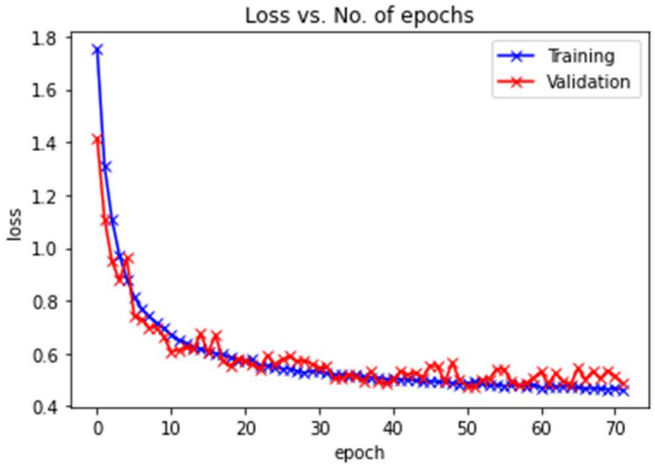


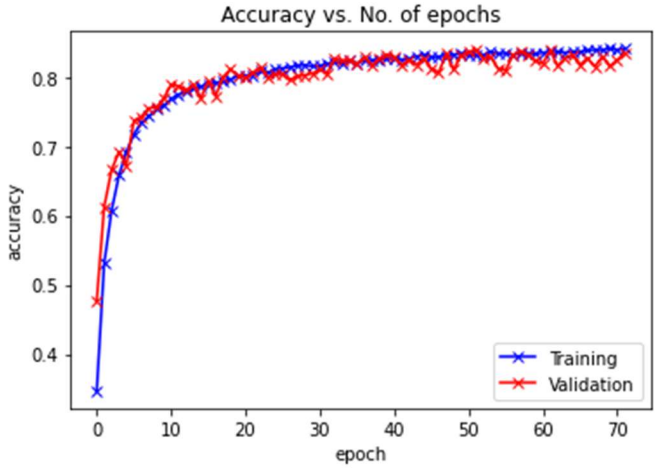


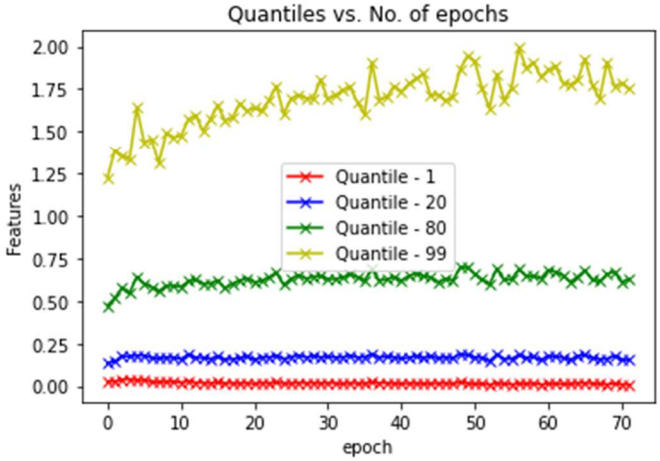


Group Norm with Batch Size 8

	Accuracy	Micro F1	Macro F1
Train	83.14	83.14	83.14
Validation	83.97	83.97	84.00
Test	82.71	82.71	82.71


Loss vs. No. of epochs
Training
Validation
loss
epoch


Accuracy vs. No. of epochs
Training
Validation
accuracy
epoch


Quantiles vs. No. of epochs
Quantile - 1
Quantile - 20
Quantile - 80
Quantile - 99
Features
epoch

PART 2

In part 2, we created two models *BI-LSTM* and *BI-LSTM- CRF*. Both models include *char embedding* and *LayerNormalization*. We can train and test both models.
However, train and test accuracy is very low as we were only able to train for *10* epochs because of 6 hrs limit on google colab.

We have uploaded the models on google drive anyways, and “test_ner.py” should give predictions, but mostly wrong.

There might be other issues, but we weren’t able to debug them because of prolonged training.