

## **Report on Assignment 3**

**Learning rate : 0.02**

**Mnist Dataset:**

### **Training Set(60,000 samples)**

<b>Epoch No.</b>	<b>Training Loss</b>	<b>Training Accuracy</b>
1	0.352	89.11
2	0.0491	96.98
3	0.0243	97.79
4	0.0149	98.21
5	0.0101	98.48

### **Validation set(5000 samples)**

<b>Epoch No.</b>	<b>Validation Loss</b>	<b>Validation Accuracy</b>	<b>Macro_F1 score</b>
1	0.1162	95.98	0.9594
2	0.0891	97.18	0.9714
3	0.0758	97.56	0.9752
4	0.0683	97.86	0.9781
5	0.0643	97.96	0.9791

### **Test Set(5000 samples)**

**Test Loss: 0.058**

**Test Accuracy: 98.02**

**Macro\_F1 score: 0.9799**

## **Cifar\_10 Dataset:**

### **Training Set(50,000 samples)**

<b>Epoch No.</b>	<b>Training Loss</b>	<b>Training Accuracy</b>
1	1.9302	29.74
2	0.7914	43.41
3	0.4845	48.24
4	0.3437	51.14
5	0.2627	53.61
6	0.2106	55.32
7	0.1745	56.91
8	0.1481	58.31
9	0.1279	59.55
10	0.1119	60.54

### **Validation set(5000 samples)**

<b>Epoch No.</b>	<b>Validation Loss</b>	<b>Validation Accuracy</b>	<b>Macro_F1 Score</b>
1	1.646	41.64	0.4039
2	1.484	46.60	0.4545
3	1.399	50.0	0.4918
4	1.34	52.62	0.5181
5	1.30	53.98	0.5329
6	1.274	55.46	0.5481
7	1.261	56.52	0.5598
8	1.239	57.22	0.5645
9	1.233	57.36	0.5665
10	1.217	57.94	0.5709

### **Test Set(5000 samples)**

Test Loss: 1.211

Test Accuracy: 57.04

Macro\_F1 Score: 0.5683