

CSE472 Machine Learning Sessional

REPORT

Performance of Implemented Convolutional Neural Network Architecture

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1 Model Architecture

	output channels	filter dimension	stride	padding	output dimension
Convolution Layer	6	5	1	0	
Relu					
Maxpool		2			
Convolution Layer	16	5	1	0	
Relu					
Maxpool		2			
Flattening					
Fully Connected					120
Relu					
Fully Connected					84
Relu					
Fully Connected					10
Softmax					

2 Dataset and Hyperparameters

	Value	Comment
Data	10k,20k and 40k images	Shuffled across sets 'training-a', 'training-b' and 'training-c'
Train set	80%	
Validation set	20%	
Batch size	32	
Epochs	100	
Learning Rate	0.000001, 0.00001, 0.0001, 0.01	Same model trained for different learning rates

3 Graphs

3.1 Epoch vs Training Loss

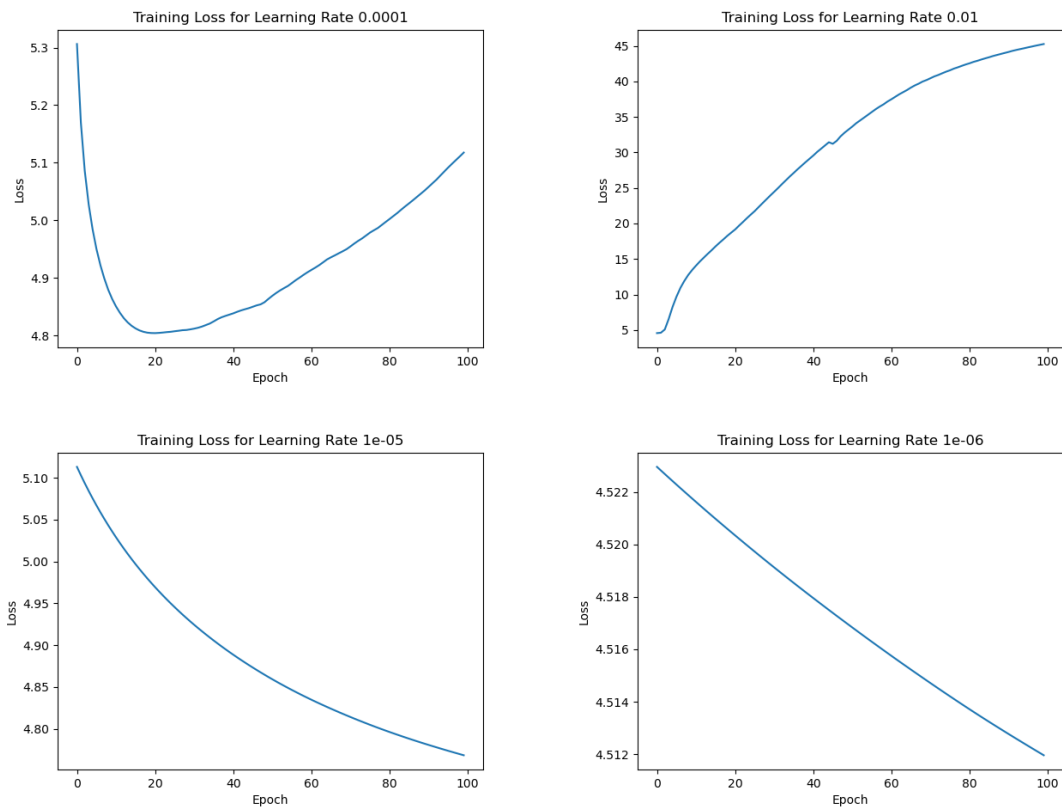


Figure 1: Epoch vs Training Loss for different learning rates

3.2 Epoch vs Validation Loss

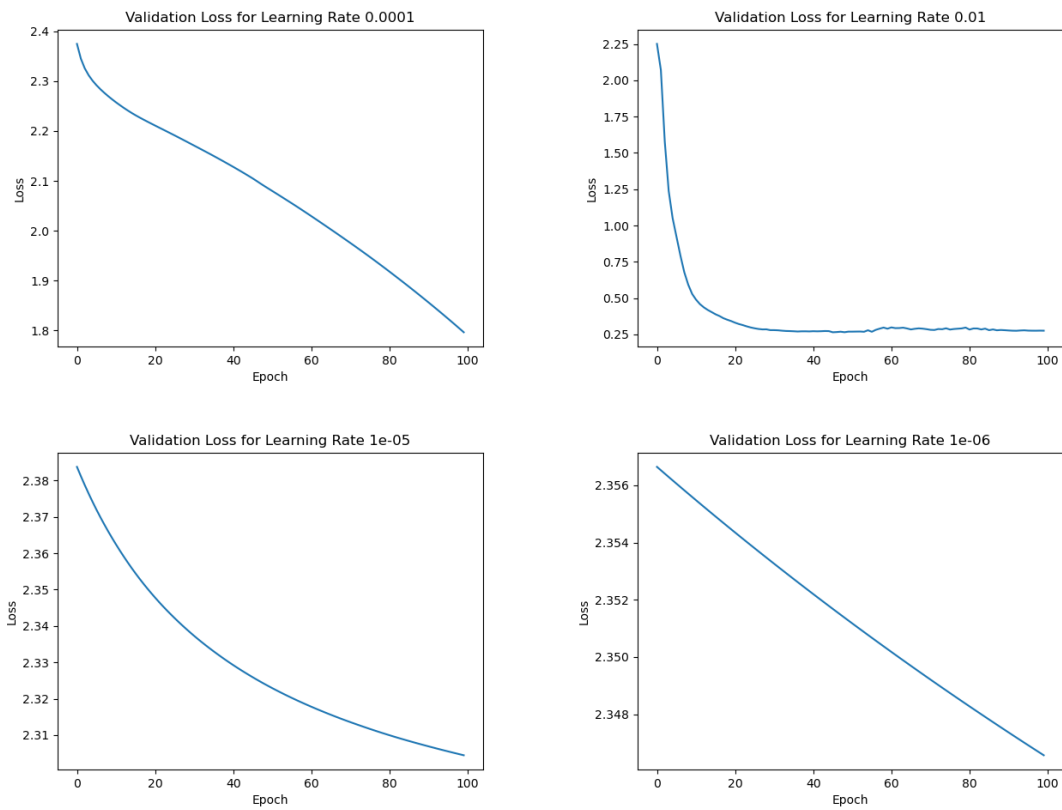


Figure 2: Epoch vs Validation Loss for different learning rates

3.3 Epoch vs Validation Accuracy

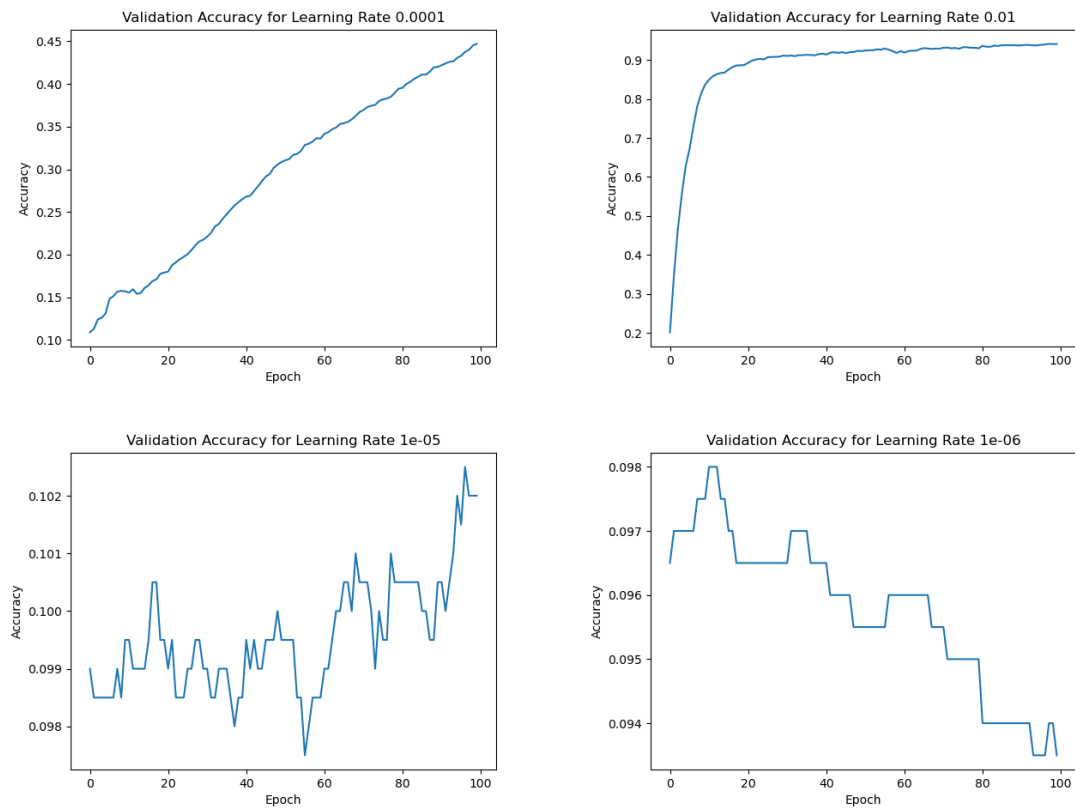


Figure 3: Epoch vs Validation Accuracy for different learning rates

3.4 Epoch vs Macro-F1

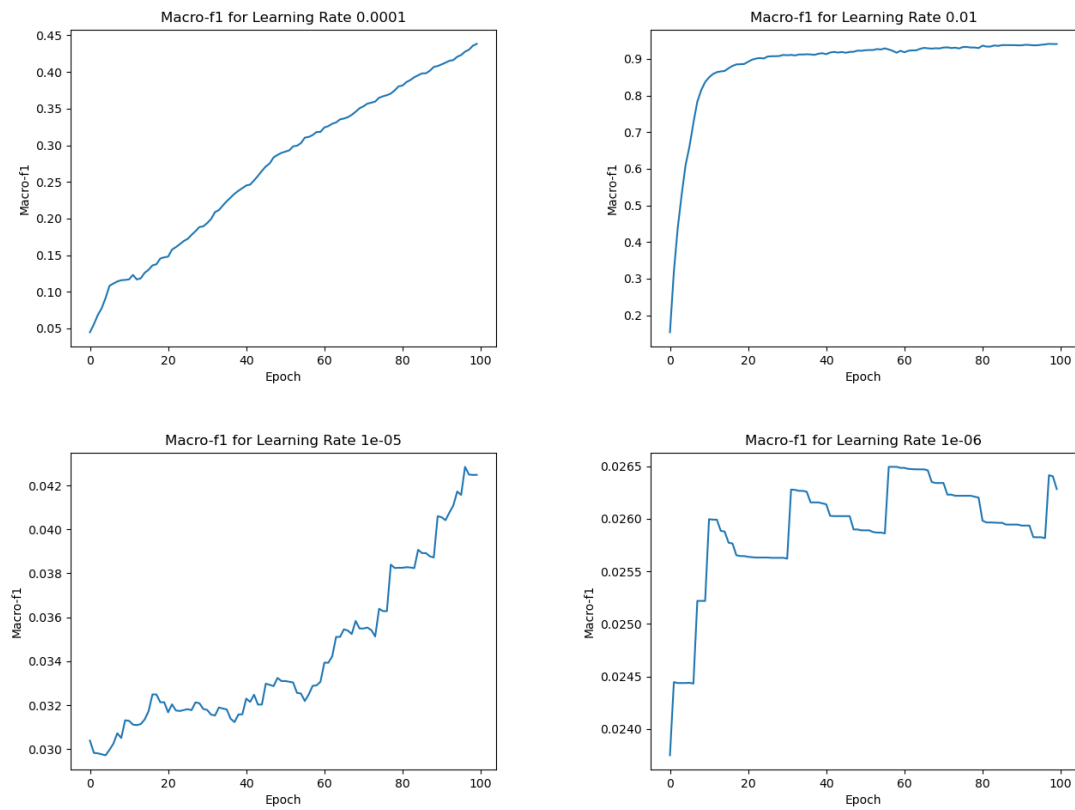


Figure 4: Epoch vs Macro-f1 for different learning rates

3.5 Confusion Matrix

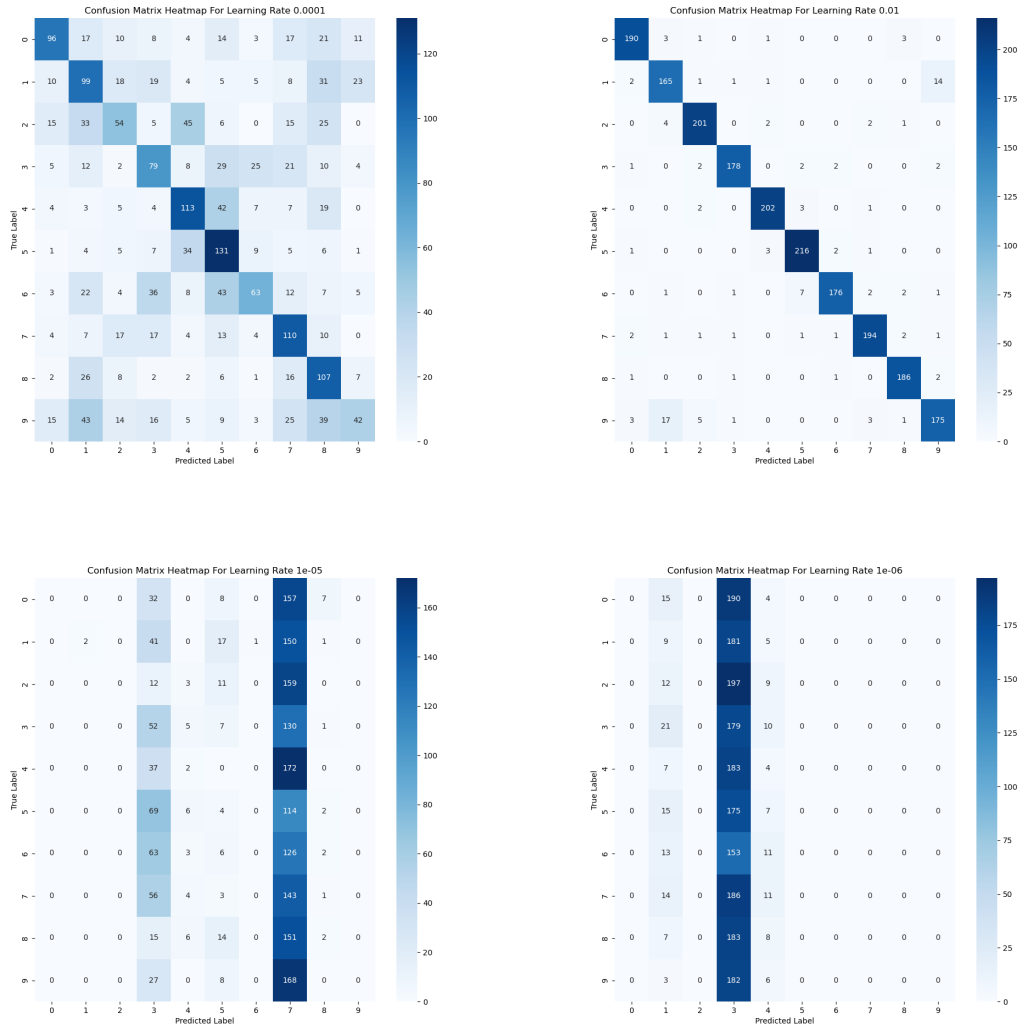


Figure 5: Confusion Matrix for different learning rates

4 Independent Test Performance

The best model was chosen based on best F1-score. The chosen model was then used to predict the labels of images from the **'training-d'** set.

Accuracy 10.9%
Macro F1 Score 0.0391

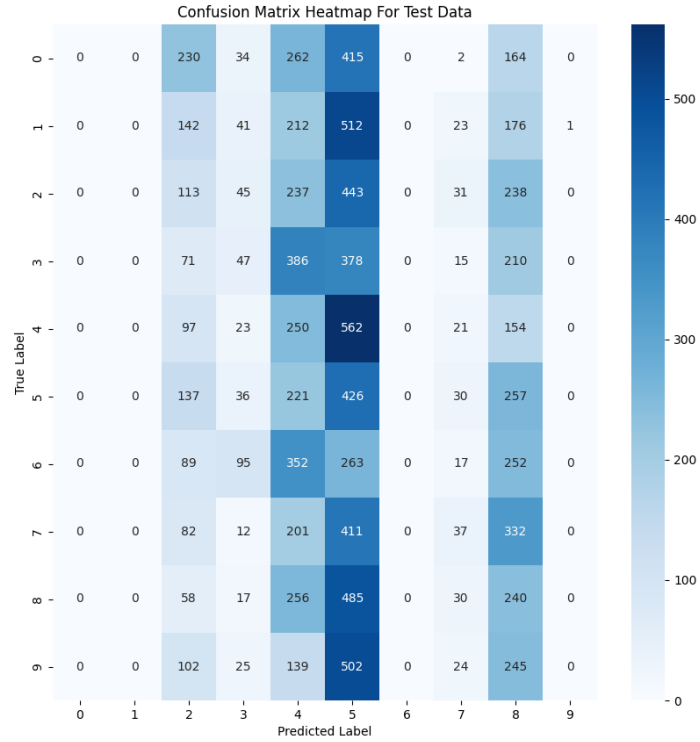


Figure 6: Confusion Matrix For Final Prediction