CSE 472

Report on **Bangla Character Recognition Challenge Using CNN**

Submitted By:
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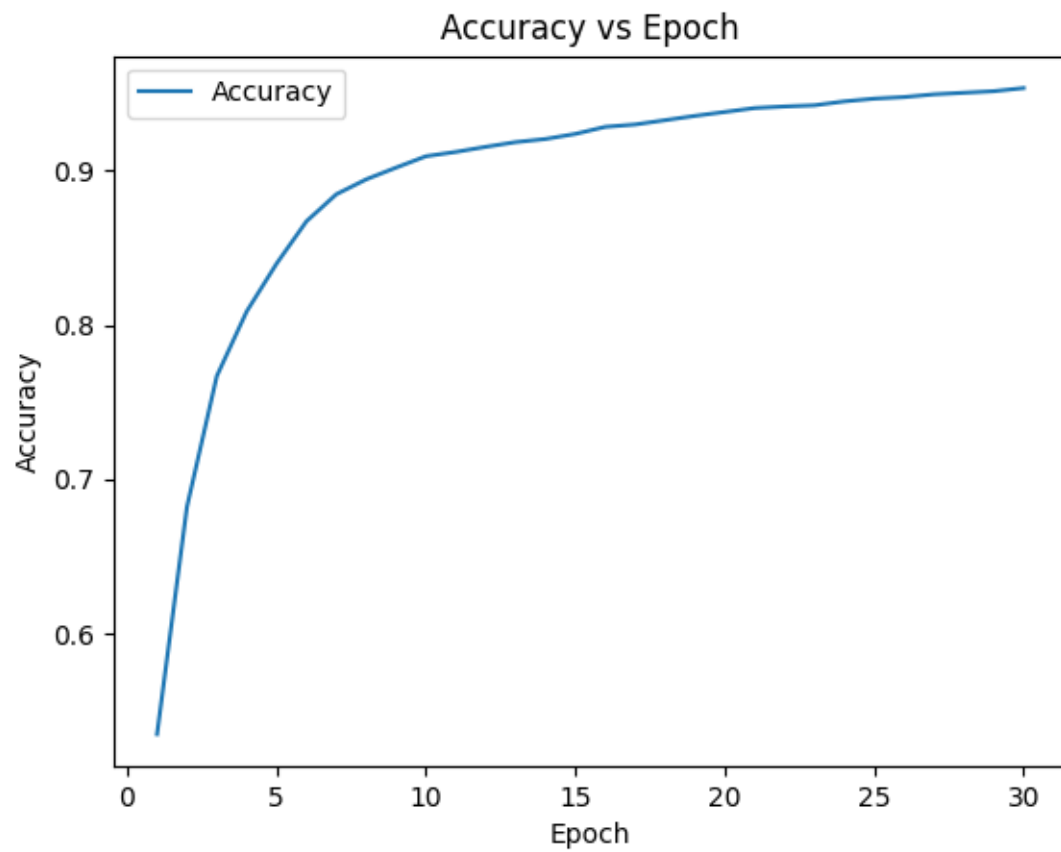1705019

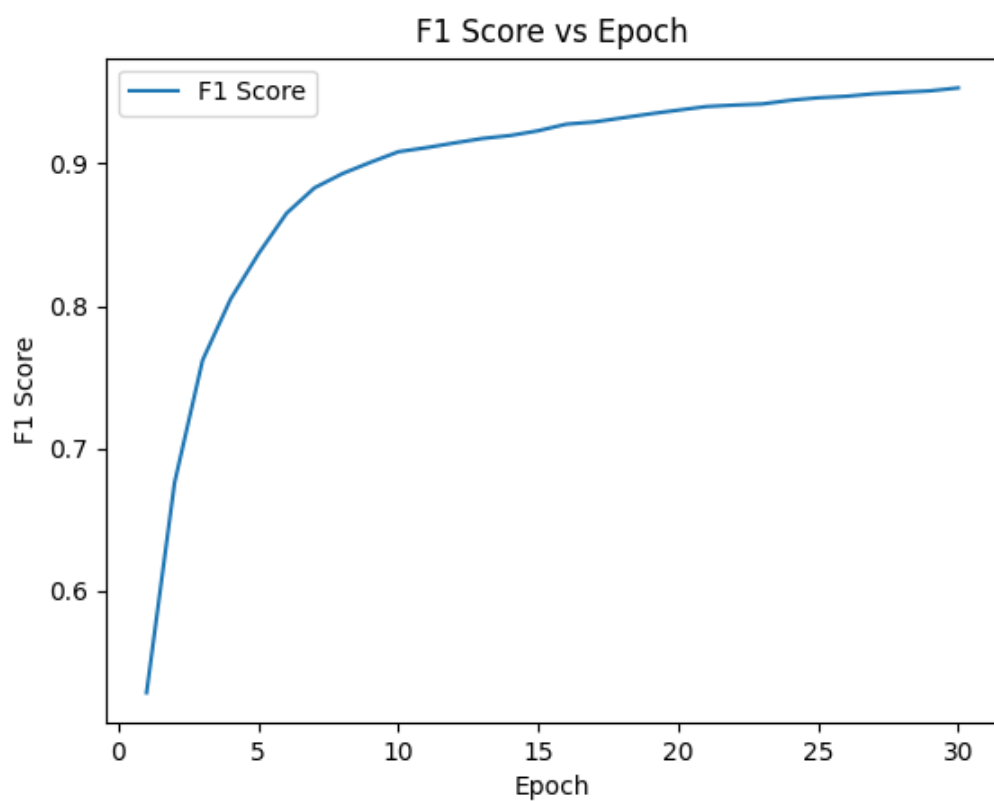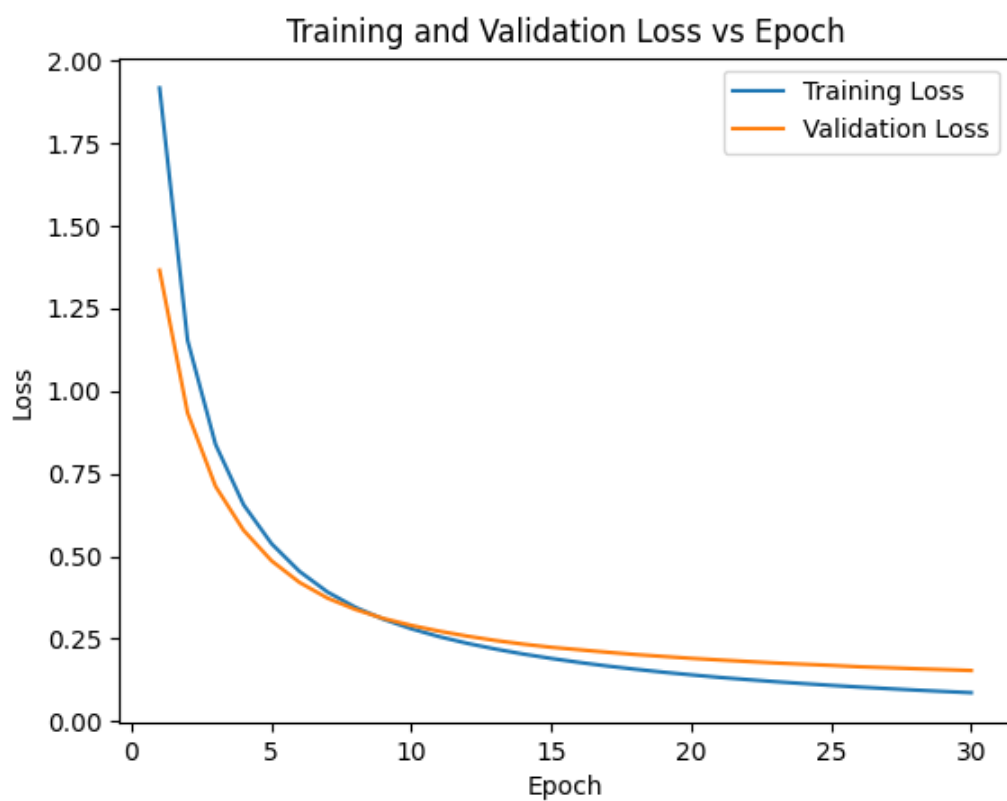Date: 10 February, 2023

Report of different metrics for each full pass over the training set:

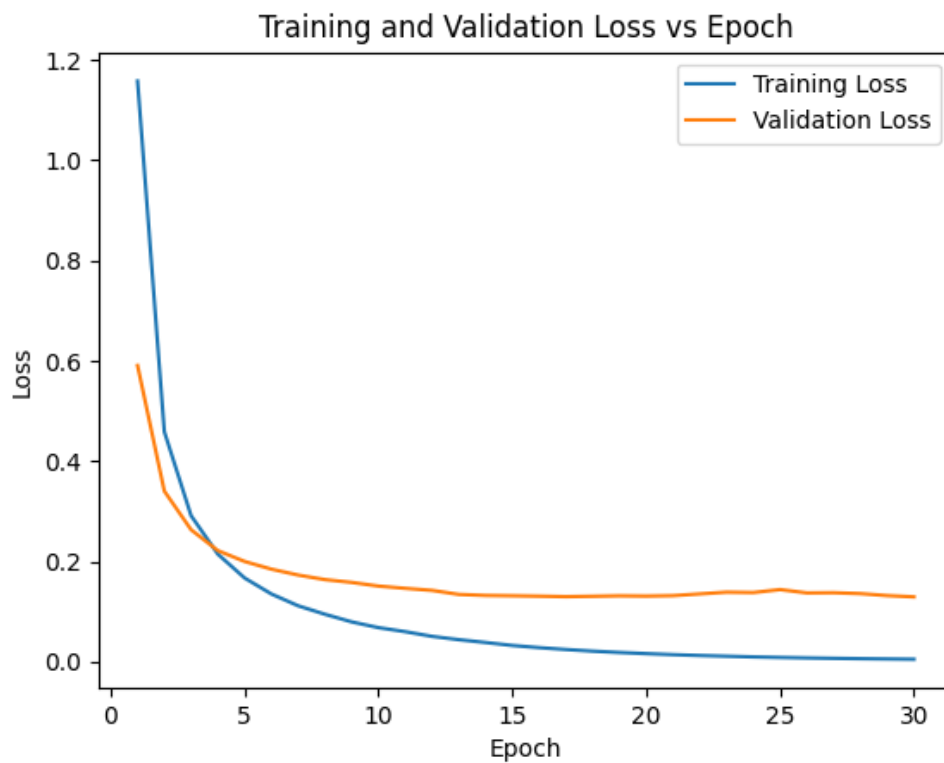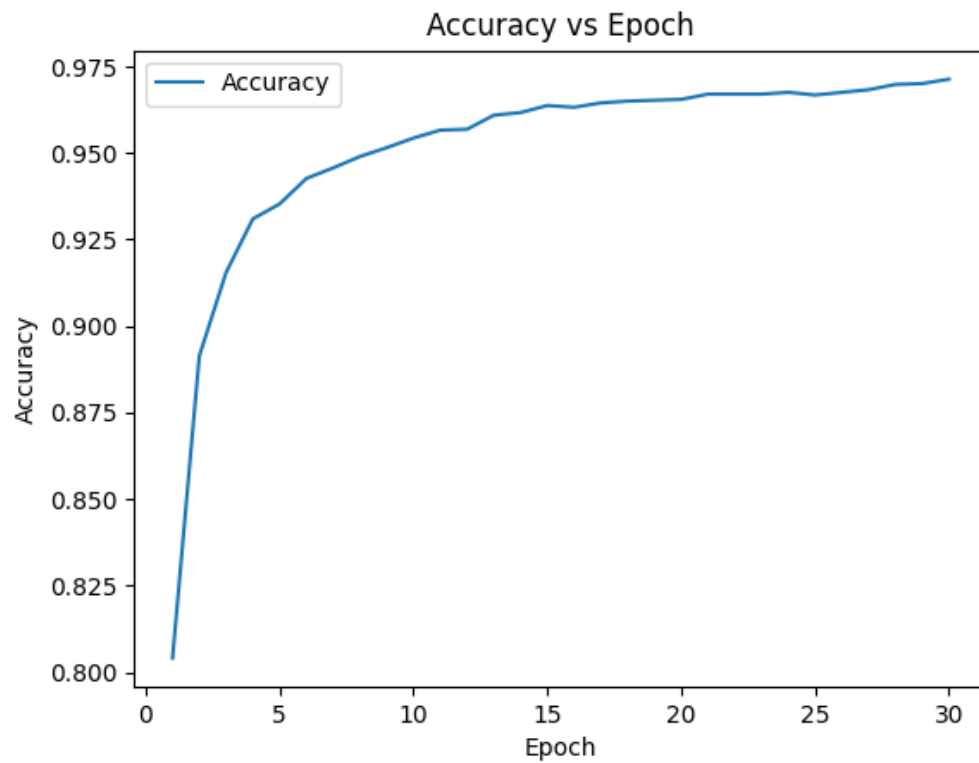| Epoch	Training Loss	Validation loss	Accuracy	F1 Score
1	1.918357	1.366267	0.53489	0.528695
2	1.154088	0.934261	0.68206	0.676012
3	0.838485	0.711623	0.76681	0.761855
4	0.656158	0.578688	0.808678	0.804768
5	0.538018	0.48615	0.839635	0.836674
6	0.454016	0.420631	0.867039	0.865028
7	0.391592	0.373077	0.884547	0.882897
8	0.344951	0.33865	0.894189	0.89287
9	0.309142	0.3114	0.901802	0.900791
10	0.280113	0.290288	0.90916	0.908221
11	0.256138	0.272803	0.911951	0.911063
12	0.236004	0.257813	0.91525	0.914387
13	0.218788	0.244729	0.918295	0.917509
14	0.203583	0.233611	0.920325	0.919604
15	0.190266	0.22409	0.923623	0.922962
16	0.178202	0.216615	0.928191	0.927565
17	0.167347	0.209121	0.929713	0.92912
18	0.157622	0.202219	0.932504	0.931962
19	0.14869	0.196347	0.935296	0.934819
20	0.140632	0.190658	0.937833	0.937393
21	0.132993	0.185795	0.94037	0.93991
22	0.126324	0.18108	0.941385	0.940932
23	0.119959	0.176616	0.942147	0.941726
24	0.114248	0.172913	0.944684	0.94431
25	0.108775	0.169318	0.94646	0.946068
26	0.103695	0.165065	0.947475	0.947112
27	0.099003	0.162286	0.949251	0.948899
28	0.094588	0.159287	0.950266	0.949949
29	0.090441	0.156587	0.951281	0.950937
30	0.086547	0.153752	0.953311	0.952986

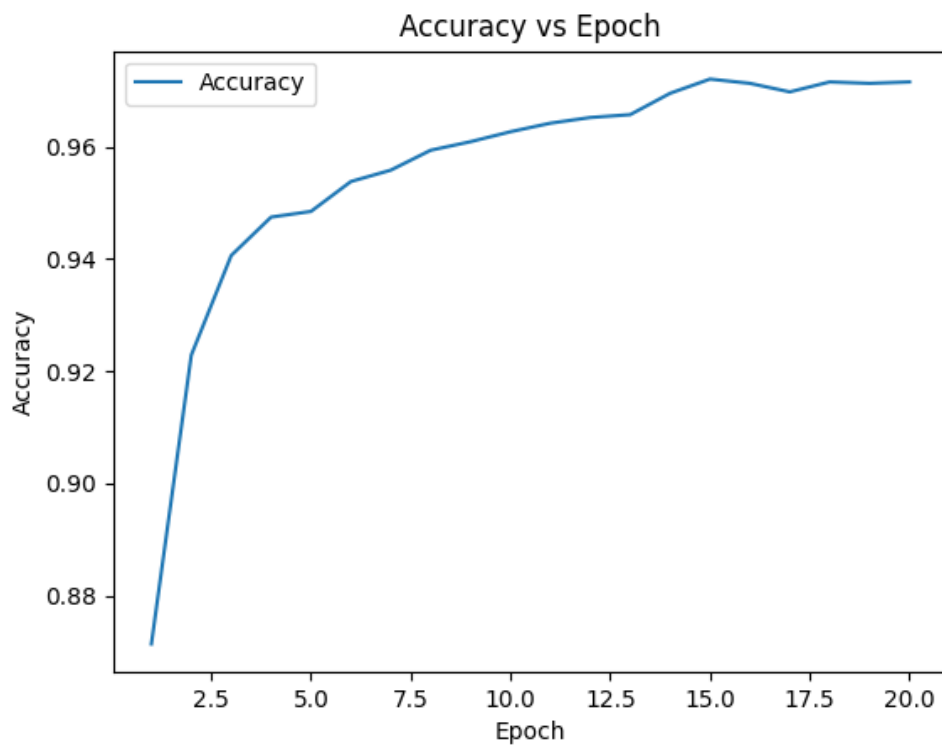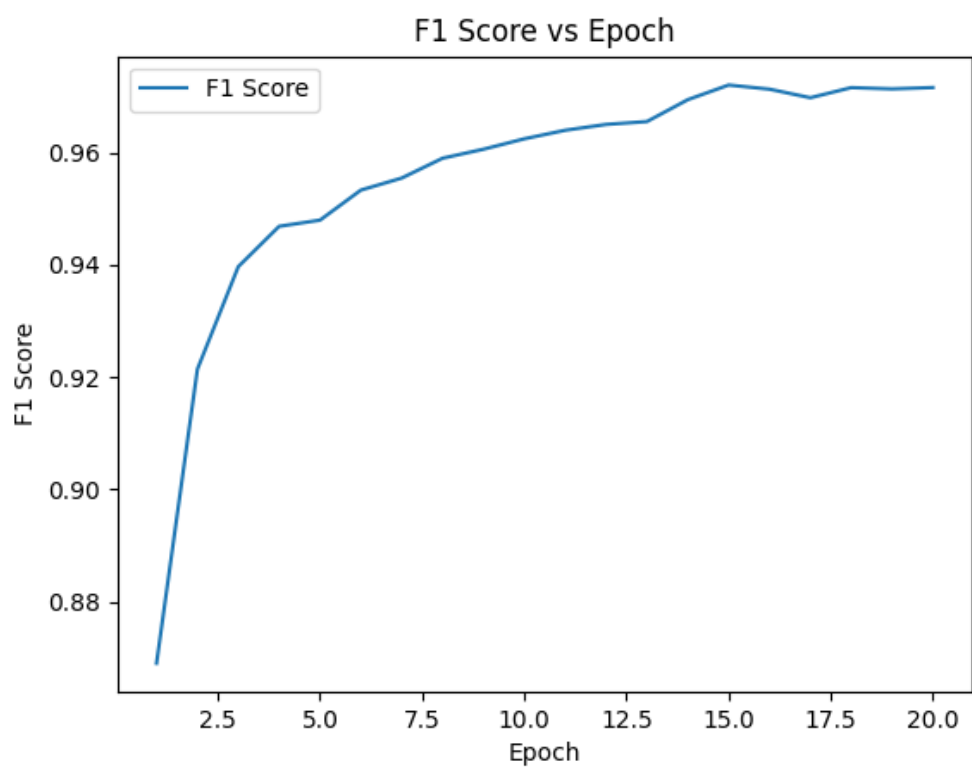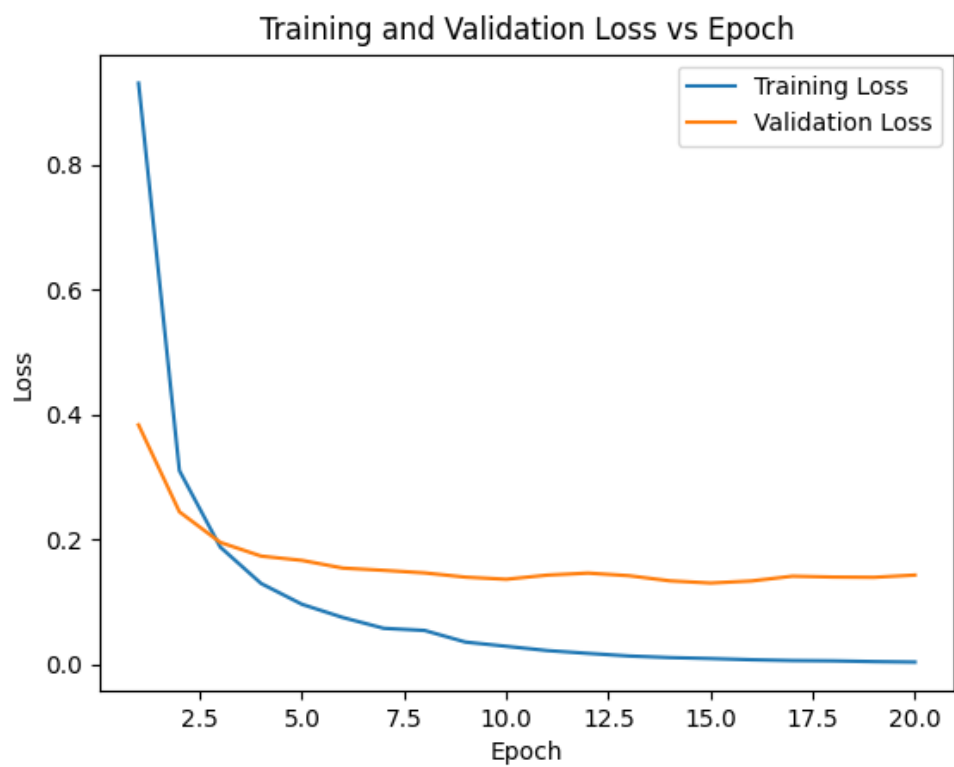# Graphs for different learning rates:
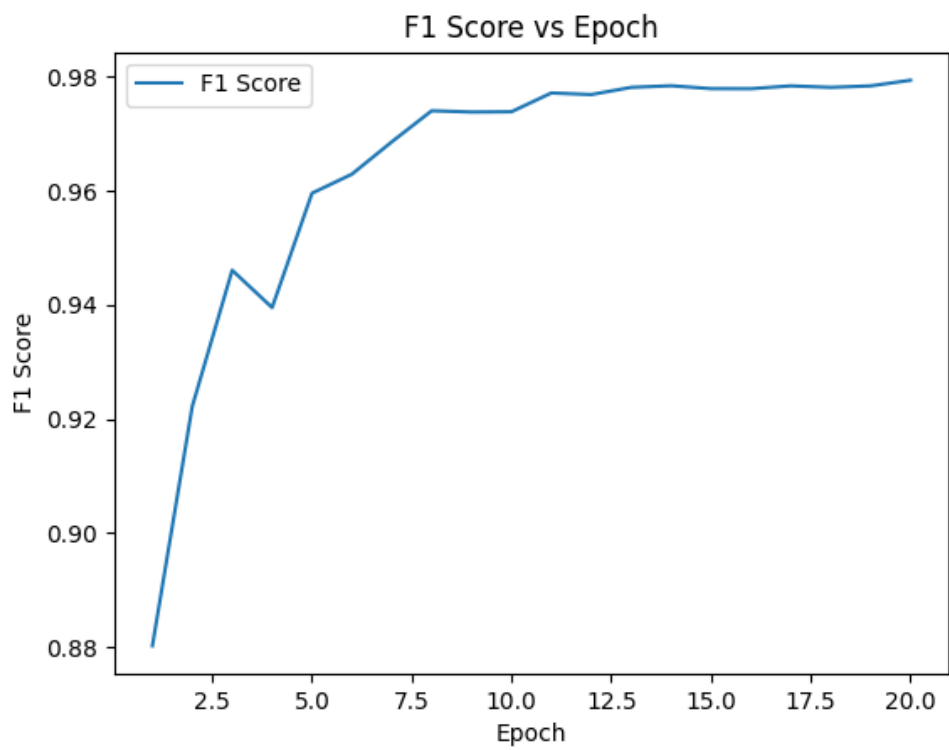
Learning rate = 0.001:

Training and Validation Loss vs Epoch

F1 Score vs Epoch

Learning rate = 0.005:

Accuracy vs Epoch

Training and Validation Loss vs Epoch

F1 Score vs Epoch

Learning rate = 0.01:

Accuracy vs Epoch

Training and Validation Loss vs Epoch

F1 Score vs Epoch

Learning rate = 0.02:

Accuracy vs Epoch

Training and Validation Loss vs Epoch

F1 Score vs Epoch

Learning rate = 0.1:

Accuracy vs Epoch

Training and Validation Loss vs Epoch

F1 Score vs Epoch
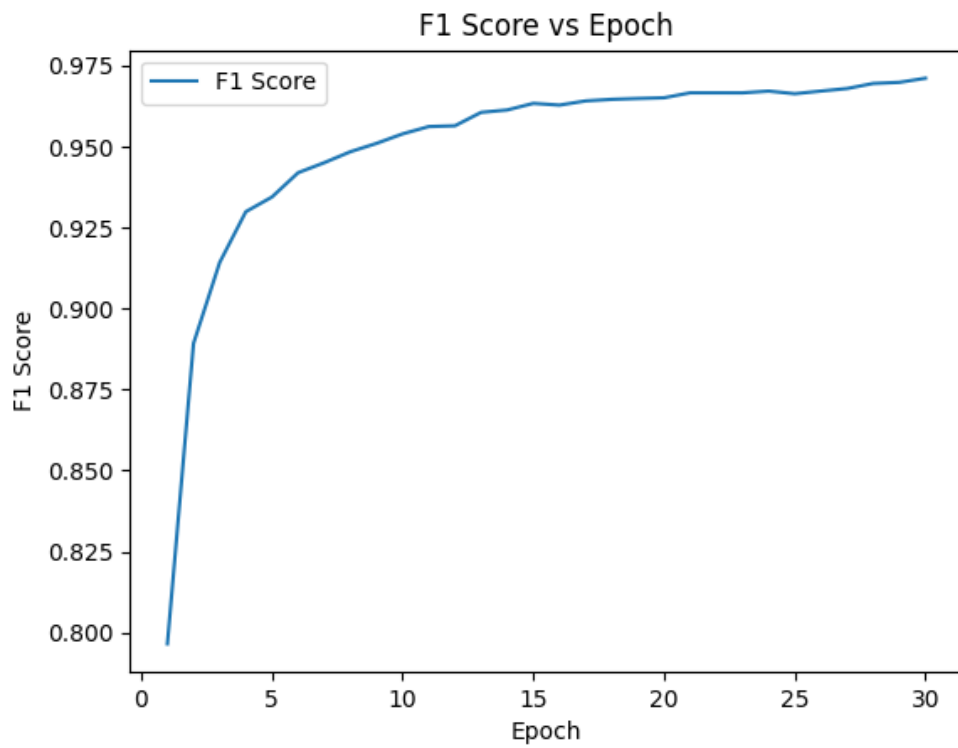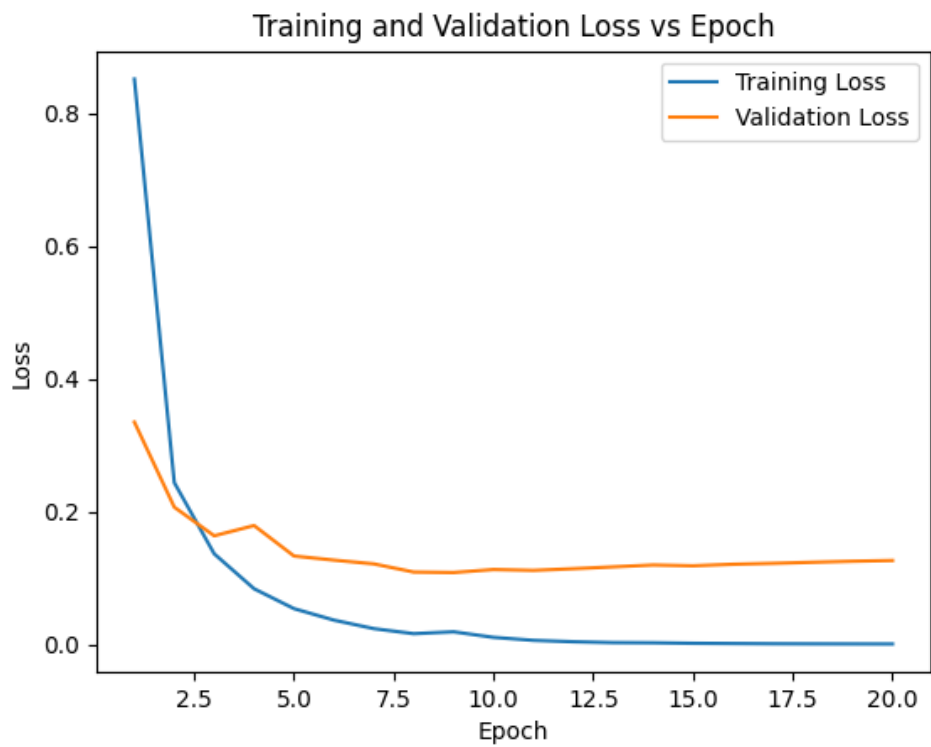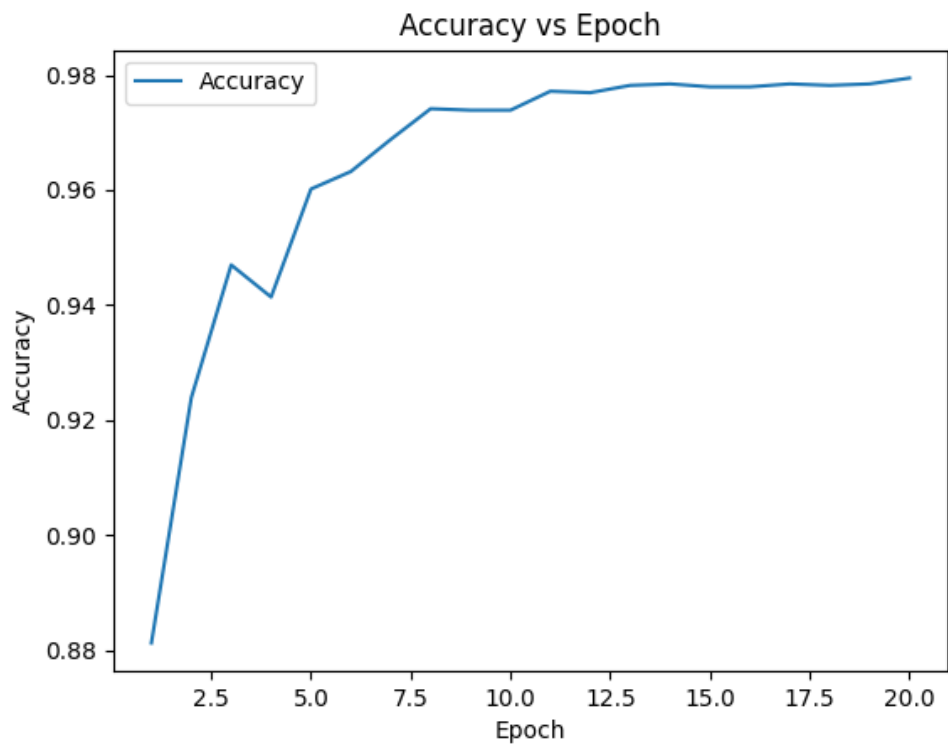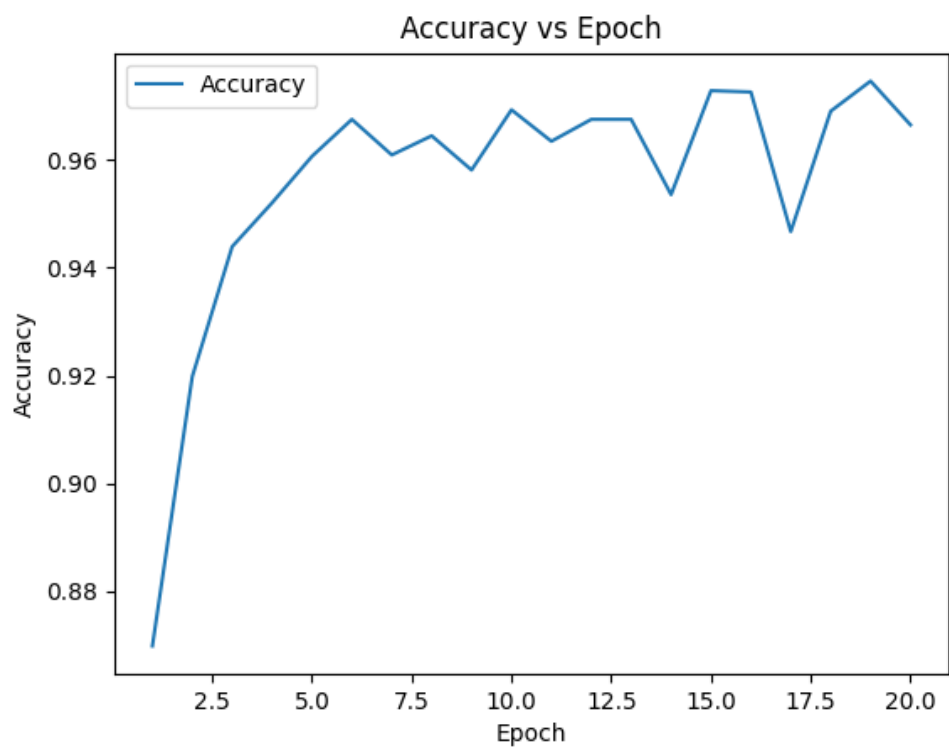
Confusion matrix:
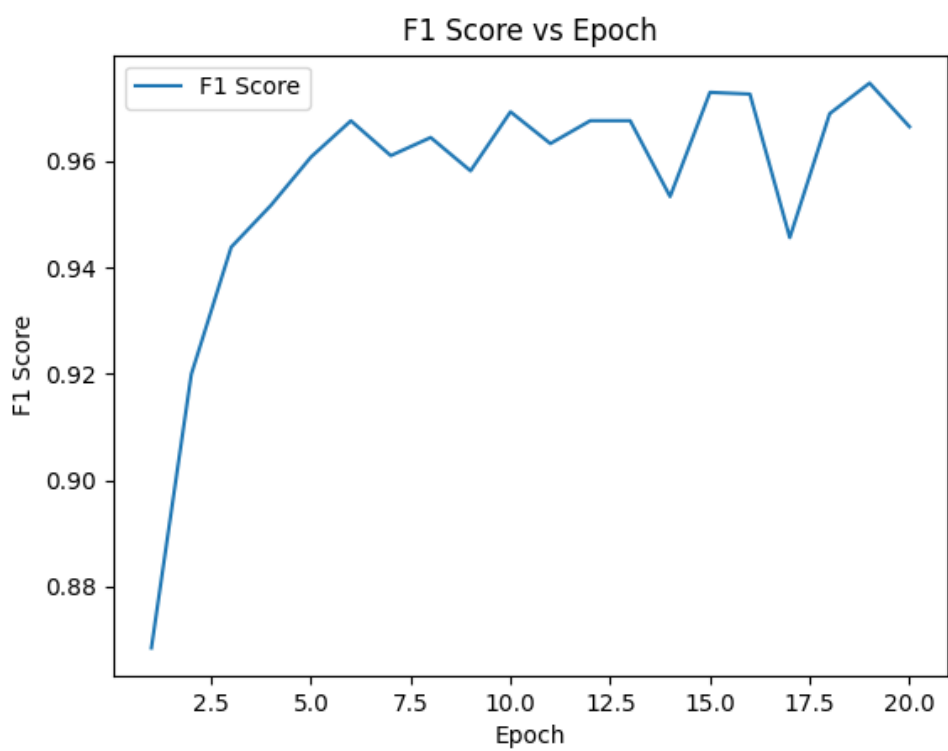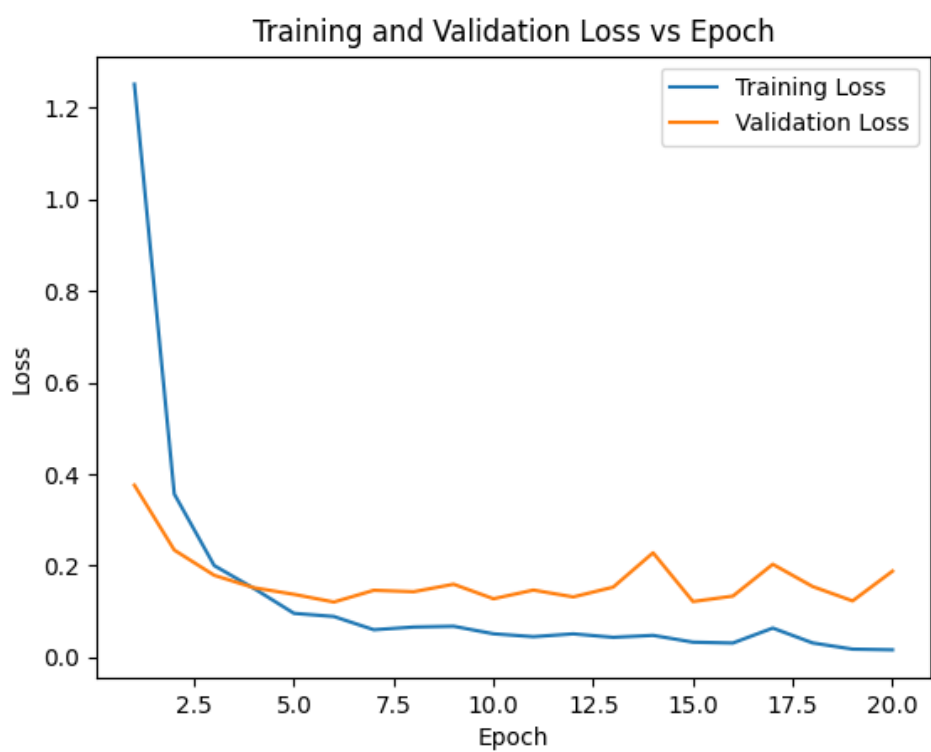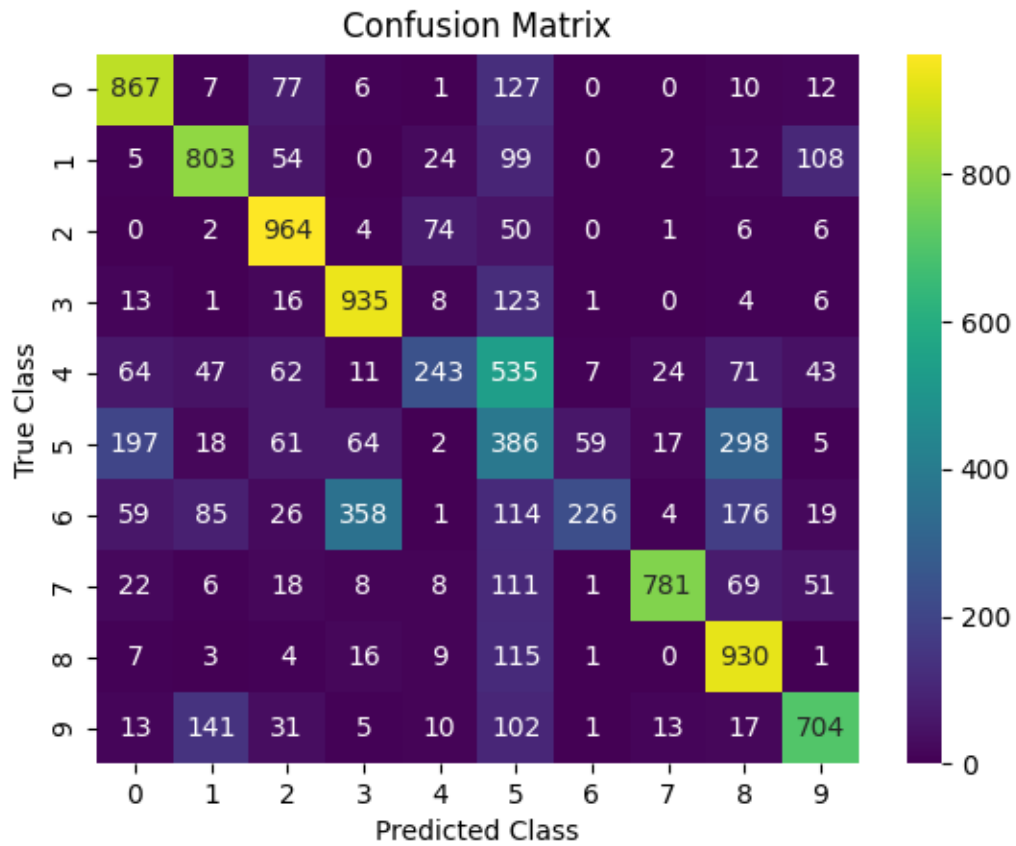

Confusion Matrix

Test performance:

Accuracy: 0.6269710304363769
Loss: 1.7206129416613563
F1 score: 0.6143795876604349

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