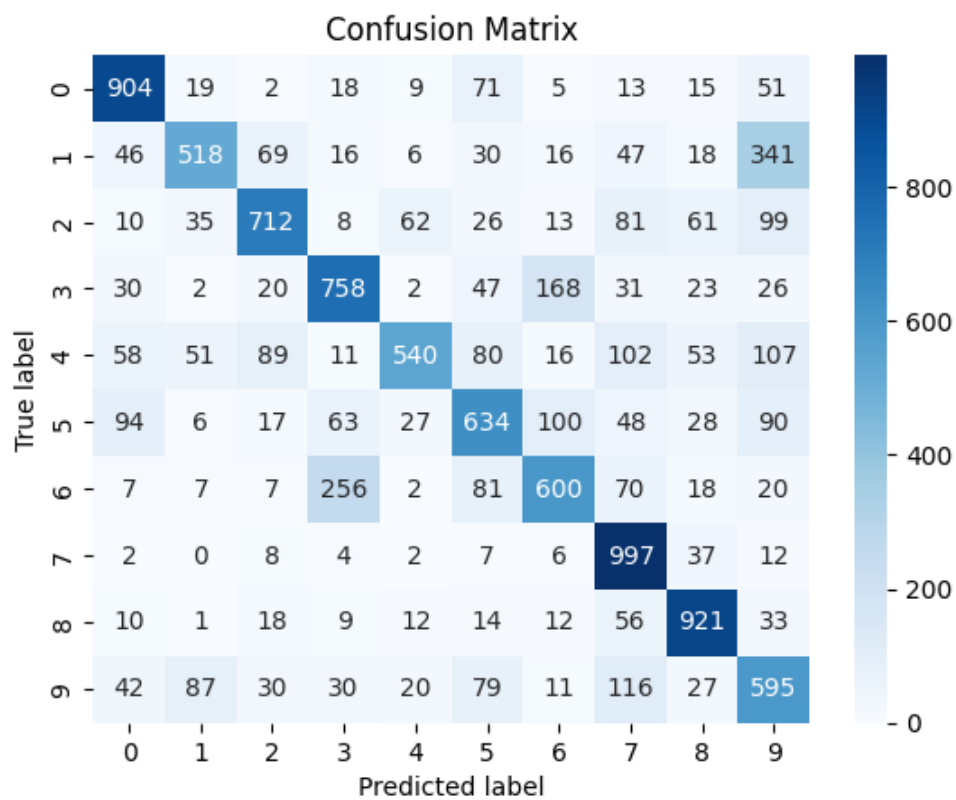
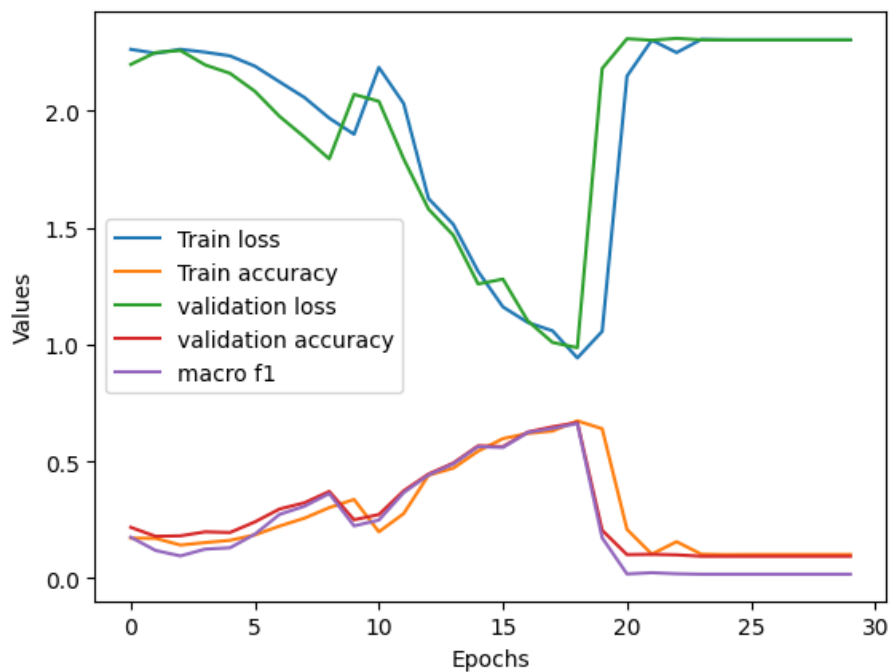


Model architecture used: Lenet-5

Learning Rate: 0.001

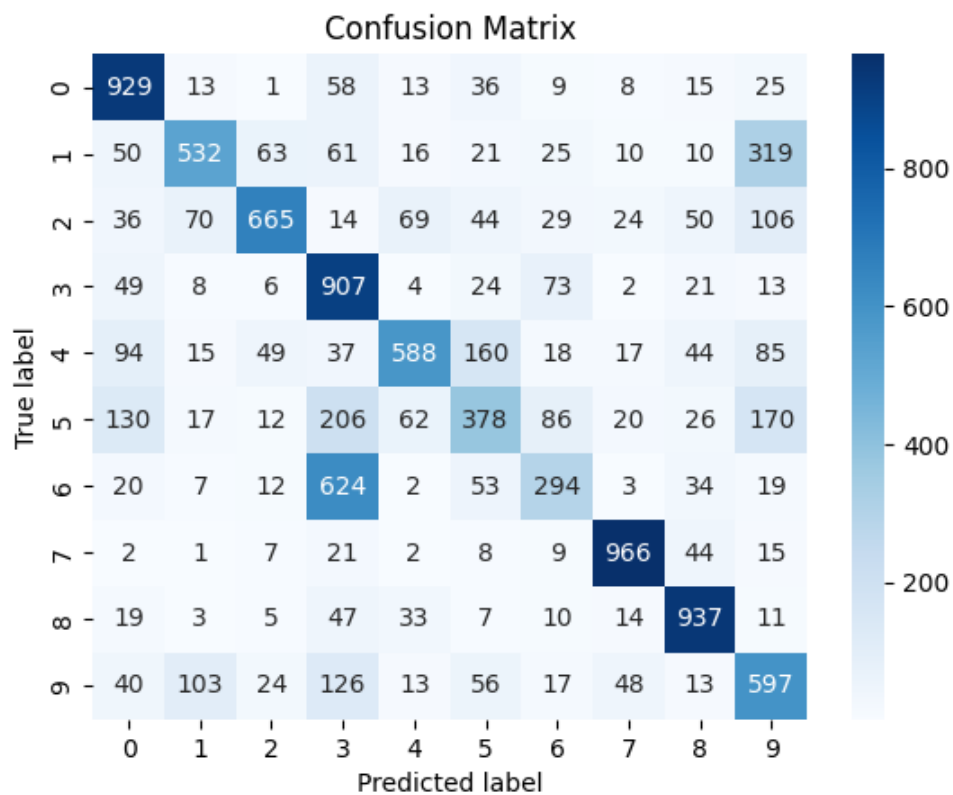
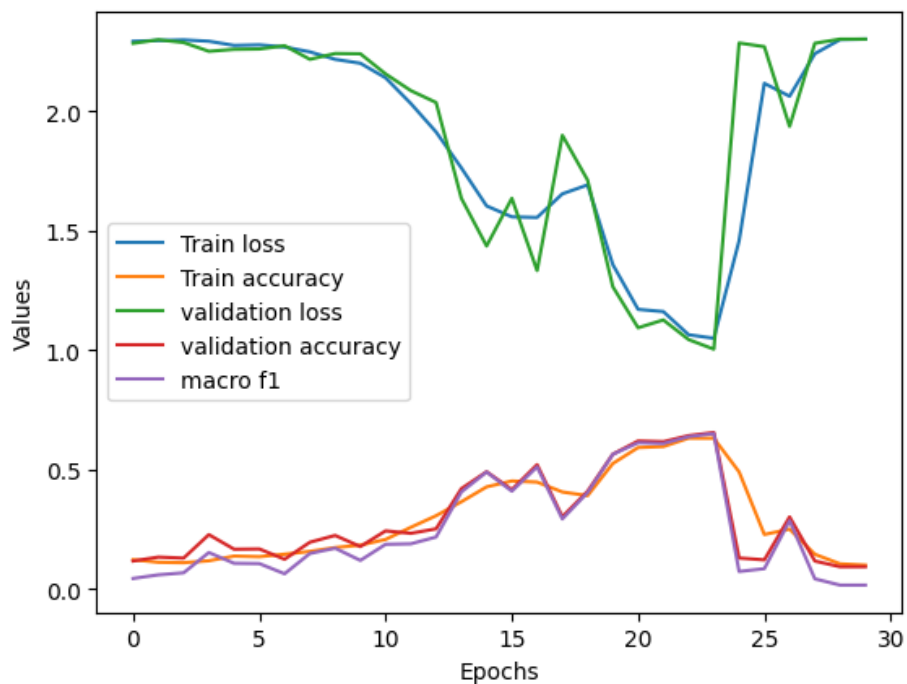
epochs	train_loss	train_accruacy	validation_loss	validation_accr	valid_f1
1	2.262510579	0.171748197	2.197936749	0.217788299	0.175679916
2	2.24574142	0.170621055	2.248828271	0.179348439	0.118903076
3	2.262602118	0.142019838	2.257671459	0.181377522	0.095426913
4	2.250375313	0.15258679	2.195797173	0.198512005	0.124609953
5	2.234496596	0.162139315	2.159940362	0.195693834	0.130272723
6	2.19075716	0.185358431	2.083357849	0.240784579	0.188225804
7	2.123320467	0.223258566	1.975509579	0.296358922	0.27324196
8	2.056610405	0.256931921	1.887319328	0.322624281	0.307910478
9	1.968225437	0.302045762	1.793946831	0.371322286	0.362204192
10	1.899301467	0.337015329	2.069714496	0.250140909	0.223978547
11	2.185158985	0.198630523	2.040324047	0.272460827	0.248789517
12	2.030579644	0.276516005	1.793651484	0.373802277	0.366310648
13	1.624417756	0.440627818	1.57927776	0.445609289	0.441509527
14	1.513778563	0.470891569	1.467370701	0.49261639	0.488899391
15	1.31249758	0.5435922	1.258814712	0.566452486	0.563154829
16	1.160734169	0.59721596	1.279628461	0.562845226	0.559496153
17	1.094109223	0.619448828	1.100951518	0.625295908	0.623324367
18	1.058491303	0.629762173	1.008666992	0.647728554	0.64102433
19	0.942446049	0.673157124	0.986114994	0.665990305	0.661911398
20	1.056138135	0.639540126	2.18046299	0.205050163	0.172973346
21	2.148084262	0.209028404	2.307827352	0.101003269	0.018347497
22	2.301914093	0.103105275	2.301375927	0.102355991	0.023881213
23	2.248514467	0.156362714	2.309543081	0.099988727	0.01925551
24	2.305225867	0.102682597	2.303115161	0.09412693	0.017205852
25	2.302855201	0.100850992	2.303073312	0.09412693	0.017205852
26	2.302860482	0.101386384	2.303072107	0.09412693	0.017205852
27	2.302860682	0.101386384	2.303072063	0.09412693	0.017205852
28	2.302860688	0.101386384	2.303072062	0.09412693	0.017205852
29	2.302860688	0.101386384	2.303072062	0.09412693	0.017205852
30	2.302860688	0.101386384	2.303072062	0.09412693	0.017205852



Test set result: Loss: 3.4055744664900405, accuracy: 0.6581801470588236

Learning Rate: 0.002

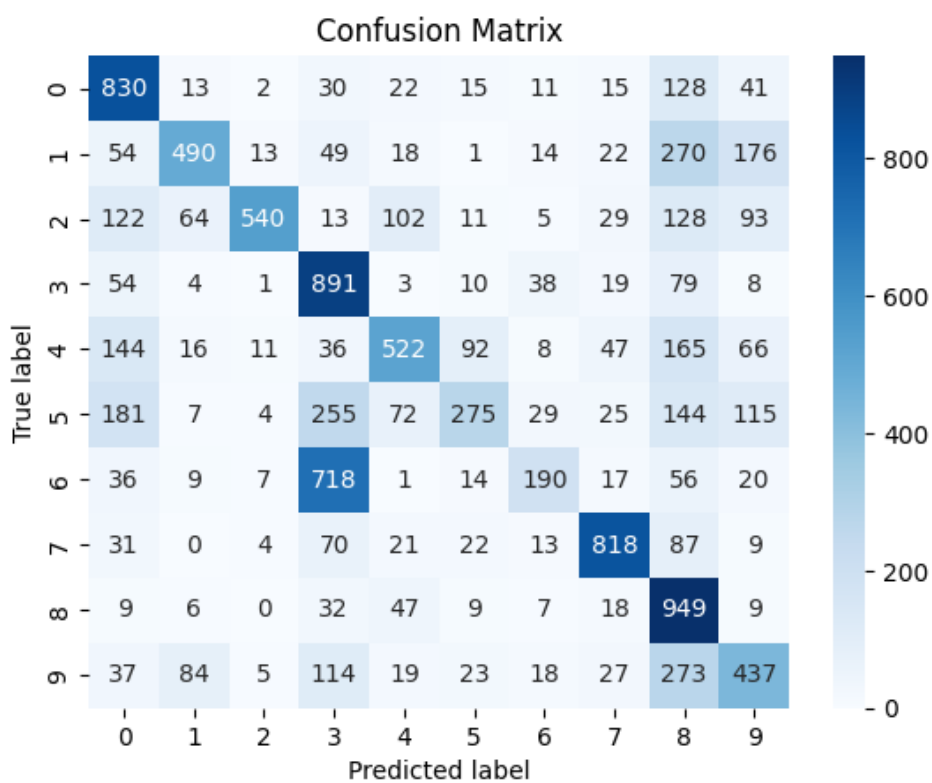
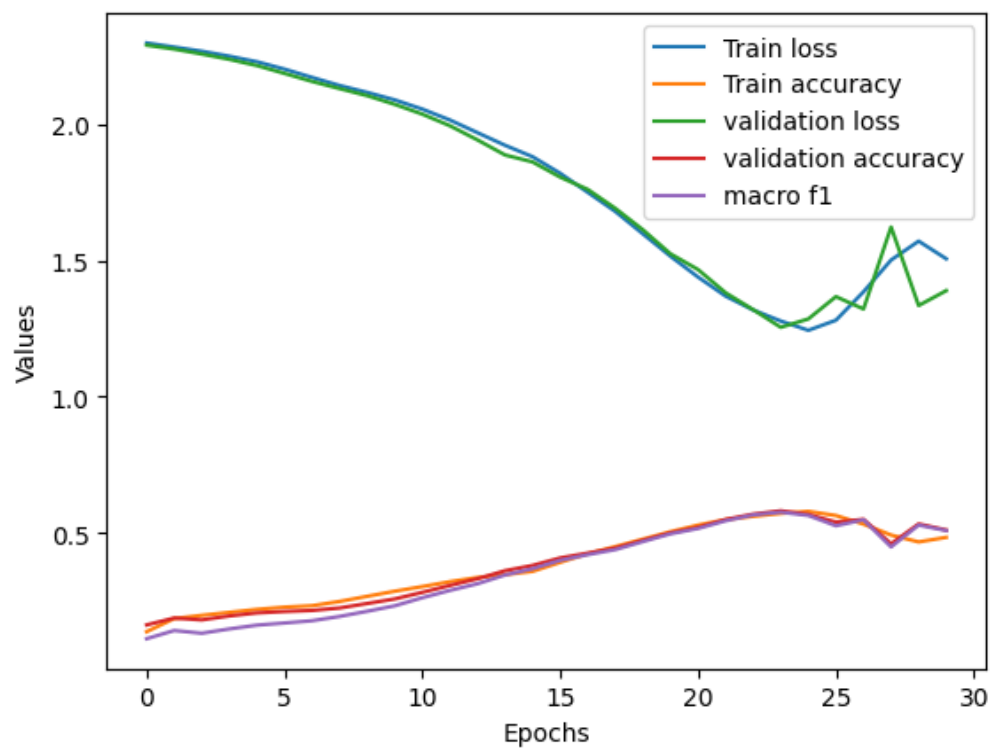
epochs	train_loss	train_accruacy	validation_loss	validation_accru	valid_f1
1	2.294101569	0.123562894	2.285607667	0.118137752	0.045149257
2	2.297420579	0.112826871	2.300563368	0.134595874	0.06022282
3	2.299940016	0.11110798	2.288936364	0.130312253	0.068751515
4	2.294333866	0.119138864	2.252145177	0.228610078	0.153585739
5	2.276831737	0.138666592	2.260264737	0.167512118	0.108560979
6	2.279157038	0.136215059	2.261619946	0.16852666	0.107237188
7	2.270198144	0.146669297	2.275471618	0.125464998	0.064773695
8	2.24981282	0.158307033	2.218568718	0.196708376	0.149555316
9	2.218481464	0.174425158	2.242875111	0.225228272	0.171862895
10	2.202187194	0.184541253	2.241883312	0.178672078	0.120636741
11	2.141052028	0.208408476	2.157397554	0.244391839	0.188133106
12	2.033489082	0.259298918	2.087494777	0.234020967	0.190123515
13	1.914226049	0.307794184	2.037676194	0.25295908	0.218580542
14	1.763975331	0.366151939	1.636723054	0.421034833	0.407261926
15	1.604787868	0.428539225	1.437085193	0.491827302	0.4907006
16	1.559057494	0.453110911	1.636704307	0.417089392	0.410493853
17	1.556382384	0.448517809	1.333975008	0.521474467	0.512432159
18	1.655399546	0.407179892	1.900557412	0.303460715	0.294334654
19	1.692746055	0.391794409	1.712812839	0.410100327	0.40473981
20	1.358911259	0.526403291	1.26621468	0.56521249	0.56490071
21	1.171742604	0.593186429	1.094619412	0.620674107	0.613243567
22	1.162422832	0.597328674	1.127290106	0.617630481	0.610140673
23	1.065434548	0.632298242	1.045218422	0.643106752	0.638583665
24	1.050682689	0.63212917	1.0049757	0.656070342	0.65159472
25	1.458994017	0.491264653	2.286921553	0.130650434	0.074314964
26	2.118010426	0.229063345	2.2715172	0.122985007	0.085987352
27	2.06388657	0.251634355	1.937832731	0.302671627	0.287195391
28	2.242081624	0.146331154	2.285827399	0.118025025	0.043515935
29	2.301003949	0.106204914	2.303138559	0.09412693	0.017205852
30	2.303116732	0.100935528	2.303146685	0.09412693	0.017205852



Test set result: Loss: 2.9965796071028423, accuracy: 0.6230698529411764

Learning rate: 0.0001

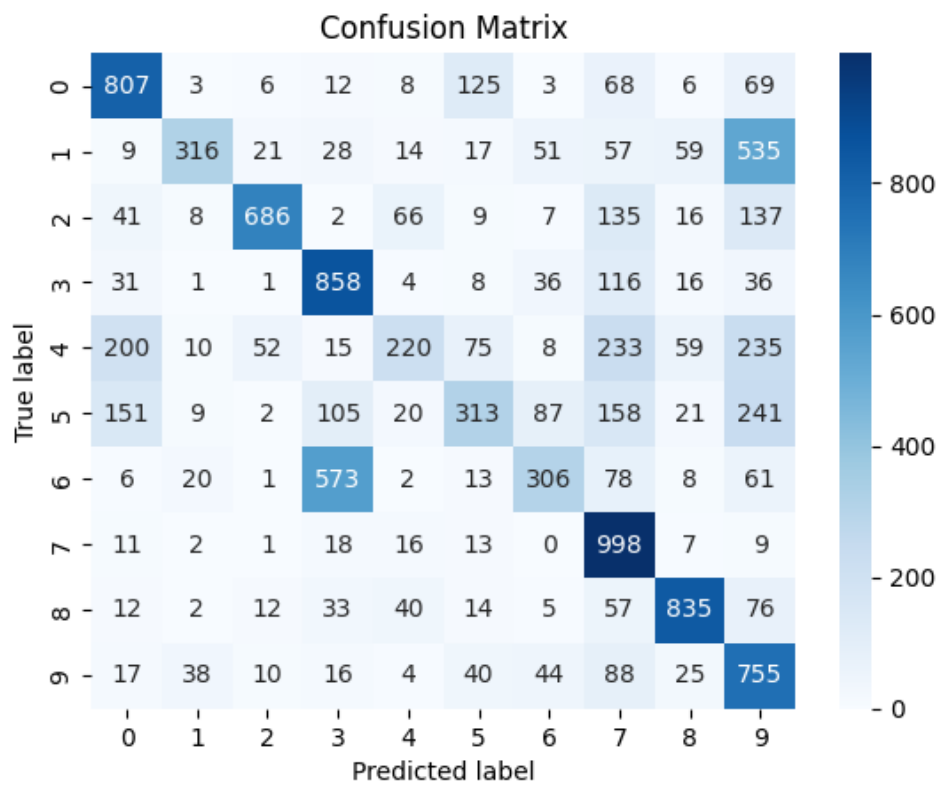
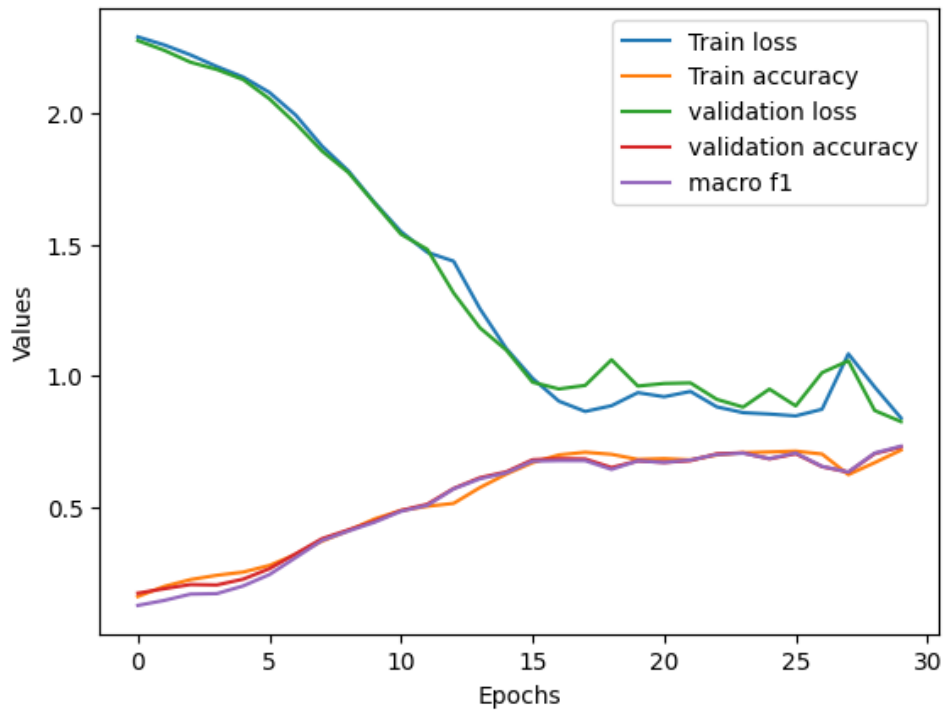
epochs	train_loss	train_accruacy	validation_loss	validation_accruacy	valid_f1
1	2.297674922	0.137821235	2.289508054	0.16277759	0.112094823
2	2.282550194	0.186006537	2.275199243	0.188028407	0.142209291
3	2.267353509	0.197869702	2.257077784	0.181264795	0.132261647
4	2.249037923	0.208802976	2.237556085	0.195693834	0.148039602
5	2.228635879	0.21970807	2.21480163	0.206853793	0.161939862
6	2.201674679	0.227992561	2.185972711	0.212039229	0.16979489
7	2.171200862	0.233261948	2.156574902	0.215871942	0.178099811
8	2.141527938	0.248901037	2.130220409	0.224890091	0.193892604
9	2.116168883	0.267696123	2.10429603	0.241348213	0.212838586
10	2.088756173	0.286406673	2.072480259	0.258144516	0.232945541
11	2.054985373	0.303454689	2.0364352	0.282268064	0.262499465
12	2.015003572	0.321404418	1.993854399	0.307518882	0.289298017
13	1.968493491	0.33662083	1.941921719	0.332206065	0.313789945
14	1.922255714	0.347103246	1.886642516	0.361627776	0.345962112
15	1.880178869	0.359220018	1.861054126	0.380904069	0.368940091
16	1.819416713	0.392273445	1.805416934	0.408522151	0.399763065
17	1.749532502	0.423917944	1.760318456	0.426107541	0.420529255
18	1.679350594	0.450067628	1.690727666	0.444707474	0.439058285
19	1.597156939	0.477288097	1.612213181	0.473001916	0.4684912
20	1.515116907	0.504677638	1.524015681	0.500394544	0.496994882
21	1.438738364	0.528995717	1.466319577	0.520459926	0.516618204
22	1.368868582	0.548861587	1.381113328	0.549543456	0.54477454
23	1.317956446	0.561119252	1.319165392	0.56915793	0.566322665
24	1.277510517	0.571742561	1.254443523	0.581445158	0.576441394
25	1.243546975	0.579294409	1.285280054	0.568143389	0.564347331
26	1.280578618	0.564106177	1.367133662	0.539848946	0.52653463
27	1.384718577	0.532574391	1.32166976	0.550107091	0.54839415
28	1.50136963	0.492391794	1.622400062	0.460263781	0.448856652
29	1.57065887	0.467172002	1.334389979	0.533198061	0.529057444
30	1.50592638	0.483966411	1.389024511	0.510990869	0.508907656



Test set result: Loss: 4.989070172409374, accuracy: 0.5450367647058824

Learning Rate 0.0002:

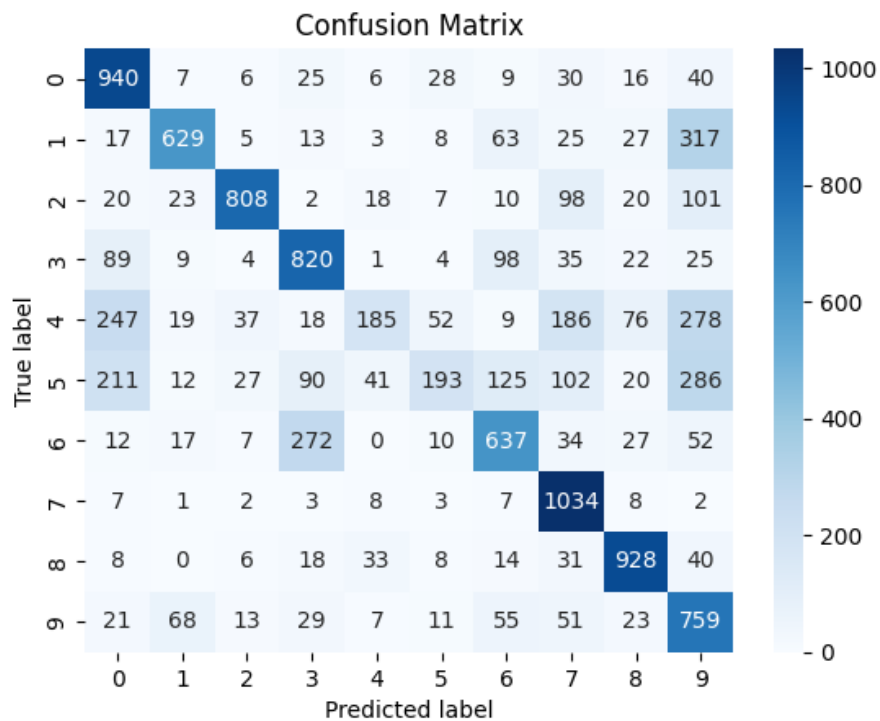
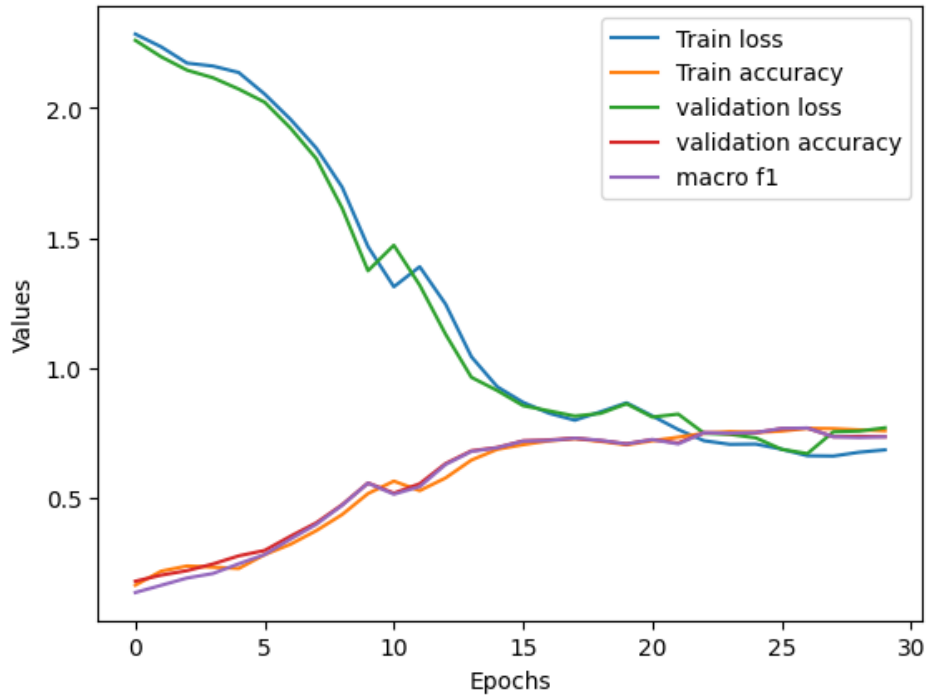
epochs	train_loss	train_accruacy	validation_loss	validation_accruacy	valid_f1
1	2.291607687	0.157687106	2.277257753	0.170443017	0.123733198
2	2.26096604	0.196122633	2.240297597	0.187239319	0.142634408
3	2.222864596	0.222187782	2.19500327	0.203246534	0.166811303
4	2.178560294	0.23861587	2.167206433	0.201668358	0.168682886
5	2.138390126	0.250760821	2.128861897	0.223762823	0.197984543
6	2.079838025	0.276206041	2.055275963	0.263668132	0.241303853
7	1.993079654	0.318248422	1.960870752	0.320595198	0.306152606
8	1.874902419	0.36902615	1.856043915	0.378198625	0.371612194
9	1.780575669	0.408645176	1.774366229	0.411678503	0.407134823
10	1.659258887	0.453646303	1.656378709	0.445045654	0.44110514
11	1.549042554	0.485628945	1.538918332	0.485627325	0.482627709
12	1.46996433	0.501662534	1.481237193	0.50952542	0.505316461
13	1.436226218	0.512821235	1.315026426	0.569608838	0.568052465
14	1.254850844	0.573151488	1.182059839	0.610754143	0.606393412
15	1.10327811	0.624408251	1.09747052	0.632961335	0.629153672
16	0.989665233	0.668028629	0.974665554	0.679179348	0.673743092
17	0.902561655	0.697672453	0.949163928	0.683237515	0.675684907
18	0.863198389	0.70776037	0.96259028	0.681884793	0.675594099
19	0.885224382	0.699870379	1.060395607	0.649419457	0.642418119
20	0.934996548	0.680427187	0.960115217	0.674895728	0.674949834
21	0.919353886	0.683329576	0.969969429	0.669259385	0.668819687
22	0.939596643	0.678708296	0.97218105	0.675572089	0.678154474
23	0.880820633	0.697306132	0.909527939	0.701837448	0.698914719
24	0.858687174	0.705703336	0.879844317	0.705444707	0.704188616
25	0.85344541	0.708831154	0.948553671	0.682448427	0.683691738
26	0.846364125	0.711789901	0.884458767	0.702062902	0.704622717
27	0.871672203	0.70099752	1.011257874	0.653026716	0.65362467
28	1.083010234	0.622463931	1.056268962	0.631608612	0.63260659
29	0.956614737	0.668056808	0.866922684	0.702513809	0.704648611
30	0.838401759	0.715903968	0.824468997	0.727764626	0.730956163



Test set result: Loss: 5.363836970620329, accuracy: 0.5588235294117647

Learning Rate: 0.0003:

epochs	train_loss	train_accruacy	validation_loss	validation_accruacy	valid_f1
1	2.283617792	0.16473174	2.259507294	0.179799346	0.136418124
2	2.234512359	0.218609107	2.196242815	0.203246534	0.164203096
3	2.171954381	0.238503156	2.144854921	0.220493744	0.192167172
4	2.160705876	0.234079125	2.115757965	0.246195468	0.209419339
5	2.135862017	0.228866096	2.072038443	0.277420809	0.246890594
6	2.053242184	0.281982642	2.021760231	0.298049825	0.282184546
7	1.956082943	0.321770739	1.922228509	0.352835081	0.341719373
8	1.845251646	0.374351894	1.804688196	0.404463984	0.398481384
9	1.694977845	0.436203787	1.614128848	0.474016458	0.471771439
10	1.466565263	0.516850766	1.373573477	0.55765979	0.557067227
11	1.311963294	0.564697926	1.471732062	0.518430842	0.514462936
12	1.389242916	0.528037647	1.318286011	0.554616165	0.543487043
13	1.245440743	0.576955591	1.129563456	0.632172247	0.628658638
14	1.042838815	0.645626691	0.963809302	0.681208432	0.678911271
15	0.927530876	0.687020965	0.912935351	0.693833841	0.69299589
16	0.867507485	0.704801623	0.854869415	0.719422838	0.718258718
17	0.825783665	0.719595356	0.834954455	0.723142825	0.721104941
18	0.798843259	0.728330703	0.814765288	0.729906437	0.729605081
19	0.831393742	0.717735573	0.825259705	0.72043738	0.721604118
20	0.865809524	0.704350766	0.862291531	0.708150152	0.70749216
21	0.815291331	0.720046213	0.811056474	0.724270094	0.724643649
22	0.763095243	0.733881876	0.822551356	0.711757412	0.70777675
23	0.719963201	0.748731966	0.748869738	0.751211814	0.751029995
24	0.706260106	0.755184851	0.744713517	0.748055462	0.749325752
25	0.707225598	0.752028855	0.731151235	0.751099087	0.751386968
26	0.687588679	0.756931921	0.68706433	0.766542667	0.767239915
27	0.662272215	0.767667944	0.670615685	0.768571751	0.769017486
28	0.661077495	0.76659716	0.754226216	0.735655507	0.735136412
29	0.675775682	0.761891344	0.757040139	0.736670048	0.73226927
30	0.684978358	0.758228133	0.769928985	0.735430053	0.735155575



Test set result: Loss: 4.183799629990827, accuracy: 0.6355698529411765