

GoogLeNet:

Epoch 1/200

97/97 [=====] - 22s 97ms/step - loss: 1.7469 - sparse_categorical_accuracy: 0.4148 - val_loss: 3.4024 - val_sparse_categorical_accuracy: 0.1008

Epoch 2/200

97/97 [=====] - 7s 75ms/step - loss: 1.3712 - sparse_categorical_accuracy: 0.5517 - val_loss: 2.4839 - val_sparse_categorical_accuracy: 0.1820

Epoch 3/200

97/97 [=====] - 7s 75ms/step - loss: 1.2037 - sparse_categorical_accuracy: 0.6013 - val_loss: 2.1328 - val_sparse_categorical_accuracy: 0.3008

Epoch 4/200

97/97 [=====] - 7s 75ms/step - loss: 1.0675 - sparse_categorical_accuracy: 0.6490 - val_loss: 2.1095 - val_sparse_categorical_accuracy: 0.3938

Epoch 5/200

97/97 [=====] - 7s 75ms/step - loss: 0.9316 - sparse_categorical_accuracy: 0.6988 - val_loss: 1.7619 - val_sparse_categorical_accuracy: 0.4578

Epoch 6/200

97/97 [=====] - 8s 77ms/step - loss: 0.8152 - sparse_categorical_accuracy: 0.7367 - val_loss: 2.2008 - val_sparse_categorical_accuracy: 0.4047

Epoch 7/200

97/97 [=====] - 7s 76ms/step - loss: 0.7430 - sparse_categorical_accuracy: 0.7566 - val_loss: 4.8048 - val_sparse_categorical_accuracy: 0.3070

Epoch 8/200

97/97 [=====] - 7s 74ms/step - loss: 0.6458 - sparse_categorical_accuracy: 0.7888 - val_loss: 2.0404 - val_sparse_categorical_accuracy: 0.4531

Epoch 9/200

97/97 [=====] - 7s 75ms/step - loss: 0.5752 - sparse_categorical_accuracy: 0.8120 - val_loss: 1.5219 - val_sparse_categorical_accuracy: 0.5617

Epoch 10/200

97/97 [=====] - 7s 76ms/step - loss: 0.5099 - sparse_categorical_accuracy: 0.8345 - val_loss: 1.4104 - val_sparse_categorical_accuracy: 0.6023

Epoch 11/200

97/97 [=====] - 7s 75ms/step - loss: 0.4376 - sparse_categorical_accuracy: 0.8542 - val_loss: 1.8838 - val_sparse_categorical_accuracy: 0.5328

Epoch 12/200

97/97 [=====] - 8s 78ms/step - loss: 0.3992 - sparse_categorical_accuracy: 0.8689 - val_loss: 2.3217 - val_sparse_categorical_accuracy: 0.4305

Epoch 13/200

97/97 [=====] - 7s 75ms/step - loss: 0.3325 - sparse_categorical_accuracy: 0.8900 - val_loss: 1.3144 - val_sparse_categorical_accuracy: 0.6453

Epoch 14/200

97/97 [=====] - 7s 76ms/step - loss: 0.3433 - sparse_categorical_accuracy: 0.8900 - val_loss: 2.3269 - val_sparse_categorical_accuracy: 0.4539

Epoch 15/200
97/97 [=====] - 7s 75ms/step - loss: 0.2820 - sparse_categorical_accuracy: 0.9081 - val_loss: 3.2396 - val_sparse_categorical_accuracy: 0.4461

Epoch 16/200
97/97 [=====] - 7s 75ms/step - loss: 0.2368 - sparse_categorical_accuracy: 0.9203 - val_loss: 2.0830 - val_sparse_categorical_accuracy: 0.4969

Epoch 17/200
97/97 [=====] - 7s 77ms/step - loss: 0.2203 - sparse_categorical_accuracy: 0.9260 - val_loss: 1.9658 - val_sparse_categorical_accuracy: 0.5766

Epoch 18/200
97/97 [=====] - 7s 75ms/step - loss: 0.1803 - sparse_categorical_accuracy: 0.9399 - val_loss: 1.9557 - val_sparse_categorical_accuracy: 0.5375

Epoch 19/200
97/97 [=====] - 7s 75ms/step - loss: 0.1994 - sparse_categorical_accuracy: 0.9344 - val_loss: 2.0460 - val_sparse_categorical_accuracy: 0.5297

Epoch 20/200
97/97 [=====] - 7s 75ms/step - loss: 0.1290 - sparse_categorical_accuracy: 0.9578 - val_loss: 2.6844 - val_sparse_categorical_accuracy: 0.4836

Epoch 21/200
97/97 [=====] - 7s 75ms/step - loss: 0.1525 - sparse_categorical_accuracy: 0.9501 - val_loss: 1.6304 - val_sparse_categorical_accuracy: 0.6625

Epoch 22/200
97/97 [=====] - 8s 78ms/step - loss: 0.1329 - sparse_categorical_accuracy: 0.9559 - val_loss: 2.0941 - val_sparse_categorical_accuracy: 0.5750

Epoch 23/200
97/97 [=====] - 7s 76ms/step - loss: 0.1325 - sparse_categorical_accuracy: 0.9564 - val_loss: 2.6217 - val_sparse_categorical_accuracy: 0.4570

Epoch 24/200
97/97 [=====] - 7s 75ms/step - loss: 0.0993 - sparse_categorical_accuracy: 0.9684 - val_loss: 5.7577 - val_sparse_categorical_accuracy: 0.3055

Epoch 25/200
97/97 [=====] - 7s 75ms/step - loss: 0.1228 - sparse_categorical_accuracy: 0.9608 - val_loss: 1.6339 - val_sparse_categorical_accuracy: 0.6406

Epoch 26/200
97/97 [=====] - 7s 75ms/step - loss: 0.1127 - sparse_categorical_accuracy: 0.9637 - val_loss: 2.7068 - val_sparse_categorical_accuracy: 0.5070

Epoch 27/200
97/97 [=====] - 7s 76ms/step - loss: 0.1002 - sparse_categorical_accuracy: 0.9680 - val_loss: 1.5733 - val_sparse_categorical_accuracy: 0.6844

Epoch 28/200
97/97 [=====] - 7s 76ms/step - loss: 0.1189 - sparse_categorical_accuracy: 0.9606 - val_loss: 2.6152 - val_sparse_categorical_accuracy: 0.5141

Epoch 29/200

97/97 [=====] - 7s 77ms/step - loss: 0.0762 - sparse_categorical_accuracy: 0.9757 - val_loss: 2.0760 - val_sparse_categorical_accuracy: 0.5625
Epoch 30/200
97/97 [=====] - 7s 75ms/step - loss: 0.0900 - sparse_categorical_accuracy: 0.9708 - val_loss: 3.2028 - val_sparse_categorical_accuracy: 0.4695
Epoch 31/200
97/97 [=====] - 7s 75ms/step - loss: 0.0854 - sparse_categorical_accuracy: 0.9725 - val_loss: 2.0652 - val_sparse_categorical_accuracy: 0.5867
Epoch 32/200
97/97 [=====] - 8s 78ms/step - loss: 0.0624 - sparse_categorical_accuracy: 0.9794 - val_loss: 1.3843 - val_sparse_categorical_accuracy: 0.7070
Epoch 33/200
97/97 [=====] - 7s 76ms/step - loss: 0.0756 - sparse_categorical_accuracy: 0.9770 - val_loss: 1.9691 - val_sparse_categorical_accuracy: 0.6039
Epoch 34/200
97/97 [=====] - 7s 75ms/step - loss: 0.0687 - sparse_categorical_accuracy: 0.9782 - val_loss: 3.0661 - val_sparse_categorical_accuracy: 0.5273
Epoch 35/200
97/97 [=====] - 7s 76ms/step - loss: 0.0718 - sparse_categorical_accuracy: 0.9772 - val_loss: 2.7569 - val_sparse_categorical_accuracy: 0.5250
Epoch 36/200
97/97 [=====] - 7s 75ms/step - loss: 0.0682 - sparse_categorical_accuracy: 0.9797 - val_loss: 2.4802 - val_sparse_categorical_accuracy: 0.5688
Epoch 37/200
97/97 [=====] - 7s 76ms/step - loss: 0.0862 - sparse_categorical_accuracy: 0.9709 - val_loss: 2.9690 - val_sparse_categorical_accuracy: 0.5016
Epoch 38/200
97/97 [=====] - 7s 76ms/step - loss: 0.1267 - sparse_categorical_accuracy: 0.9593 - val_loss: 2.1085 - val_sparse_categorical_accuracy: 0.5922
Epoch 39/200
97/97 [=====] - 7s 75ms/step - loss: 0.1025 - sparse_categorical_accuracy: 0.9690 - val_loss: 1.7576 - val_sparse_categorical_accuracy: 0.6500
Epoch 40/200
97/97 [=====] - 7s 75ms/step - loss: 0.0561 - sparse_categorical_accuracy: 0.9817 - val_loss: 1.8369 - val_sparse_categorical_accuracy: 0.6203
Epoch 41/200
97/97 [=====] - 7s 75ms/step - loss: 0.0570 - sparse_categorical_accuracy: 0.9824 - val_loss: 2.1710 - val_sparse_categorical_accuracy: 0.6000
Epoch 42/200
97/97 [=====] - 7s 75ms/step - loss: 0.0573 - sparse_categorical_accuracy: 0.9816 - val_loss: 1.5339 - val_sparse_categorical_accuracy: 0.6750
Epoch 43/200
97/97 [=====] - 7s 77ms/step - loss: 0.0655 - sparse_categorical_accuracy: 0.9791 - val_loss: 1.7250 - val_sparse_categorical_accuracy: 0.6750

Epoch 44/200
97/97 [=====] - 7s 75ms/step - loss: 0.0480 - sparse_categorical_accuracy: 0.9839 - val_loss: 2.5211 - val_sparse_categorical_accuracy: 0.5773

Epoch 45/200
97/97 [=====] - 7s 74ms/step - loss: 0.0546 - sparse_categorical_accuracy: 0.9834 - val_loss: 3.4825 - val_sparse_categorical_accuracy: 0.4633

Epoch 46/200
97/97 [=====] - 7s 75ms/step - loss: 0.0779 - sparse_categorical_accuracy: 0.9768 - val_loss: 1.9075 - val_sparse_categorical_accuracy: 0.6484

Epoch 47/200
97/97 [=====] - 7s 75ms/step - loss: 0.0432 - sparse_categorical_accuracy: 0.9865 - val_loss: 1.9627 - val_sparse_categorical_accuracy: 0.6539

Epoch 48/200
97/97 [=====] - 7s 77ms/step - loss: 0.0633 - sparse_categorical_accuracy: 0.9808 - val_loss: 2.0297 - val_sparse_categorical_accuracy: 0.6305

Epoch 49/200
97/97 [=====] - 7s 77ms/step - loss: 0.0465 - sparse_categorical_accuracy: 0.9855 - val_loss: 1.9693 - val_sparse_categorical_accuracy: 0.6406

Epoch 50/200
97/97 [=====] - 7s 76ms/step - loss: 0.0543 - sparse_categorical_accuracy: 0.9821 - val_loss: 2.1826 - val_sparse_categorical_accuracy: 0.5734

Epoch 51/200
97/97 [=====] - 7s 75ms/step - loss: 0.0466 - sparse_categorical_accuracy: 0.9848 - val_loss: 2.1145 - val_sparse_categorical_accuracy: 0.5961

Epoch 52/200
97/97 [=====] - 7s 75ms/step - loss: 0.0574 - sparse_categorical_accuracy: 0.9808 - val_loss: 1.8110 - val_sparse_categorical_accuracy: 0.6383

Epoch 53/200
97/97 [=====] - 8s 78ms/step - loss: 0.0515 - sparse_categorical_accuracy: 0.9851 - val_loss: 1.6209 - val_sparse_categorical_accuracy: 0.6891

Epoch 54/200
97/97 [=====] - 7s 76ms/step - loss: 0.0214 - sparse_categorical_accuracy: 0.9929 - val_loss: 1.8747 - val_sparse_categorical_accuracy: 0.6648

Epoch 55/200
97/97 [=====] - 7s 75ms/step - loss: 0.0640 - sparse_categorical_accuracy: 0.9792 - val_loss: 1.7896 - val_sparse_categorical_accuracy: 0.6648

Epoch 56/200
97/97 [=====] - 7s 75ms/step - loss: 0.0581 - sparse_categorical_accuracy: 0.9820 - val_loss: 1.7058 - val_sparse_categorical_accuracy: 0.6883

Epoch 57/200
97/97 [=====] - 7s 75ms/step - loss: 0.0539 - sparse_categorical_accuracy: 0.9833 - val_loss: 2.1099 - val_sparse_categorical_accuracy: 0.5906

Epoch 58/200

97/97 [=====] - 7s 75ms/step - loss: 0.0559 - sparse_categorical_accuracy: 0.9816 - val_loss: 1.9516 - val_sparse_categorical_accuracy: 0.6234
Epoch 59/200
97/97 [=====] - 7s 75ms/step - loss: 0.0636 - sparse_categorical_accuracy: 0.9808 - val_loss: 2.7603 - val_sparse_categorical_accuracy: 0.5453
Epoch 60/200
97/97 [=====] - 7s 74ms/step - loss: 0.0447 - sparse_categorical_accuracy: 0.9858 - val_loss: 1.8285 - val_sparse_categorical_accuracy: 0.6656
Epoch 61/200
97/97 [=====] - 7s 76ms/step - loss: 0.0367 - sparse_categorical_accuracy: 0.9881 - val_loss: 2.2700 - val_sparse_categorical_accuracy: 0.5898
Epoch 62/200
97/97 [=====] - 7s 77ms/step - loss: 0.0682 - sparse_categorical_accuracy: 0.9770 - val_loss: 3.9529 - val_sparse_categorical_accuracy: 0.4586
Epoch 63/200
97/97 [=====] - 7s 75ms/step - loss: 0.0408 - sparse_categorical_accuracy: 0.9875 - val_loss: 1.6908 - val_sparse_categorical_accuracy: 0.6891
Epoch 64/200
97/97 [=====] - 7s 75ms/step - loss: 0.0298 - sparse_categorical_accuracy: 0.9899 - val_loss: 4.7378 - val_sparse_categorical_accuracy: 0.4180
Epoch 65/200
97/97 [=====] - 8s 78ms/step - loss: 0.0364 - sparse_categorical_accuracy: 0.9892 - val_loss: 1.5954 - val_sparse_categorical_accuracy: 0.6836
Epoch 66/200
97/97 [=====] - 7s 75ms/step - loss: 0.0352 - sparse_categorical_accuracy: 0.9888 - val_loss: 2.0456 - val_sparse_categorical_accuracy: 0.6734
Epoch 67/200
97/97 [=====] - 7s 76ms/step - loss: 0.0522 - sparse_categorical_accuracy: 0.9830 - val_loss: 1.9514 - val_sparse_categorical_accuracy: 0.6445
Epoch 68/200
97/97 [=====] - 7s 75ms/step - loss: 0.0358 - sparse_categorical_accuracy: 0.9880 - val_loss: 2.1810 - val_sparse_categorical_accuracy: 0.6156
Epoch 69/200
97/97 [=====] - 7s 75ms/step - loss: 0.0465 - sparse_categorical_accuracy: 0.9846 - val_loss: 1.5972 - val_sparse_categorical_accuracy: 0.6734
Epoch 70/200
97/97 [=====] - 7s 75ms/step - loss: 0.0330 - sparse_categorical_accuracy: 0.9896 - val_loss: 2.2894 - val_sparse_categorical_accuracy: 0.6094
Epoch 71/200
97/97 [=====] - 7s 76ms/step - loss: 0.0458 - sparse_categorical_accuracy: 0.9842 - val_loss: 2.0000 - val_sparse_categorical_accuracy: 0.6344
Epoch 72/200
97/97 [=====] - 7s 75ms/step - loss: 0.0376 - sparse_categorical_accuracy: 0.9882 - val_loss: 1.7620 - val_sparse_categorical_accuracy: 0.6633

Epoch 73/200
97/97 [=====] - 7s 75ms/step - loss: 0.0438 - sparse_categorical_accuracy: 0.9875 - val_loss: 1.7848 - val_sparse_categorical_accuracy: 0.6633

Epoch 74/200
97/97 [=====] - 7s 74ms/step - loss: 0.0531 - sparse_categorical_accuracy: 0.9834 - val_loss: 2.3650 - val_sparse_categorical_accuracy: 0.6094

Epoch 75/200
97/97 [=====] - 7s 74ms/step - loss: 0.0374 - sparse_categorical_accuracy: 0.9872 - val_loss: 2.7913 - val_sparse_categorical_accuracy: 0.6102

Epoch 76/200
97/97 [=====] - 7s 75ms/step - loss: 0.0307 - sparse_categorical_accuracy: 0.9895 - val_loss: 2.1214 - val_sparse_categorical_accuracy: 0.6281

Epoch 77/200
97/97 [=====] - 7s 76ms/step - loss: 0.0548 - sparse_categorical_accuracy: 0.9822 - val_loss: 2.0028 - val_sparse_categorical_accuracy: 0.6422

Epoch 78/200
97/97 [=====] - 7s 75ms/step - loss: 0.0392 - sparse_categorical_accuracy: 0.9867 - val_loss: 2.2279 - val_sparse_categorical_accuracy: 0.6398

Epoch 79/200
97/97 [=====] - 7s 75ms/step - loss: 0.0223 - sparse_categorical_accuracy: 0.9920 - val_loss: 1.6081 - val_sparse_categorical_accuracy: 0.7078

Epoch 80/200
97/97 [=====] - 7s 74ms/step - loss: 0.0400 - sparse_categorical_accuracy: 0.9863 - val_loss: 2.7225 - val_sparse_categorical_accuracy: 0.5391

Epoch 81/200
97/97 [=====] - 7s 75ms/step - loss: 0.0329 - sparse_categorical_accuracy: 0.9890 - val_loss: 1.6004 - val_sparse_categorical_accuracy: 0.6898

Epoch 82/200
97/97 [=====] - 7s 75ms/step - loss: 0.0179 - sparse_categorical_accuracy: 0.9942 - val_loss: 1.5021 - val_sparse_categorical_accuracy: 0.7383

Epoch 83/200
97/97 [=====] - 7s 76ms/step - loss: 0.0240 - sparse_categorical_accuracy: 0.9922 - val_loss: 2.4218 - val_sparse_categorical_accuracy: 0.5984

Epoch 84/200
97/97 [=====] - 7s 75ms/step - loss: 0.0550 - sparse_categorical_accuracy: 0.9817 - val_loss: 1.6187 - val_sparse_categorical_accuracy: 0.6961

Epoch 85/200
97/97 [=====] - 7s 75ms/step - loss: 0.0335 - sparse_categorical_accuracy: 0.9903 - val_loss: 1.6984 - val_sparse_categorical_accuracy: 0.6750

Epoch 86/200
97/97 [=====] - 7s 75ms/step - loss: 0.0549 - sparse_categorical_accuracy: 0.9826 - val_loss: 1.6476 - val_sparse_categorical_accuracy: 0.7063

Epoch 87/200

97/97 [=====] - 7s 75ms/step - loss: 0.0353 - sparse_categorical_accuracy: 0.9877 - val_loss: 1.5268 - val_sparse_categorical_accuracy: 0.7133
Epoch 88/200
97/97 [=====] - 8s 79ms/step - loss: 0.0332 - sparse_categorical_accuracy: 0.9894 - val_loss: 1.6226 - val_sparse_categorical_accuracy: 0.7164
Epoch 89/200
97/97 [=====] - 7s 74ms/step - loss: 0.0468 - sparse_categorical_accuracy: 0.9856 - val_loss: 2.0120 - val_sparse_categorical_accuracy: 0.6430
Epoch 90/200
97/97 [=====] - 7s 75ms/step - loss: 0.0360 - sparse_categorical_accuracy: 0.9879 - val_loss: 3.2896 - val_sparse_categorical_accuracy: 0.5289
Epoch 91/200
97/97 [=====] - 7s 75ms/step - loss: 0.0169 - sparse_categorical_accuracy: 0.9942 - val_loss: 2.7988 - val_sparse_categorical_accuracy: 0.5680
Epoch 92/200
97/97 [=====] - 7s 75ms/step - loss: 0.0275 - sparse_categorical_accuracy: 0.9907 - val_loss: 1.8640 - val_sparse_categorical_accuracy: 0.6883
Epoch 93/200
97/97 [=====] - 7s 75ms/step - loss: 0.0362 - sparse_categorical_accuracy: 0.9887 - val_loss: 1.7276 - val_sparse_categorical_accuracy: 0.6797
Epoch 94/200
97/97 [=====] - 7s 75ms/step - loss: 0.0206 - sparse_categorical_accuracy: 0.9935 - val_loss: 1.6298 - val_sparse_categorical_accuracy: 0.6938
Epoch 95/200
97/97 [=====] - 7s 74ms/step - loss: 0.0354 - sparse_categorical_accuracy: 0.9888 - val_loss: 2.6690 - val_sparse_categorical_accuracy: 0.5406
Epoch 96/200
97/97 [=====] - 7s 76ms/step - loss: 0.0295 - sparse_categorical_accuracy: 0.9912 - val_loss: 1.7489 - val_sparse_categorical_accuracy: 0.6938
Epoch 97/200
97/97 [=====] - 7s 75ms/step - loss: 0.0324 - sparse_categorical_accuracy: 0.9905 - val_loss: 1.6107 - val_sparse_categorical_accuracy: 0.7414
Epoch 98/200
97/97 [=====] - 7s 74ms/step - loss: 0.0320 - sparse_categorical_accuracy: 0.9903 - val_loss: 1.6615 - val_sparse_categorical_accuracy: 0.6844
Epoch 99/200
97/97 [=====] - 7s 75ms/step - loss: 0.0370 - sparse_categorical_accuracy: 0.9877 - val_loss: 2.0573 - val_sparse_categorical_accuracy: 0.6445
Epoch 100/200
97/97 [=====] - 7s 75ms/step - loss: 0.0182 - sparse_categorical_accuracy: 0.9929 - val_loss: 2.1539 - val_sparse_categorical_accuracy: 0.6305
Epoch 101/200
97/97 [=====] - 7s 74ms/step - loss: 0.0241 - sparse_categorical_accuracy: 0.9914 - val_loss: 1.5990 - val_sparse_categorical_accuracy: 0.7227

Epoch 102/200
97/97 [=====] - 7s 75ms/step - loss: 0.0150 - sparse_categorical_accuracy: 0.9951 - val_loss: 1.5459 - val_sparse_categorical_accuracy: 0.7266

Epoch 103/200
97/97 [=====] - 7s 75ms/step - loss: 0.0306 - sparse_categorical_accuracy: 0.9899 - val_loss: 1.7690 - val_sparse_categorical_accuracy: 0.6953

Epoch 104/200
97/97 [=====] - 7s 75ms/step - loss: 0.0228 - sparse_categorical_accuracy: 0.9932 - val_loss: 2.5078 - val_sparse_categorical_accuracy: 0.5828

Epoch 105/200
97/97 [=====] - 7s 75ms/step - loss: 0.0282 - sparse_categorical_accuracy: 0.9918 - val_loss: 1.7806 - val_sparse_categorical_accuracy: 0.7133

Epoch 106/200
97/97 [=====] - 7s 75ms/step - loss: 0.0575 - sparse_categorical_accuracy: 0.9829 - val_loss: 3.0037 - val_sparse_categorical_accuracy: 0.4945

Epoch 107/200
97/97 [=====] - 7s 75ms/step - loss: 0.0362 - sparse_categorical_accuracy: 0.9893 - val_loss: 2.2064 - val_sparse_categorical_accuracy: 0.6242

Epoch 108/200
97/97 [=====] - 7s 75ms/step - loss: 0.0289 - sparse_categorical_accuracy: 0.9909 - val_loss: 1.7097 - val_sparse_categorical_accuracy: 0.7016

Epoch 109/200
97/97 [=====] - 7s 76ms/step - loss: 0.0186 - sparse_categorical_accuracy: 0.9932 - val_loss: 1.8276 - val_sparse_categorical_accuracy: 0.6773

Epoch 110/200
97/97 [=====] - 7s 75ms/step - loss: 0.0327 - sparse_categorical_accuracy: 0.9901 - val_loss: 2.7853 - val_sparse_categorical_accuracy: 0.5711

Epoch 111/200
97/97 [=====] - 8s 80ms/step - loss: 0.0357 - sparse_categorical_accuracy: 0.9882 - val_loss: 2.2634 - val_sparse_categorical_accuracy: 0.6313

Epoch 112/200
97/97 [=====] - 7s 77ms/step - loss: 0.0232 - sparse_categorical_accuracy: 0.9933 - val_loss: 1.9390 - val_sparse_categorical_accuracy: 0.6641

Epoch 113/200
97/97 [=====] - 7s 75ms/step - loss: 0.0225 - sparse_categorical_accuracy: 0.9920 - val_loss: 1.9499 - val_sparse_categorical_accuracy: 0.6734

Epoch 114/200
97/97 [=====] - 7s 75ms/step - loss: 0.0213 - sparse_categorical_accuracy: 0.9927 - val_loss: 1.5905 - val_sparse_categorical_accuracy: 0.7234

Epoch 115/200
97/97 [=====] - 7s 75ms/step - loss: 0.0289 - sparse_categorical_accuracy: 0.9902 - val_loss: 1.8859 - val_sparse_categorical_accuracy: 0.6836

Epoch 116/200

97/97 [=====] - 7s 75ms/step - loss: 0.0134 - sparse_categorical_accuracy: 0.9955 - val_loss: 2.0947 - val_sparse_categorical_accuracy: 0.6555
Epoch 117/200
97/97 [=====] - 7s 75ms/step - loss: 0.0283 - sparse_categorical_accuracy: 0.9915 - val_loss: 1.7516 - val_sparse_categorical_accuracy: 0.7219
Epoch 118/200
97/97 [=====] - 7s 77ms/step - loss: 0.0343 - sparse_categorical_accuracy: 0.9893 - val_loss: 1.8354 - val_sparse_categorical_accuracy: 0.6836
Epoch 119/200
97/97 [=====] - 7s 75ms/step - loss: 0.0299 - sparse_categorical_accuracy: 0.9907 - val_loss: 1.6933 - val_sparse_categorical_accuracy: 0.6898
Epoch 120/200
97/97 [=====] - 7s 76ms/step - loss: 0.0274 - sparse_categorical_accuracy: 0.9912 - val_loss: 1.7578 - val_sparse_categorical_accuracy: 0.6992
Epoch 121/200
97/97 [=====] - 7s 76ms/step - loss: 0.0373 - sparse_categorical_accuracy: 0.9878 - val_loss: 1.8746 - val_sparse_categorical_accuracy: 0.6727
Epoch 122/200
97/97 [=====] - 7s 77ms/step - loss: 0.0264 - sparse_categorical_accuracy: 0.9928 - val_loss: 1.8689 - val_sparse_categorical_accuracy: 0.6930
Epoch 123/200
97/97 [=====] - 7s 75ms/step - loss: 0.0643 - sparse_categorical_accuracy: 0.9804 - val_loss: 1.6190 - val_sparse_categorical_accuracy: 0.6742
Epoch 124/200
97/97 [=====] - 7s 75ms/step - loss: 0.0247 - sparse_categorical_accuracy: 0.9925 - val_loss: 1.6461 - val_sparse_categorical_accuracy: 0.6914
Epoch 125/200
97/97 [=====] - 7s 74ms/step - loss: 0.0151 - sparse_categorical_accuracy: 0.9954 - val_loss: 1.6729 - val_sparse_categorical_accuracy: 0.7266
Epoch 126/200
97/97 [=====] - 7s 75ms/step - loss: 0.0088 - sparse_categorical_accuracy: 0.9968 - val_loss: 1.6246 - val_sparse_categorical_accuracy: 0.7406
Epoch 127/200
97/97 [=====] - 7s 76ms/step - loss: 0.0225 - sparse_categorical_accuracy: 0.9936 - val_loss: 1.4208 - val_sparse_categorical_accuracy: 0.7617
Epoch 128/200
97/97 [=====] - 7s 75ms/step - loss: 0.0173 - sparse_categorical_accuracy: 0.9955 - val_loss: 1.8404 - val_sparse_categorical_accuracy: 0.6766
Epoch 129/200
97/97 [=====] - 7s 75ms/step - loss: 0.0212 - sparse_categorical_accuracy: 0.9932 - val_loss: 1.6526 - val_sparse_categorical_accuracy: 0.7109
Epoch 130/200
97/97 [=====] - 7s 75ms/step - loss: 0.0197 - sparse_categorical_accuracy: 0.9924 - val_loss: 1.9466 - val_sparse_categorical_accuracy: 0.6844

Epoch 131/200
97/97 [=====] - 7s 76ms/step - loss: 0.0277 - sparse_categorical_accuracy: 0.9913 - val_loss: 1.9819 - val_sparse_categorical_accuracy: 0.6789

Epoch 132/200
97/97 [=====] - 7s 75ms/step - loss: 0.0144 - sparse_categorical_accuracy: 0.9948 - val_loss: 1.7691 - val_sparse_categorical_accuracy: 0.6930

Epoch 133/200
97/97 [=====] - 7s 76ms/step - loss: 0.0347 - sparse_categorical_accuracy: 0.9890 - val_loss: 2.0121 - val_sparse_categorical_accuracy: 0.6766

Epoch 134/200
97/97 [=====] - 7s 74ms/step - loss: 0.0189 - sparse_categorical_accuracy: 0.9939 - val_loss: 1.7756 - val_sparse_categorical_accuracy: 0.7047

Epoch 135/200
97/97 [=====] - 7s 75ms/step - loss: 0.0275 - sparse_categorical_accuracy: 0.9907 - val_loss: 1.8016 - val_sparse_categorical_accuracy: 0.7000

Epoch 136/200
97/97 [=====] - 7s 77ms/step - loss: 0.0207 - sparse_categorical_accuracy: 0.9925 - val_loss: 1.9535 - val_sparse_categorical_accuracy: 0.6687

Epoch 137/200
97/97 [=====] - 7s 75ms/step - loss: 0.0232 - sparse_categorical_accuracy: 0.9929 - val_loss: 2.0520 - val_sparse_categorical_accuracy: 0.6742

Epoch 138/200
97/97 [=====] - 7s 76ms/step - loss: 0.0262 - sparse_categorical_accuracy: 0.9918 - val_loss: 1.9143 - val_sparse_categorical_accuracy: 0.6664

Epoch 139/200
97/97 [=====] - 7s 74ms/step - loss: 0.0145 - sparse_categorical_accuracy: 0.9950 - val_loss: 1.7973 - val_sparse_categorical_accuracy: 0.7148

Epoch 140/200
97/97 [=====] - 7s 74ms/step - loss: 0.0440 - sparse_categorical_accuracy: 0.9864 - val_loss: 2.0816 - val_sparse_categorical_accuracy: 0.6219

Epoch 141/200
97/97 [=====] - 7s 75ms/step - loss: 0.0189 - sparse_categorical_accuracy: 0.9943 - val_loss: 1.8802 - val_sparse_categorical_accuracy: 0.6516

Epoch 142/200
97/97 [=====] - 7s 75ms/step - loss: 0.0132 - sparse_categorical_accuracy: 0.9947 - val_loss: 1.9408 - val_sparse_categorical_accuracy: 0.7148

Epoch 143/200
97/97 [=====] - 7s 74ms/step - loss: 0.0095 - sparse_categorical_accuracy: 0.9973 - val_loss: 2.2531 - val_sparse_categorical_accuracy: 0.6742

Epoch 144/200
97/97 [=====] - 7s 75ms/step - loss: 0.0254 - sparse_categorical_accuracy: 0.9920 - val_loss: 1.7788 - val_sparse_categorical_accuracy: 0.7125

Epoch 145/200

97/97 [=====] - 7s 74ms/step - loss: 0.0144 - sparse_categorical_accuracy: 0.9955 - val_loss: 1.4978 - val_sparse_categorical_accuracy: 0.7367
Epoch 146/200

97/97 [=====] - 7s 75ms/step - loss: 0.0355 - sparse_categorical_accuracy: 0.9899 - val_loss: 1.8228 - val_sparse_categorical_accuracy: 0.6750
Epoch 147/200

97/97 [=====] - 7s 75ms/step - loss: 0.0151 - sparse_categorical_accuracy: 0.9942 - val_loss: 1.8206 - val_sparse_categorical_accuracy: 0.7031
Epoch 148/200

97/97 [=====] - 7s 74ms/step - loss: 0.0276 - sparse_categorical_accuracy: 0.9912 - val_loss: 1.6969 - val_sparse_categorical_accuracy: 0.6867
Epoch 149/200

97/97 [=====] - 7s 73ms/step - loss: 0.0155 - sparse_categorical_accuracy: 0.9951 - val_loss: 2.3960 - val_sparse_categorical_accuracy: 0.6398
Epoch 150/200

97/97 [=====] - 7s 74ms/step - loss: 0.0170 - sparse_categorical_accuracy: 0.9939 - val_loss: 1.9302 - val_sparse_categorical_accuracy: 0.6695
Epoch 151/200

97/97 [=====] - 7s 75ms/step - loss: 0.0204 - sparse_categorical_accuracy: 0.9929 - val_loss: 1.8047 - val_sparse_categorical_accuracy: 0.7125
Epoch 152/200

97/97 [=====] - 7s 74ms/step - loss: 0.0284 - sparse_categorical_accuracy: 0.9915 - val_loss: 1.7373 - val_sparse_categorical_accuracy: 0.6820
Epoch 153/200

97/97 [=====] - 7s 75ms/step - loss: 0.0190 - sparse_categorical_accuracy: 0.9939 - val_loss: 1.5654 - val_sparse_categorical_accuracy: 0.7312
Epoch 154/200

97/97 [=====] - 7s 75ms/step - loss: 0.0140 - sparse_categorical_accuracy: 0.9955 - val_loss: 1.8787 - val_sparse_categorical_accuracy: 0.7148
Epoch 155/200

97/97 [=====] - 7s 75ms/step - loss: 0.0091 - sparse_categorical_accuracy: 0.9959 - val_loss: 1.7062 - val_sparse_categorical_accuracy: 0.7406
Epoch 156/200

97/97 [=====] - 7s 75ms/step - loss: 0.0376 - sparse_categorical_accuracy: 0.9900 - val_loss: 1.5602 - val_sparse_categorical_accuracy: 0.7172
Epoch 157/200

97/97 [=====] - 7s 75ms/step - loss: 0.0212 - sparse_categorical_accuracy: 0.9925 - val_loss: 1.8227 - val_sparse_categorical_accuracy: 0.6562
Epoch 158/200

97/97 [=====] - 7s 74ms/step - loss: 0.0231 - sparse_categorical_accuracy: 0.9928 - val_loss: 2.3223 - val_sparse_categorical_accuracy: 0.6359
Epoch 159/200

97/97 [=====] - 7s 75ms/step - loss: 0.0217 - sparse_categorical_accuracy: 0.9923 - val_loss: 1.3980 - val_sparse_categorical_accuracy: 0.7422

Epoch 160/200
97/97 [=====] - 7s 76ms/step - loss: 0.0190 - sparse_categorical_accuracy: 0.9943 - val_loss: 1.6482 - val_sparse_categorical_accuracy: 0.7039

Epoch 161/200
97/97 [=====] - 7s 75ms/step - loss: 0.0204 - sparse_categorical_accuracy: 0.9933 - val_loss: 1.6910 - val_sparse_categorical_accuracy: 0.6898

Epoch 162/200
97/97 [=====] - 7s 74ms/step - loss: 0.0128 - sparse_categorical_accuracy: 0.9963 - val_loss: 2.1780 - val_sparse_categorical_accuracy: 0.6938

Epoch 163/200
97/97 [=====] - 7s 74ms/step - loss: 0.0080 - sparse_categorical_accuracy: 0.9968 - val_loss: 1.8314 - val_sparse_categorical_accuracy: 0.7437

Epoch 164/200
97/97 [=====] - 7s 75ms/step - loss: 0.0246 - sparse_categorical_accuracy: 0.9927 - val_loss: 2.3943 - val_sparse_categorical_accuracy: 0.5906

Epoch 165/200
97/97 [=====] - 7s 76ms/step - loss: 0.0122 - sparse_categorical_accuracy: 0.9956 - val_loss: 1.5631 - val_sparse_categorical_accuracy: 0.7422

Epoch 166/200
97/97 [=====] - 7s 74ms/step - loss: 0.0098 - sparse_categorical_accuracy: 0.9969 - val_loss: 1.9039 - val_sparse_categorical_accuracy: 0.7016

Epoch 167/200
97/97 [=====] - 7s 75ms/step - loss: 0.0086 - sparse_categorical_accuracy: 0.9971 - val_loss: 1.9258 - val_sparse_categorical_accuracy: 0.7086

Epoch 168/200
97/97 [=====] - 7s 75ms/step - loss: 0.0286 - sparse_categorical_accuracy: 0.9903 - val_loss: 2.2993 - val_sparse_categorical_accuracy: 0.6531

Epoch 169/200
97/97 [=====] - 7s 75ms/step - loss: 0.0252 - sparse_categorical_accuracy: 0.9918 - val_loss: 1.7130 - val_sparse_categorical_accuracy: 0.7078

Epoch 170/200
97/97 [=====] - 7s 75ms/step - loss: 0.0216 - sparse_categorical_accuracy: 0.9935 - val_loss: 1.7130 - val_sparse_categorical_accuracy: 0.7188

Epoch 171/200
97/97 [=====] - 7s 74ms/step - loss: 0.0274 - sparse_categorical_accuracy: 0.9923 - val_loss: 2.2652 - val_sparse_categorical_accuracy: 0.6062

Epoch 172/200
97/97 [=====] - 7s 74ms/step - loss: 0.0157 - sparse_categorical_accuracy: 0.9950 - val_loss: 1.5318 - val_sparse_categorical_accuracy: 0.7352

Epoch 173/200
97/97 [=====] - 7s 75ms/step - loss: 0.0475 - sparse_categorical_accuracy: 0.9864 - val_loss: 1.7031 - val_sparse_categorical_accuracy: 0.6938

Epoch 174/200

97/97 [=====] - 7s 74ms/step - loss: 0.0147 - sparse_categorical_accuracy: 0.9946 - val_loss: 2.1721 - val_sparse_categorical_accuracy: 0.6750
Epoch 175/200

97/97 [=====] - 7s 75ms/step - loss: 0.0095 - sparse_categorical_accuracy: 0.9971 - val_loss: 1.9143 - val_sparse_categorical_accuracy: 0.7367
Epoch 176/200

97/97 [=====] - 7s 74ms/step - loss: 0.0248 - sparse_categorical_accuracy: 0.9924 - val_loss: 2.0681 - val_sparse_categorical_accuracy: 0.6758
Epoch 177/200

97/97 [=====] - 7s 75ms/step - loss: 0.0256 - sparse_categorical_accuracy: 0.9916 - val_loss: 2.0596 - val_sparse_categorical_accuracy: 0.6695
Epoch 178/200

97/97 [=====] - 7s 74ms/step - loss: 0.0352 - sparse_categorical_accuracy: 0.9893 - val_loss: 2.1557 - val_sparse_categorical_accuracy: 0.6633
Epoch 179/200

97/97 [=====] - 7s 74ms/step - loss: 0.0189 - sparse_categorical_accuracy: 0.9931 - val_loss: 2.3562 - val_sparse_categorical_accuracy: 0.6273
Epoch 180/200

97/97 [=====] - 7s 76ms/step - loss: 0.0155 - sparse_categorical_accuracy: 0.9949 - val_loss: 1.6988 - val_sparse_categorical_accuracy: 0.6984
Epoch 181/200

97/97 [=====] - 7s 74ms/step - loss: 0.0088 - sparse_categorical_accuracy: 0.9965 - val_loss: 1.4319 - val_sparse_categorical_accuracy: 0.7539
Epoch 182/200

97/97 [=====] - 7s 75ms/step - loss: 0.0081 - sparse_categorical_accuracy: 0.9966 - val_loss: 1.6070 - val_sparse_categorical_accuracy: 0.7344
Epoch 183/200

97/97 [=====] - 7s 76ms/step - loss: 0.0104 - sparse_categorical_accuracy: 0.9966 - val_loss: 2.3126 - val_sparse_categorical_accuracy: 0.6719
Epoch 184/200

97/97 [=====] - 7s 75ms/step - loss: 0.0214 - sparse_categorical_accuracy: 0.9925 - val_loss: 1.6621 - val_sparse_categorical_accuracy: 0.7000
Epoch 185/200

97/97 [=====] - 7s 77ms/step - loss: 0.0189 - sparse_categorical_accuracy: 0.9935 - val_loss: 2.1766 - val_sparse_categorical_accuracy: 0.6687
Epoch 186/200

97/97 [=====] - 8s 77ms/step - loss: 0.0368 - sparse_categorical_accuracy: 0.9898 - val_loss: 2.4071 - val_sparse_categorical_accuracy: 0.6070
Epoch 187/200

97/97 [=====] - 7s 76ms/step - loss: 0.0291 - sparse_categorical_accuracy: 0.9902 - val_loss: 2.2188 - val_sparse_categorical_accuracy: 0.6602
Epoch 188/200

97/97 [=====] - 7s 76ms/step - loss: 0.0188 - sparse_categorical_accuracy: 0.9938 - val_loss: 1.7419 - val_sparse_categorical_accuracy: 0.7055

Epoch 189/200
 97/97 [=====] - 7s 76ms/step - loss: 0.0106 - sparse_categorical_accuracy: 0.9962 - val_loss: 2.0378 - val_sparse_categorical_accuracy: 0.6867

Epoch 190/200
 97/97 [=====] - 7s 75ms/step - loss: 0.0261 - sparse_categorical_accuracy: 0.9924 - val_loss: 1.8149 - val_sparse_categorical_accuracy: 0.6883

Epoch 191/200
 97/97 [=====] - 8s 82ms/step - loss: 0.0165 - sparse_categorical_accuracy: 0.9949 - val_loss: 1.7784 - val_sparse_categorical_accuracy: 0.7234

Epoch 192/200
 97/97 [=====] - 7s 76ms/step - loss: 0.0074 - sparse_categorical_accuracy: 0.9972 - val_loss: 1.6055 - val_sparse_categorical_accuracy: 0.7383

Epoch 193/200
 97/97 [=====] - 7s 75ms/step - loss: 0.0087 - sparse_categorical_accuracy: 0.9966 - val_loss: 1.6718 - val_sparse_categorical_accuracy: 0.7430

Epoch 194/200
 97/97 [=====] - 7s 76ms/step - loss: 0.0133 - sparse_categorical_accuracy: 0.9950 - val_loss: 1.5315 - val_sparse_categorical_accuracy: 0.7453

Epoch 195/200
 97/97 [=====] - 7s 76ms/step - loss: 0.0175 - sparse_categorical_accuracy: 0.9945 - val_loss: 1.5667 - val_sparse_categorical_accuracy: 0.7297

Epoch 196/200
 97/97 [=====] - 7s 77ms/step - loss: 0.0119 - sparse_categorical_accuracy: 0.9957 - val_loss: 1.6213 - val_sparse_categorical_accuracy: 0.7359

Epoch 197/200
 97/97 [=====] - 7s 76ms/step - loss: 0.0124 - sparse_categorical_accuracy: 0.9955 - val_loss: 1.9674 - val_sparse_categorical_accuracy: 0.6797

Epoch 198/200
 97/97 [=====] - 7s 75ms/step - loss: 0.0124 - sparse_categorical_accuracy: 0.9950 - val_loss: 2.3409 - val_sparse_categorical_accuracy: 0.6719

Epoch 199/200
 97/97 [=====] - 7s 74ms/step - loss: 0.0160 - sparse_categorical_accuracy: 0.9941 - val_loss: 2.1474 - val_sparse_categorical_accuracy: 0.7102

Epoch 200/200
 97/97 [=====] - 7s 76ms/step - loss: 0.0108 - sparse_categorical_accuracy: 0.9962 - val_loss: 2.0132 - val_sparse_categorical_accuracy: 0.7070

Model: "goog_le_net"

| Layer (type) | Output Shape | Param # |
|--------------------------------|--------------|---------|
| ===== | | |
| conv2d_7 (Conv2D) | multiple | 9472 |
| ===== | | |
| max_pooling2d_5 (MaxPooling2D) | multiple | 0 |
| ===== | | |

| | | |
|---|----------|---------|
| batch_normalization_3 (Batch normalization) | multiple | 256 |
| activation_3 (Activation) | multiple | 0 |
| conv2d_8 (Conv2D) | multiple | 4160 |
| conv2d_9 (Conv2D) | multiple | 110784 |
| batch_normalization_4 (Batch normalization) | multiple | 768 |
| activation_4 (Activation) | multiple | 0 |
| max_pooling2d_6 (MaxPooling2D) | multiple | 0 |
| inception (Inception) | multiple | 165168 |
| inception_1 (Inception) | multiple | 391296 |
| max_pooling2d_9 (MaxPooling2D) | multiple | 0 |
| inception_2 (Inception) | multiple | 378672 |
| inception_3 (Inception) | multiple | 451752 |
| inception_4 (Inception) | multiple | 512760 |
| inception_5 (Inception) | multiple | 608192 |
| inception_6 (Inception) | multiple | 872448 |
| max_pooling2d_15 (MaxPooling2D) | multiple | 0 |
| inception_7 (Inception) | multiple | 1047552 |
| inception_8 (Inception) | multiple | 1449136 |
| global_average_pooling2d (GlobalAveragePooling2D) | multiple | 0 |
| dropout_2 (Dropout) | multiple | 0 |
| dense_6 (Dense) | multiple | 1025000 |
| dense_7 (Dense) | multiple | 10010 |
| ===== | | |

Total params: 7,037,426
Trainable params: 7,022,994
Non-trainable params: 14,432

Training and Validation Accuracy Training and Validation Loss

