LeNet-5:

500 次迭代运行情况如下：

Epoch 1/500

2022-07-18 06:16:21.549218: I tensorflow/stream_executor/cuda/cuda_dnn.cc:369] Loaded cuDNN version 8005

49/49 [==============================] - 9s 23ms/step - loss: 2.3119 - sparse_categorical_accuracy: 0.1018 - val_loss: 2.3009 - val_sparse_categorical_accuracy: 0.1015

Epoch 2/500

49/49 [==============================] - 1s 13ms/step - loss: 2.2835 - sparse_categorical_accuracy: 0.1420 - val_loss: 2.2233 - val_sparse_categorical_accuracy: 0.1724

Epoch 3/500

49/49 [==============================] - 1s 13ms/step - loss: 2.1142 - sparse_categorical_accuracy: 0.2080 - val_loss: 2.0601 - val_sparse_categorical_accuracy: 0.2246

Epoch 4/500

49/49 [==============================] - 1s 12ms/step - loss: 2.0409 - sparse_categorical_accuracy: 0.2349 - val_loss: 2.0203 - val_sparse_categorical_accuracy: 0.2552

Epoch 5/500

49/49 [==============================] - 1s 12ms/step - loss: 2.0154 - sparse_categorical_accuracy: 0.2488 - val_loss: 1.9972 - val_sparse_categorical_accuracy: 0.2607

Epoch 6/500

49/49 [==============================] - 1s 12ms/step - loss: 1.9942 - sparse_categorical_accuracy: 0.2580 - val_loss: 1.9849 - val_sparse_categorical_accuracy: 0.2700

Epoch 7/500

49/49 [==============================] - 1s 12ms/step - loss: 1.9761 - sparse_categorical_accuracy: 0.2678 - val_loss: 1.9554 - val_sparse_categorical_accuracy: 0.2752

Epoch 8/500

49/49 [==============================] - 1s 15ms/step - loss: 1.9568 - sparse_categorical_accuracy: 0.2750 - val_loss: 1.9366 - val_sparse_categorical_accuracy: 0.2812

Epoch 9/500

49/49 [==============================] - 1s 17ms/step - loss: 1.9375 - sparse_categorical_accuracy: 0.2831 - val_loss: 1.9173 - val_sparse_categorical_accuracy: 0.2889

Epoch 10/500

49/49 [==============================] - 1s 13ms/step - loss: 1.9149 - sparse_categorical_accuracy: 0.2908 - val_loss: 1.8915 - val_sparse_categorical_accuracy: 0.2977

Epoch 11/500

49/49 [==============================] - 1s 13ms/step - loss: 1.8912 - sparse_categorical_accuracy: 0.2989 - val_loss: 1.8731 - val_sparse_categorical_accuracy: 0.3092

Epoch 12/500

49/49 [==============================] - 1s 12ms/step - loss: 1.8702 - sparse_categorical_accuracy: 0.3077 - val_loss: 1.8516 - val_sparse_categorical_accuracy: 0.3243

Epoch 13/500

49/49 [==============================] - 1s 16ms/step - loss: 1.8434 - sparse_categorical_accuracy: 0.3210 - val_loss: 1.8208 - val_sparse_categorical_accuracy: 0.3350

Epoch 14/500

49/49 [==============================] - 1s 13ms/step - loss: 1.8145 - sparse_categorical_accuracy: 0.3374 - val_loss: 1.7914 - val_sparse_categorical_accuracy: 0.3525

Epoch 15/500

49/49 [==============================] - 1s 13ms/step - loss: 1.7823 - sparse_categorical_accuracy: 0.3556 - val_loss: 1.7523 - val_sparse_categorical_accuracy: 0.3720

Epoch 16/500

49/49 [==============================] - 1s 12ms/step - loss: 1.7477 - sparse_categorical_accuracy: 0.3670 - val_loss: 1.7256 - val_sparse_categorical_accuracy: 0.3828

Epoch 17/500

49/49 [==============================] - 1s 12ms/step - loss: 1.7217 - sparse_categorical_accuracy: 0.3776 - val_loss: 1.6933 - val_sparse_categorical_accuracy: 0.3917

Epoch 18/500

49/49 [==============================] - 1s 12ms/step - loss: 1.6969 - sparse_categorical_accuracy: 0.3876 - val_loss: 1.6736 - val_sparse_categorical_accuracy: 0.3949

Epoch 19/500

49/49 [==============================] - 1s 12ms/step - loss: 1.6801 - sparse_categorical_accuracy: 0.3927 - val_loss: 1.6570 - val_sparse_categorical_accuracy: 0.3994

Epoch 20/500

49/49 [==============================] - 1s 13ms/step - loss: 1.6636 - sparse_categorical_accuracy: 0.3982 - val_loss: 1.6419 - val_sparse_categorical_accuracy: 0.4087

Epoch 21/500

49/49 [==============================] - 1s 12ms/step - loss: 1.6482 - sparse_categorical_accuracy: 0.4028 - val_loss: 1.6316 - val_sparse_categorical_accuracy: 0.4080

Epoch 22/500

49/49 [==============================] - 1s 12ms/step - loss: 1.6348 - sparse_categorical_accuracy: 0.4074 - val_loss: 1.6191 - val_sparse_categorical_accuracy: 0.4155

Epoch 23/500

49/49 [==============================] - 1s 12ms/step - loss: 1.6242 - sparse_categorical_accuracy: 0.4122 - val_loss: 1.6033 - val_sparse_categorical_accuracy: 0.4193

Epoch 24/500

49/49 [==============================] - 1s 12ms/step - loss: 1.6131 - sparse_categorical_accuracy: 0.4147 - val_loss: 1.5960 - val_sparse_categorical_accuracy: 0.4270

Epoch 25/500

49/49 [==============================] - 1s 12ms/step - loss: 1.6022 - sparse_categorical_accuracy: 0.4188 - val_loss: 1.5810 - val_sparse_categorical_accuracy: 0.4323

Epoch 26/500

49/49 [==============================] - 1s 12ms/step - loss: 1.5958 - sparse_categorical_accuracy: 0.4214 - val_loss: 1.5899 - val_sparse_categorical_accuracy: 0.4179

Epoch 27/500

49/49 [==============================] - 1s 13ms/step - loss: 1.5927 - sparse_categorical_accuracy: 0.4222 - val_loss: 1.5649 - val_sparse_categorical_accuracy: 0.4362

Epoch 28/500

49/49 [==============================] - 1s 13ms/step - loss: 1.5740 - sparse_categorical_accuracy: 0.4287 - val_loss: 1.5613 - val_sparse_categorical_accuracy: 0.4327

Epoch 29/500

49/49 [==============================] - 1s 12ms/step - loss: 1.5658 - sparse_categorical_accuracy: 0.4328 - val_loss: 1.5563 - val_sparse_categorical_accuracy: 0.4358

Epoch 30/500

49/49 [==============================] - 1s 15ms/step - loss: 1.5580 - sparse_categorical_accuracy: 0.4361 - val_loss: 1.5439 - val_sparse_categorical_accuracy: 0.4417

Epoch 31/500

49/49 [==============================] - 1s 13ms/step - loss: 1.5481 - sparse_categorical_accuracy: 0.4405 - val_loss: 1.5314 - val_sparse_categorical_accuracy: 0.4485

Epoch 32/500

49/49 [==============================] - 1s 12ms/step - loss: 1.5395 - sparse_categorical_accuracy: 0.4418 - val_loss: 1.5225 - val_sparse_categorical_accuracy: 0.4533

Epoch 33/500

49/49 [==============================] - 1s 12ms/step - loss: 1.5307 - sparse_categorical_accuracy: 0.4447 - val_loss: 1.5264 - val_sparse_categorical_accuracy: 0.4483

Epoch 34/500

49/49 [==============================] - 1s 12ms/step - loss: 1.5260 - sparse_categorical_accuracy: 0.4457 - val_loss: 1.5165 - val_sparse_categorical_accuracy: 0.4493

Epoch 35/500

49/49 [==============================] - 1s 13ms/step - loss: 1.5148 - sparse_categorical_accuracy: 0.4505 - val_loss: 1.5087 - val_sparse_categorical_accuracy: 0.4518

Epoch 36/500

49/49 [==============================] - 1s 13ms/step - loss: 1.5052 - sparse_categorical_accuracy: 0.4540 - val_loss: 1.4982 - val_sparse_categorical_accuracy: 0.4533

Epoch 37/500

49/49 [==============================] - 1s 12ms/step - loss: 1.5003 - sparse_categorical_accuracy: 0.4559 - val_loss: 1.4891 - val_sparse_categorical_accuracy: 0.4573

Epoch 38/500

49/49 [==============================] - 1s 12ms/step - loss: 1.4930 - sparse_categorical_accuracy: 0.4593 - val_loss: 1.4982 - val_sparse_categorical_accuracy: 0.4579

Epoch 39/500

49/49 [==============================] - 1s 12ms/step - loss: 1.4846 - sparse_categorical_accuracy: 0.4631 - val_loss: 1.4912 - val_sparse_categorical_accuracy: 0.4586

Epoch 40/500

49/49 [==============================] - 1s 13ms/step - loss: 1.4784 - sparse_categorical_accuracy: 0.4638 - val_loss: 1.4655 - val_sparse_categorical_accuracy: 0.4679

Epoch 41/500

49/49 [==============================] - 1s 13ms/step - loss: 1.4639 - sparse_categorical_accuracy: 0.4692 - val_loss: 1.4740 - val_sparse_categorical_accuracy: 0.4678

Epoch 42/500

49/49 [==============================] - 1s 13ms/step - loss: 1.4569 - sparse_categorical_accuracy: 0.4705 - val_loss: 1.4573 - val_sparse_categorical_accuracy: 0.4701

Epoch 43/500

49/49 [==============================] - 1s 12ms/step - loss: 1.4519 - sparse_categorical_accuracy: 0.4741 - val_loss: 1.4531 -

val_sparse_categorical_accuracy: 0.4723

Epoch 44/500

49/49 [==============================] - 1s 12ms/step - loss: 1.4436 - sparse_categorical_accuracy: 0.4764 - val_loss: 1.4459 - val_sparse_categorical_accuracy: 0.4775

Epoch 45/500

49/49 [==============================] - 1s 13ms/step - loss: 1.4358 - sparse_categorical_accuracy: 0.4812 - val_loss: 1.4324 - val_sparse_categorical_accuracy: 0.4780

Epoch 46/500

49/49 [==============================] - 1s 13ms/step - loss: 1.4267 - sparse_categorical_accuracy: 0.4837 - val_loss: 1.4293 - val_sparse_categorical_accuracy: 0.4811

Epoch 47/500

49/49 [==============================] - 1s 15ms/step - loss: 1.4228 - sparse_categorical_accuracy: 0.4854 - val_loss: 1.4293 - val_sparse_categorical_accuracy: 0.4783

Epoch 48/500

49/49 [==============================] - 1s 13ms/step - loss: 1.4137 - sparse_categorical_accuracy: 0.4887 - val_loss: 1.4178 - val_sparse_categorical_accuracy: 0.4834

Epoch 49/500

49/49 [==============================] - 1s 12ms/step - loss: 1.4061 - sparse_categorical_accuracy: 0.4902 - val_loss: 1.4103 - val_sparse_categorical_accuracy: 0.4870

Epoch 50/500

49/49 [==============================] - 1s 12ms/step - loss: 1.4033 - sparse_categorical_accuracy: 0.4924 - val_loss: 1.4050 - val_sparse_categorical_accuracy: 0.4901

Epoch 51/500

49/49 [==============================] - 1s 13ms/step - loss: 1.3974 - sparse_categorical_accuracy: 0.4946 - val_loss: 1.4035 - val_sparse_categorical_accuracy: 0.4915

Epoch 52/500

49/49 [==============================] - 1s 13ms/step - loss: 1.3919 - sparse_categorical_accuracy: 0.4954 - val_loss: 1.3993 - val_sparse_categorical_accuracy: 0.4879

Epoch 53/500

49/49 [==============================] - 1s 12ms/step - loss: 1.3868 - sparse_categorical_accuracy: 0.4988 - val_loss: 1.3948 - val_sparse_categorical_accuracy: 0.4904

Epoch 54/500

49/49 [==============================] - 1s 12ms/step - loss: 1.3824 - sparse_categorical_accuracy: 0.4983 - val_loss: 1.3877 - val_sparse_categorical_accuracy: 0.4979

Epoch 55/500

49/49 [==============================] - 1s 12ms/step - loss: 1.3726 - sparse_categorical_accuracy: 0.5032 - val_loss: 1.3899 - val_sparse_categorical_accuracy: 0.4954

Epoch 56/500

49/49 [==============================] - 1s 13ms/step - loss: 1.3683 - sparse_categorical_accuracy: 0.5046 - val_loss: 1.3879 - val_sparse_categorical_accuracy: 0.5003

Epoch 57/500

49/49 [==============================] - 1s 12ms/step - loss: 1.3667 - sparse_categorical_accuracy: 0.5042 - val_loss: 1.3787 - val_sparse_categorical_accuracy: 0.4978

Epoch 58/500

49/49 [==============================] - 1s 15ms/step - loss: 1.3647 - sparse_categorical_accuracy: 0.5035 - val_loss: 1.3759 - val_sparse_categorical_accuracy: 0.5025

Epoch 59/500

49/49 [==============================] - 1s 17ms/step - loss: 1.3571 - sparse_categorical_accuracy: 0.5094 - val_loss: 1.3883 - val_sparse_categorical_accuracy: 0.4986

Epoch 60/500

49/49 [==============================] - 1s 13ms/step - loss: 1.3491 - sparse_categorical_accuracy: 0.5138 - val_loss: 1.3638 - val_sparse_categorical_accuracy: 0.5068

Epoch 61/500

49/49 [==============================] - 1s 13ms/step - loss: 1.3421 - sparse_categorical_accuracy: 0.5151 - val_loss: 1.3583 - val_sparse_categorical_accuracy: 0.5101

Epoch 62/500

49/49 [==============================] - 1s 12ms/step - loss: 1.3431 - sparse_categorical_accuracy: 0.5143 - val_loss: 1.3833 - val_sparse_categorical_accuracy: 0.4980

Epoch 63/500

49/49 [==============================] - 1s 12ms/step - loss: 1.3415 - sparse_categorical_accuracy: 0.5162 - val_loss: 1.3510 - val_sparse_categorical_accuracy: 0.5103

Epoch 64/500

49/49 [==============================] - 1s 15ms/step - loss: 1.3312 - sparse_categorical_accuracy: 0.5191 - val_loss: 1.3477 - val_sparse_categorical_accuracy: 0.5084

Epoch 65/500

49/49 [==============================] - 1s 13ms/step - loss: 1.3295 - sparse_categorical_accuracy: 0.5190 - val_loss: 1.3418 - val_sparse_categorical_accuracy: 0.5140

Epoch 66/500

49/49 [==============================] - 1s 13ms/step - loss: 1.3249 - sparse_categorical_accuracy: 0.5207 - val_loss: 1.3566 - val_sparse_categorical_accuracy: 0.5117

Epoch 67/500

49/49 [==============================] - 1s 13ms/step - loss: 1.3238 - sparse_categorical_accuracy: 0.5210 - val_loss: 1.3430 - val_sparse_categorical_accuracy: 0.5146

Epoch 68/500

49/49 [==============================] - 1s 13ms/step - loss: 1.3197 - sparse_categorical_accuracy: 0.5237 - val_loss: 1.3620 - val_sparse_categorical_accuracy: 0.5047

Epoch 69/500

49/49 [==============================] - 1s 12ms/step - loss: 1.3149 - sparse_categorical_accuracy: 0.5250 - val_loss: 1.3352 - val_sparse_categorical_accuracy: 0.5130

Epoch 70/500

49/49 [==============================] - 1s 13ms/step - loss: 1.3142 - sparse_categorical_accuracy: 0.5271 - val_loss: 1.3467 - val_sparse_categorical_accuracy: 0.5164

Epoch 71/500

49/49 [==============================] - 1s 12ms/step - loss: 1.3055 - sparse_categorical_accuracy: 0.5289 - val_loss: 1.3306 - val_sparse_categorical_accuracy: 0.5153

Epoch 72/500

49/49 [==============================] - 1s 12ms/step - loss: 1.3022 - sparse_categorical_accuracy: 0.5310 - val_loss: 1.3205 - val_sparse_categorical_accuracy: 0.5236

Epoch 73/500

49/49 [==============================] - 1s 13ms/step - loss: 1.2977 - sparse_categorical_accuracy: 0.5314 - val_loss: 1.3244 - val_sparse_categorical_accuracy: 0.5213

Epoch 74/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2960 - sparse_categorical_accuracy: 0.5332 - val_loss: 1.3124 - val_sparse_categorical_accuracy: 0.5223

Epoch 75/500

49/49 [==============================] - 1s 13ms/step - loss: 1.2882 - sparse_categorical_accuracy: 0.5369 - val_loss: 1.3268 - val_sparse_categorical_accuracy: 0.5211

Epoch 76/500

49/49 [==============================] - 1s 13ms/step - loss: 1.2864 - sparse_categorical_accuracy: 0.5364 - val_loss: 1.3164 - val_sparse_categorical_accuracy: 0.5239

Epoch 77/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2870 - sparse_categorical_accuracy: 0.5362 - val_loss: 1.3075 - val_sparse_categorical_accuracy: 0.5284

Epoch 78/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2785 - sparse_categorical_accuracy: 0.5382 - val_loss: 1.3040 - val_sparse_categorical_accuracy: 0.5266

Epoch 79/500

49/49 [==============================] - 1s 13ms/step - loss: 1.2768 - sparse_categorical_accuracy: 0.5408 - val_loss: 1.3012 - val_sparse_categorical_accuracy: 0.5288

Epoch 80/500

49/49 [==============================] - 1s 13ms/step - loss: 1.2722 - sparse_categorical_accuracy: 0.5419 - val_loss: 1.3132 - val_sparse_categorical_accuracy: 0.5280

Epoch 81/500

49/49 [==============================] - 1s 15ms/step - loss: 1.2714 - sparse_categorical_accuracy: 0.5449 - val_loss: 1.3083 - val_sparse_categorical_accuracy: 0.5266

Epoch 82/500

49/49 [==============================] - 1s 13ms/step - loss: 1.2653 - sparse_categorical_accuracy: 0.5449 - val_loss: 1.3062 - val_sparse_categorical_accuracy: 0.5255

Epoch 83/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2648 - sparse_categorical_accuracy: 0.5444 - val_loss: 1.3021 - val_sparse_categorical_accuracy: 0.5305

Epoch 84/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2651 - sparse_categorical_accuracy: 0.5440 - val_loss: 1.2909 - val_sparse_categorical_accuracy: 0.5348

Epoch 85/500

49/49 [==============================] - 1s 13ms/step - loss: 1.2535 - sparse_categorical_accuracy: 0.5487 - val_loss: 1.2935 - val_sparse_categorical_accuracy: 0.5321

Epoch 86/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2551 - sparse_categorical_accuracy: 0.5504 - val_loss: 1.2860 - val_sparse_categorical_accuracy: 0.5316

Epoch 87/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2488 - sparse_categorical_accuracy: 0.5520 - val_loss: 1.2812 -

val_sparse_categorical_accuracy: 0.5391

Epoch 88/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2463 - sparse_categorical_accuracy: 0.5513 - val_loss: 1.2889 -
val_sparse_categorical_accuracy: 0.5323

Epoch 89/500

49/49 [==============================] - 1s 13ms/step - loss: 1.2466 - sparse_categorical_accuracy: 0.5530 - val_loss: 1.2871 -
val_sparse_categorical_accuracy: 0.5334

Epoch 90/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2433 - sparse_categorical_accuracy: 0.5516 - val_loss: 1.2838 -
val_sparse_categorical_accuracy: 0.5387

Epoch 91/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2457 - sparse_categorical_accuracy: 0.5535 - val_loss: 1.2750 -
val_sparse_categorical_accuracy: 0.5381

Epoch 92/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2376 - sparse_categorical_accuracy: 0.5566 - val_loss: 1.2688 -
val_sparse_categorical_accuracy: 0.5430

Epoch 93/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2360 - sparse_categorical_accuracy: 0.5571 - val_loss: 1.2889 -
val_sparse_categorical_accuracy: 0.5330

Epoch 94/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2350 - sparse_categorical_accuracy: 0.5584 - val_loss: 1.2753 -
val_sparse_categorical_accuracy: 0.5409

Epoch 95/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2264 - sparse_categorical_accuracy: 0.5597 - val_loss: 1.2686 -
val_sparse_categorical_accuracy: 0.5435

Epoch 96/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2274 - sparse_categorical_accuracy: 0.5610 - val_loss: 1.2700 -
val_sparse_categorical_accuracy: 0.5417

Epoch 97/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2229 - sparse_categorical_accuracy: 0.5622 - val_loss: 1.2629 -
val_sparse_categorical_accuracy: 0.5454

Epoch 98/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2223 - sparse_categorical_accuracy: 0.5615 - val_loss: 1.2609 -
val_sparse_categorical_accuracy: 0.5451

Epoch 99/500

49/49 [==============================] - 1s 15ms/step - loss: 1.2153 - sparse_categorical_accuracy: 0.5638 - val_loss: 1.2568 -
val_sparse_categorical_accuracy: 0.5504

Epoch 100/500

49/49 [==============================] - 1s 13ms/step - loss: 1.2149 - sparse_categorical_accuracy: 0.5640 - val_loss: 1.2693 -
val_sparse_categorical_accuracy: 0.5439

Epoch 101/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2169 - sparse_categorical_accuracy: 0.5642 - val_loss: 1.2582 -
val_sparse_categorical_accuracy: 0.5466

Epoch 102/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2120 - sparse_categorical_accuracy: 0.5670 - val_loss: 1.2686 - val_sparse_categorical_accuracy: 0.5430

Epoch 103/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2106 - sparse_categorical_accuracy: 0.5668 - val_loss: 1.2569 - val_sparse_categorical_accuracy: 0.5481

Epoch 104/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2064 - sparse_categorical_accuracy: 0.5682 - val_loss: 1.2568 - val_sparse_categorical_accuracy: 0.5511

Epoch 105/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2065 - sparse_categorical_accuracy: 0.5686 - val_loss: 1.2524 - val_sparse_categorical_accuracy: 0.5466

Epoch 106/500

49/49 [==============================] - 1s 12ms/step - loss: 1.2012 - sparse_categorical_accuracy: 0.5702 - val_loss: 1.2418 - val_sparse_categorical_accuracy: 0.5506

Epoch 107/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1935 - sparse_categorical_accuracy: 0.5734 - val_loss: 1.2442 - val_sparse_categorical_accuracy: 0.5541

Epoch 108/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1994 - sparse_categorical_accuracy: 0.5709 - val_loss: 1.2526 - val_sparse_categorical_accuracy: 0.5494

Epoch 109/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1975 - sparse_categorical_accuracy: 0.5713 - val_loss: 1.2413 - val_sparse_categorical_accuracy: 0.5554

Epoch 110/500

49/49 [==============================] - 1s 15ms/step - loss: 1.1898 - sparse_categorical_accuracy: 0.5746 - val_loss: 1.2363 - val_sparse_categorical_accuracy: 0.5541

Epoch 111/500

49/49 [==============================] - 1s 16ms/step - loss: 1.1914 - sparse_categorical_accuracy: 0.5741 - val_loss: 1.2474 - val_sparse_categorical_accuracy: 0.5553

Epoch 112/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1852 - sparse_categorical_accuracy: 0.5773 - val_loss: 1.2302 - val_sparse_categorical_accuracy: 0.5556

Epoch 113/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1834 - sparse_categorical_accuracy: 0.5783 - val_loss: 1.2331 - val_sparse_categorical_accuracy: 0.5566

Epoch 114/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1831 - sparse_categorical_accuracy: 0.5768 - val_loss: 1.2351 - val_sparse_categorical_accuracy: 0.5548

Epoch 115/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1810 - sparse_categorical_accuracy: 0.5796 - val_loss: 1.2276 - val_sparse_categorical_accuracy: 0.5600

Epoch 116/500

49/49 [==============================] - 1s 15ms/step - loss: 1.1761 - sparse_categorical_accuracy: 0.5804 - val_loss: 1.2252 - val_sparse_categorical_accuracy: 0.5624

Epoch 117/500

49/49 [==============================] - 1s 13ms/step - loss: 1.1756 - sparse_categorical_accuracy: 0.5820 - val_loss: 1.2248 - val_sparse_categorical_accuracy: 0.5636

Epoch 118/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1731 - sparse_categorical_accuracy: 0.5831 - val_loss: 1.2215 - val_sparse_categorical_accuracy: 0.5615

Epoch 119/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1679 - sparse_categorical_accuracy: 0.5850 - val_loss: 1.2193 - val_sparse_categorical_accuracy: 0.5593

Epoch 120/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1664 - sparse_categorical_accuracy: 0.5843 - val_loss: 1.2248 - val_sparse_categorical_accuracy: 0.5584

Epoch 121/500

49/49 [==============================] - 1s 13ms/step - loss: 1.1704 - sparse_categorical_accuracy: 0.5832 - val_loss: 1.2208 - val_sparse_categorical_accuracy: 0.5633

Epoch 122/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1653 - sparse_categorical_accuracy: 0.5839 - val_loss: 1.2406 - val_sparse_categorical_accuracy: 0.5607

Epoch 123/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1682 - sparse_categorical_accuracy: 0.5841 - val_loss: 1.2201 - val_sparse_categorical_accuracy: 0.5624

Epoch 124/500

49/49 [==============================] - 1s 13ms/step - loss: 1.1614 - sparse_categorical_accuracy: 0.5873 - val_loss: 1.2141 - val_sparse_categorical_accuracy: 0.5650

Epoch 125/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1556 - sparse_categorical_accuracy: 0.5887 - val_loss: 1.2162 - val_sparse_categorical_accuracy: 0.5692

Epoch 126/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1591 - sparse_categorical_accuracy: 0.5864 - val_loss: 1.2141 - val_sparse_categorical_accuracy: 0.5654

Epoch 127/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1543 - sparse_categorical_accuracy: 0.5889 - val_loss: 1.2081 - val_sparse_categorical_accuracy: 0.5704

Epoch 128/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1543 - sparse_categorical_accuracy: 0.5885 - val_loss: 1.2182 - val_sparse_categorical_accuracy: 0.5638

Epoch 129/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1499 - sparse_categorical_accuracy: 0.5883 - val_loss: 1.2108 - val_sparse_categorical_accuracy: 0.5658

Epoch 130/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1504 - sparse_categorical_accuracy: 0.5908 - val_loss: 1.2200 - val_sparse_categorical_accuracy: 0.5627

Epoch 131/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1471 - sparse_categorical_accuracy: 0.5902 - val_loss: 1.2219 -

val_sparse_categorical_accuracy: 0.5609

Epoch 132/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1468 - sparse_categorical_accuracy: 0.5914 - val_loss: 1.2108 - val_sparse_categorical_accuracy: 0.5697

Epoch 133/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1510 - sparse_categorical_accuracy: 0.5886 - val_loss: 1.2086 - val_sparse_categorical_accuracy: 0.5721

Epoch 134/500

49/49 [==============================] - 1s 16ms/step - loss: 1.1496 - sparse_categorical_accuracy: 0.5910 - val_loss: 1.2082 - val_sparse_categorical_accuracy: 0.5714

Epoch 135/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1424 - sparse_categorical_accuracy: 0.5930 - val_loss: 1.1946 - val_sparse_categorical_accuracy: 0.5740

Epoch 136/500

49/49 [==============================] - 1s 13ms/step - loss: 1.1396 - sparse_categorical_accuracy: 0.5934 - val_loss: 1.1964 - val_sparse_categorical_accuracy: 0.5725

Epoch 137/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1320 - sparse_categorical_accuracy: 0.5974 - val_loss: 1.1929 - val_sparse_categorical_accuracy: 0.5723

Epoch 138/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1310 - sparse_categorical_accuracy: 0.5985 - val_loss: 1.2050 - val_sparse_categorical_accuracy: 0.5703

Epoch 139/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1322 - sparse_categorical_accuracy: 0.5956 - val_loss: 1.1922 - val_sparse_categorical_accuracy: 0.5745

Epoch 140/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1319 - sparse_categorical_accuracy: 0.5975 - val_loss: 1.2102 - val_sparse_categorical_accuracy: 0.5628

Epoch 141/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1272 - sparse_categorical_accuracy: 0.5979 - val_loss: 1.1888 - val_sparse_categorical_accuracy: 0.5759

Epoch 142/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1232 - sparse_categorical_accuracy: 0.6004 - val_loss: 1.1954 - val_sparse_categorical_accuracy: 0.5742

Epoch 143/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1264 - sparse_categorical_accuracy: 0.5995 - val_loss: 1.1929 - val_sparse_categorical_accuracy: 0.5743

Epoch 144/500

49/49 [==============================] - 1s 13ms/step - loss: 1.1258 - sparse_categorical_accuracy: 0.5978 - val_loss: 1.1948 - val_sparse_categorical_accuracy: 0.5756

Epoch 145/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1175 - sparse_categorical_accuracy: 0.6014 - val_loss: 1.1962 - val_sparse_categorical_accuracy: 0.5734

Epoch 146/500

49/49 [==============================] - 1s 13ms/step - loss: 1.1200 - sparse_categorical_accuracy: 0.6017 - val_loss: 1.1848 - val_sparse_categorical_accuracy: 0.5785

Epoch 147/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1198 - sparse_categorical_accuracy: 0.6029 - val_loss: 1.1834 - val_sparse_categorical_accuracy: 0.5781

Epoch 148/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1167 - sparse_categorical_accuracy: 0.6023 - val_loss: 1.1840 - val_sparse_categorical_accuracy: 0.5789

Epoch 149/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1166 - sparse_categorical_accuracy: 0.6014 - val_loss: 1.1895 - val_sparse_categorical_accuracy: 0.5782

Epoch 150/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1135 - sparse_categorical_accuracy: 0.6054 - val_loss: 1.1812 - val_sparse_categorical_accuracy: 0.5810

Epoch 151/500

49/49 [==============================] - 1s 14ms/step - loss: 1.1117 - sparse_categorical_accuracy: 0.6054 - val_loss: 1.1759 - val_sparse_categorical_accuracy: 0.5808

Epoch 152/500

49/49 [==============================] - 1s 14ms/step - loss: 1.1097 - sparse_categorical_accuracy: 0.6052 - val_loss: 1.1788 - val_sparse_categorical_accuracy: 0.5777

Epoch 153/500

49/49 [==============================] - 1s 13ms/step - loss: 1.1112 - sparse_categorical_accuracy: 0.6058 - val_loss: 1.1748 - val_sparse_categorical_accuracy: 0.5829

Epoch 154/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1087 - sparse_categorical_accuracy: 0.6057 - val_loss: 1.1962 - val_sparse_categorical_accuracy: 0.5703

Epoch 155/500

49/49 [==============================] - 1s 13ms/step - loss: 1.1030 - sparse_categorical_accuracy: 0.6095 - val_loss: 1.1819 - val_sparse_categorical_accuracy: 0.5786

Epoch 156/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1007 - sparse_categorical_accuracy: 0.6081 - val_loss: 1.1795 - val_sparse_categorical_accuracy: 0.5790

Epoch 157/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1014 - sparse_categorical_accuracy: 0.6078 - val_loss: 1.1798 - val_sparse_categorical_accuracy: 0.5793

Epoch 158/500

49/49 [==============================] - 1s 12ms/step - loss: 1.1019 - sparse_categorical_accuracy: 0.6077 - val_loss: 1.1708 - val_sparse_categorical_accuracy: 0.5817

Epoch 159/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0968 - sparse_categorical_accuracy: 0.6083 - val_loss: 1.1769 - val_sparse_categorical_accuracy: 0.5798

Epoch 160/500

49/49 [==============================] - 1s 15ms/step - loss: 1.0972 - sparse_categorical_accuracy: 0.6098 - val_loss: 1.1837 - val_sparse_categorical_accuracy: 0.5783

Epoch 161/500

49/49 [==============================] - 1s 17ms/step - loss: 1.0924 - sparse_categorical_accuracy: 0.6112 - val_loss: 1.1836 - val_sparse_categorical_accuracy: 0.5795

Epoch 162/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0934 - sparse_categorical_accuracy: 0.6124 - val_loss: 1.1694 - val_sparse_categorical_accuracy: 0.5869

Epoch 163/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0859 - sparse_categorical_accuracy: 0.6132 - val_loss: 1.1690 - val_sparse_categorical_accuracy: 0.5825

Epoch 164/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0873 - sparse_categorical_accuracy: 0.6131 - val_loss: 1.1588 - val_sparse_categorical_accuracy: 0.5887

Epoch 165/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0948 - sparse_categorical_accuracy: 0.6095 - val_loss: 1.1719 - val_sparse_categorical_accuracy: 0.5849

Epoch 166/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0907 - sparse_categorical_accuracy: 0.6118 - val_loss: 1.1745 - val_sparse_categorical_accuracy: 0.5848

Epoch 167/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0836 - sparse_categorical_accuracy: 0.6132 - val_loss: 1.1697 - val_sparse_categorical_accuracy: 0.5844

Epoch 168/500

49/49 [==============================] - 1s 15ms/step - loss: 1.0918 - sparse_categorical_accuracy: 0.6108 - val_loss: 1.1787 - val_sparse_categorical_accuracy: 0.5811

Epoch 169/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0861 - sparse_categorical_accuracy: 0.6132 - val_loss: 1.1652 - val_sparse_categorical_accuracy: 0.5887

Epoch 170/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0825 - sparse_categorical_accuracy: 0.6167 - val_loss: 1.1613 - val_sparse_categorical_accuracy: 0.5871

Epoch 171/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0762 - sparse_categorical_accuracy: 0.6183 - val_loss: 1.1664 - val_sparse_categorical_accuracy: 0.5867

Epoch 172/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0803 - sparse_categorical_accuracy: 0.6146 - val_loss: 1.1612 - val_sparse_categorical_accuracy: 0.5882

Epoch 173/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0737 - sparse_categorical_accuracy: 0.6186 - val_loss: 1.1594 - val_sparse_categorical_accuracy: 0.5865

Epoch 174/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0730 - sparse_categorical_accuracy: 0.6183 - val_loss: 1.1636 - val_sparse_categorical_accuracy: 0.5842

Epoch 175/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0731 - sparse_categorical_accuracy: 0.6199 - val_loss: 1.1566 -

val_sparse_categorical_accuracy: 0.5912

Epoch 176/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0694 - sparse_categorical_accuracy: 0.6203 - val_loss: 1.1492 - val_sparse_categorical_accuracy: 0.5901

Epoch 177/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0688 - sparse_categorical_accuracy: 0.6198 - val_loss: 1.1492 - val_sparse_categorical_accuracy: 0.5933

Epoch 178/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0728 - sparse_categorical_accuracy: 0.6193 - val_loss: 1.1540 - val_sparse_categorical_accuracy: 0.5905

Epoch 179/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0718 - sparse_categorical_accuracy: 0.6203 - val_loss: 1.1484 - val_sparse_categorical_accuracy: 0.5921

Epoch 180/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0629 - sparse_categorical_accuracy: 0.6229 - val_loss: 1.1523 - val_sparse_categorical_accuracy: 0.5937

Epoch 181/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0585 - sparse_categorical_accuracy: 0.6240 - val_loss: 1.1512 - val_sparse_categorical_accuracy: 0.5932

Epoch 182/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0590 - sparse_categorical_accuracy: 0.6246 - val_loss: 1.1446 - val_sparse_categorical_accuracy: 0.5964

Epoch 183/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0640 - sparse_categorical_accuracy: 0.6225 - val_loss: 1.1602 - val_sparse_categorical_accuracy: 0.5870

Epoch 184/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0620 - sparse_categorical_accuracy: 0.6224 - val_loss: 1.1619 - val_sparse_categorical_accuracy: 0.5880

Epoch 185/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0585 - sparse_categorical_accuracy: 0.6234 - val_loss: 1.1442 - val_sparse_categorical_accuracy: 0.5955

Epoch 186/500

49/49 [==============================] - 1s 15ms/step - loss: 1.0568 - sparse_categorical_accuracy: 0.6244 - val_loss: 1.1553 - val_sparse_categorical_accuracy: 0.5939

Epoch 187/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0573 - sparse_categorical_accuracy: 0.6238 - val_loss: 1.1553 - val_sparse_categorical_accuracy: 0.5879

Epoch 188/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0570 - sparse_categorical_accuracy: 0.6244 - val_loss: 1.1448 - val_sparse_categorical_accuracy: 0.5977

Epoch 189/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0545 - sparse_categorical_accuracy: 0.6266 - val_loss: 1.1503 - val_sparse_categorical_accuracy: 0.5963

Epoch 190/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0554 - sparse_categorical_accuracy: 0.6252 - val_loss: 1.1386 - val_sparse_categorical_accuracy: 0.5965

Epoch 191/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0465 - sparse_categorical_accuracy: 0.6295 - val_loss: 1.1484 - val_sparse_categorical_accuracy: 0.5911

Epoch 192/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0461 - sparse_categorical_accuracy: 0.6287 - val_loss: 1.1504 - val_sparse_categorical_accuracy: 0.5936

Epoch 193/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0484 - sparse_categorical_accuracy: 0.6276 - val_loss: 1.1402 - val_sparse_categorical_accuracy: 0.5974

Epoch 194/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0433 - sparse_categorical_accuracy: 0.6303 - val_loss: 1.1407 - val_sparse_categorical_accuracy: 0.5977

Epoch 195/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0417 - sparse_categorical_accuracy: 0.6299 - val_loss: 1.1390 - val_sparse_categorical_accuracy: 0.5948

Epoch 196/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0419 - sparse_categorical_accuracy: 0.6300 - val_loss: 1.1379 - val_sparse_categorical_accuracy: 0.6016

Epoch 197/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0412 - sparse_categorical_accuracy: 0.6304 - val_loss: 1.1321 - val_sparse_categorical_accuracy: 0.6018

Epoch 198/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0383 - sparse_categorical_accuracy: 0.6324 - val_loss: 1.1528 - val_sparse_categorical_accuracy: 0.5907

Epoch 199/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0411 - sparse_categorical_accuracy: 0.6310 - val_loss: 1.1426 - val_sparse_categorical_accuracy: 0.6003

Epoch 200/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0386 - sparse_categorical_accuracy: 0.6319 - val_loss: 1.1389 - val_sparse_categorical_accuracy: 0.5955

Epoch 201/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0389 - sparse_categorical_accuracy: 0.6306 - val_loss: 1.1274 - val_sparse_categorical_accuracy: 0.6044

Epoch 202/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0340 - sparse_categorical_accuracy: 0.6325 - val_loss: 1.1365 - val_sparse_categorical_accuracy: 0.5974

Epoch 203/500

49/49 [==============================] - 1s 14ms/step - loss: 1.0350 - sparse_categorical_accuracy: 0.6322 - val_loss: 1.1324 - val_sparse_categorical_accuracy: 0.6018

Epoch 204/500

49/49 [==============================] - 1s 14ms/step - loss: 1.0326 - sparse_categorical_accuracy: 0.6336 - val_loss: 1.1293 - val_sparse_categorical_accuracy: 0.6030

Epoch 205/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0307 - sparse_categorical_accuracy: 0.6348 - val_loss: 1.1388 - val_sparse_categorical_accuracy: 0.5940

Epoch 206/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0335 - sparse_categorical_accuracy: 0.6342 - val_loss: 1.1516 - val_sparse_categorical_accuracy: 0.5895

Epoch 207/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0314 - sparse_categorical_accuracy: 0.6337 - val_loss: 1.1376 - val_sparse_categorical_accuracy: 0.5962

Epoch 208/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0245 - sparse_categorical_accuracy: 0.6386 - val_loss: 1.1318 - val_sparse_categorical_accuracy: 0.5999

Epoch 209/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0239 - sparse_categorical_accuracy: 0.6373 - val_loss: 1.1331 - val_sparse_categorical_accuracy: 0.5986

Epoch 210/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0216 - sparse_categorical_accuracy: 0.6381 - val_loss: 1.1247 - val_sparse_categorical_accuracy: 0.6052

Epoch 211/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0247 - sparse_categorical_accuracy: 0.6367 - val_loss: 1.1332 - val_sparse_categorical_accuracy: 0.5969

Epoch 212/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0240 - sparse_categorical_accuracy: 0.6365 - val_loss: 1.1249 - val_sparse_categorical_accuracy: 0.6056

Epoch 213/500

49/49 [==============================] - 1s 17ms/step - loss: 1.0193 - sparse_categorical_accuracy: 0.6389 - val_loss: 1.1281 - val_sparse_categorical_accuracy: 0.6044

Epoch 214/500

49/49 [==============================] - 1s 14ms/step - loss: 1.0215 - sparse_categorical_accuracy: 0.6362 - val_loss: 1.1305 - val_sparse_categorical_accuracy: 0.5965

Epoch 215/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0172 - sparse_categorical_accuracy: 0.6401 - val_loss: 1.1254 - val_sparse_categorical_accuracy: 0.6048

Epoch 216/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0163 - sparse_categorical_accuracy: 0.6405 - val_loss: 1.1349 - val_sparse_categorical_accuracy: 0.5945

Epoch 217/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0142 - sparse_categorical_accuracy: 0.6413 - val_loss: 1.1191 - val_sparse_categorical_accuracy: 0.6067

Epoch 218/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0104 - sparse_categorical_accuracy: 0.6421 - val_loss: 1.1197 - val_sparse_categorical_accuracy: 0.6042

Epoch 219/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0140 - sparse_categorical_accuracy: 0.6409 - val_loss: 1.1301 -

val_sparse_categorical_accuracy: 0.5975

Epoch 220/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0170 - sparse_categorical_accuracy: 0.6395 - val_loss: 1.1236 - val_sparse_categorical_accuracy: 0.6065

Epoch 221/500

49/49 [==============================] - 1s 15ms/step - loss: 1.0098 - sparse_categorical_accuracy: 0.6418 - val_loss: 1.1338 - val_sparse_categorical_accuracy: 0.5994

Epoch 222/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0114 - sparse_categorical_accuracy: 0.6433 - val_loss: 1.1178 - val_sparse_categorical_accuracy: 0.6036

Epoch 223/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0086 - sparse_categorical_accuracy: 0.6429 - val_loss: 1.1202 - val_sparse_categorical_accuracy: 0.6047

Epoch 224/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0115 - sparse_categorical_accuracy: 0.6417 - val_loss: 1.1385 - val_sparse_categorical_accuracy: 0.5976

Epoch 225/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0060 - sparse_categorical_accuracy: 0.6435 - val_loss: 1.1342 - val_sparse_categorical_accuracy: 0.5987

Epoch 226/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0066 - sparse_categorical_accuracy: 0.6449 - val_loss: 1.1277 - val_sparse_categorical_accuracy: 0.6031

Epoch 227/500

49/49 [==============================] - 1s 13ms/step - loss: 1.0036 - sparse_categorical_accuracy: 0.6443 - val_loss: 1.1276 - val_sparse_categorical_accuracy: 0.6029

Epoch 228/500

49/49 [==============================] - 1s 12ms/step - loss: 1.0051 - sparse_categorical_accuracy: 0.6442 - val_loss: 1.1160 - val_sparse_categorical_accuracy: 0.6042

Epoch 229/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9996 - sparse_categorical_accuracy: 0.6448 - val_loss: 1.1147 - val_sparse_categorical_accuracy: 0.6080

Epoch 230/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9987 - sparse_categorical_accuracy: 0.6463 - val_loss: 1.1173 - val_sparse_categorical_accuracy: 0.6091

Epoch 231/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9937 - sparse_categorical_accuracy: 0.6493 - val_loss: 1.1128 - val_sparse_categorical_accuracy: 0.6059

Epoch 232/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9926 - sparse_categorical_accuracy: 0.6487 - val_loss: 1.1154 - val_sparse_categorical_accuracy: 0.6044

Epoch 233/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9951 - sparse_categorical_accuracy: 0.6475 - val_loss: 1.1289 - val_sparse_categorical_accuracy: 0.6036

Epoch 234/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9939 - sparse_categorical_accuracy: 0.6481 - val_loss: 1.1175 - val_sparse_categorical_accuracy: 0.6083

Epoch 235/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9966 - sparse_categorical_accuracy: 0.6467 - val_loss: 1.1160 - val_sparse_categorical_accuracy: 0.6058

Epoch 236/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9904 - sparse_categorical_accuracy: 0.6490 - val_loss: 1.1169 - val_sparse_categorical_accuracy: 0.6085

Epoch 237/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9892 - sparse_categorical_accuracy: 0.6490 - val_loss: 1.1093 - val_sparse_categorical_accuracy: 0.6102

Epoch 238/500

49/49 [==============================] - 1s 15ms/step - loss: 0.9913 - sparse_categorical_accuracy: 0.6497 - val_loss: 1.1079 - val_sparse_categorical_accuracy: 0.6117

Epoch 239/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9872 - sparse_categorical_accuracy: 0.6519 - val_loss: 1.1295 - val_sparse_categorical_accuracy: 0.5953

Epoch 240/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9857 - sparse_categorical_accuracy: 0.6514 - val_loss: 1.1208 - val_sparse_categorical_accuracy: 0.6034

Epoch 241/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9897 - sparse_categorical_accuracy: 0.6501 - val_loss: 1.1131 - val_sparse_categorical_accuracy: 0.6083

Epoch 242/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9857 - sparse_categorical_accuracy: 0.6506 - val_loss: 1.1131 - val_sparse_categorical_accuracy: 0.6074

Epoch 243/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9842 - sparse_categorical_accuracy: 0.6510 - val_loss: 1.1169 - val_sparse_categorical_accuracy: 0.6049

Epoch 244/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9818 - sparse_categorical_accuracy: 0.6525 - val_loss: 1.1235 - val_sparse_categorical_accuracy: 0.6027

Epoch 245/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9835 - sparse_categorical_accuracy: 0.6520 - val_loss: 1.1182 - val_sparse_categorical_accuracy: 0.6042

Epoch 246/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9811 - sparse_categorical_accuracy: 0.6538 - val_loss: 1.1122 - val_sparse_categorical_accuracy: 0.6089

Epoch 247/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9752 - sparse_categorical_accuracy: 0.6556 - val_loss: 1.1060 - val_sparse_categorical_accuracy: 0.6089

Epoch 248/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9724 - sparse_categorical_accuracy: 0.6564 - val_loss: 1.1086 - val_sparse_categorical_accuracy: 0.6133

Epoch 249/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9714 - sparse_categorical_accuracy: 0.6574 - val_loss: 1.1026 - val_sparse_categorical_accuracy: 0.6097

Epoch 250/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9763 - sparse_categorical_accuracy: 0.6547 - val_loss: 1.1233 - val_sparse_categorical_accuracy: 0.6082

Epoch 251/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9772 - sparse_categorical_accuracy: 0.6551 - val_loss: 1.1048 - val_sparse_categorical_accuracy: 0.6087

Epoch 252/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9735 - sparse_categorical_accuracy: 0.6580 - val_loss: 1.1139 - val_sparse_categorical_accuracy: 0.6102

Epoch 253/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9705 - sparse_categorical_accuracy: 0.6576 - val_loss: 1.1007 - val_sparse_categorical_accuracy: 0.6090

Epoch 254/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9684 - sparse_categorical_accuracy: 0.6581 - val_loss: 1.1020 - val_sparse_categorical_accuracy: 0.6128

Epoch 255/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9739 - sparse_categorical_accuracy: 0.6563 - val_loss: 1.1080 - val_sparse_categorical_accuracy: 0.6098

Epoch 256/500

49/49 [==============================] - 1s 16ms/step - loss: 0.9673 - sparse_categorical_accuracy: 0.6594 - val_loss: 1.1040 - val_sparse_categorical_accuracy: 0.6133

Epoch 257/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9651 - sparse_categorical_accuracy: 0.6596 - val_loss: 1.1015 - val_sparse_categorical_accuracy: 0.6130

Epoch 258/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9649 - sparse_categorical_accuracy: 0.6592 - val_loss: 1.1066 - val_sparse_categorical_accuracy: 0.6092

Epoch 259/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9636 - sparse_categorical_accuracy: 0.6605 - val_loss: 1.0973 - val_sparse_categorical_accuracy: 0.6132

Epoch 260/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9643 - sparse_categorical_accuracy: 0.6595 - val_loss: 1.1013 - val_sparse_categorical_accuracy: 0.6112

Epoch 261/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9656 - sparse_categorical_accuracy: 0.6598 - val_loss: 1.1045 - val_sparse_categorical_accuracy: 0.6100

Epoch 262/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9598 - sparse_categorical_accuracy: 0.6616 - val_loss: 1.1256 - val_sparse_categorical_accuracy: 0.6033

Epoch 263/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9604 - sparse_categorical_accuracy: 0.6606 - val_loss: 1.1017 -

val_sparse_categorical_accuracy: 0.6113

Epoch 264/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9582 - sparse_categorical_accuracy: 0.6627 - val_loss: 1.0983 -

val_sparse_categorical_accuracy: 0.6170

Epoch 265/500

49/49 [==============================] - 1s 15ms/step - loss: 0.9560 - sparse_categorical_accuracy: 0.6626 - val_loss: 1.0989 -

val_sparse_categorical_accuracy: 0.6155

Epoch 266/500

49/49 [==============================] - 1s 16ms/step - loss: 0.9529 - sparse_categorical_accuracy: 0.6637 - val_loss: 1.0990 -

val_sparse_categorical_accuracy: 0.6134

Epoch 267/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9572 - sparse_categorical_accuracy: 0.6632 - val_loss: 1.1127 -

val_sparse_categorical_accuracy: 0.6123

Epoch 268/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9548 - sparse_categorical_accuracy: 0.6639 - val_loss: 1.1001 -

val_sparse_categorical_accuracy: 0.6128

Epoch 269/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9580 - sparse_categorical_accuracy: 0.6625 - val_loss: 1.1177 -

val_sparse_categorical_accuracy: 0.6059

Epoch 270/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9515 - sparse_categorical_accuracy: 0.6645 - val_loss: 1.0999 -

val_sparse_categorical_accuracy: 0.6133

Epoch 271/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9507 - sparse_categorical_accuracy: 0.6641 - val_loss: 1.0989 -

val_sparse_categorical_accuracy: 0.6114

Epoch 272/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9484 - sparse_categorical_accuracy: 0.6651 - val_loss: 1.1033 -

val_sparse_categorical_accuracy: 0.6118

Epoch 273/500

49/49 [==============================] - 1s 15ms/step - loss: 0.9495 - sparse_categorical_accuracy: 0.6641 - val_loss: 1.1025 -

val_sparse_categorical_accuracy: 0.6137

Epoch 274/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9490 - sparse_categorical_accuracy: 0.6649 - val_loss: 1.1032 -

val_sparse_categorical_accuracy: 0.6119

Epoch 275/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9452 - sparse_categorical_accuracy: 0.6672 - val_loss: 1.0975 -

val_sparse_categorical_accuracy: 0.6124

Epoch 276/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9440 - sparse_categorical_accuracy: 0.6675 - val_loss: 1.0941 -

val_sparse_categorical_accuracy: 0.6145

Epoch 277/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9470 - sparse_categorical_accuracy: 0.6668 - val_loss: 1.1027 -

val_sparse_categorical_accuracy: 0.6145

Epoch 278/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9390 - sparse_categorical_accuracy: 0.6690 - val_loss: 1.0874 - val_sparse_categorical_accuracy: 0.6182

Epoch 279/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9422 - sparse_categorical_accuracy: 0.6683 - val_loss: 1.1086 - val_sparse_categorical_accuracy: 0.6125

Epoch 280/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9467 - sparse_categorical_accuracy: 0.6665 - val_loss: 1.0972 - val_sparse_categorical_accuracy: 0.6161

Epoch 281/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9400 - sparse_categorical_accuracy: 0.6688 - val_loss: 1.1035 - val_sparse_categorical_accuracy: 0.6138

Epoch 282/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9408 - sparse_categorical_accuracy: 0.6692 - val_loss: 1.0934 - val_sparse_categorical_accuracy: 0.6158

Epoch 283/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9428 - sparse_categorical_accuracy: 0.6680 - val_loss: 1.0951 - val_sparse_categorical_accuracy: 0.6150

Epoch 284/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9366 - sparse_categorical_accuracy: 0.6702 - val_loss: 1.0871 - val_sparse_categorical_accuracy: 0.6196

Epoch 285/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9345 - sparse_categorical_accuracy: 0.6717 - val_loss: 1.1097 - val_sparse_categorical_accuracy: 0.6123

Epoch 286/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9352 - sparse_categorical_accuracy: 0.6719 - val_loss: 1.0869 - val_sparse_categorical_accuracy: 0.6207

Epoch 287/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9277 - sparse_categorical_accuracy: 0.6733 - val_loss: 1.0852 - val_sparse_categorical_accuracy: 0.6202

Epoch 288/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9351 - sparse_categorical_accuracy: 0.6710 - val_loss: 1.0935 - val_sparse_categorical_accuracy: 0.6209

Epoch 289/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9292 - sparse_categorical_accuracy: 0.6728 - val_loss: 1.0858 - val_sparse_categorical_accuracy: 0.6193

Epoch 290/500

49/49 [==============================] - 1s 14ms/step - loss: 0.9338 - sparse_categorical_accuracy: 0.6711 - val_loss: 1.0968 - val_sparse_categorical_accuracy: 0.6118

Epoch 291/500

49/49 [==============================] - 1s 14ms/step - loss: 0.9287 - sparse_categorical_accuracy: 0.6728 - val_loss: 1.0931 - val_sparse_categorical_accuracy: 0.6190

Epoch 292/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9243 - sparse_categorical_accuracy: 0.6754 - val_loss: 1.0878 - val_sparse_categorical_accuracy: 0.6236

Epoch 293/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9264 - sparse_categorical_accuracy: 0.6730 - val_loss: 1.1050 - val_sparse_categorical_accuracy: 0.6144

Epoch 294/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9273 - sparse_categorical_accuracy: 0.6737 - val_loss: 1.1071 - val_sparse_categorical_accuracy: 0.6118

Epoch 295/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9246 - sparse_categorical_accuracy: 0.6752 - val_loss: 1.0970 - val_sparse_categorical_accuracy: 0.6196

Epoch 296/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9228 - sparse_categorical_accuracy: 0.6755 - val_loss: 1.1011 - val_sparse_categorical_accuracy: 0.6153

Epoch 297/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9274 - sparse_categorical_accuracy: 0.6734 - val_loss: 1.0803 - val_sparse_categorical_accuracy: 0.6235

Epoch 298/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9214 - sparse_categorical_accuracy: 0.6746 - val_loss: 1.0835 - val_sparse_categorical_accuracy: 0.6204

Epoch 299/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9191 - sparse_categorical_accuracy: 0.6766 - val_loss: 1.0967 - val_sparse_categorical_accuracy: 0.6180

Epoch 300/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9173 - sparse_categorical_accuracy: 0.6772 - val_loss: 1.0935 - val_sparse_categorical_accuracy: 0.6186

Epoch 301/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9183 - sparse_categorical_accuracy: 0.6782 - val_loss: 1.0900 - val_sparse_categorical_accuracy: 0.6200

Epoch 302/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9201 - sparse_categorical_accuracy: 0.6758 - val_loss: 1.0935 - val_sparse_categorical_accuracy: 0.6183

Epoch 303/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9156 - sparse_categorical_accuracy: 0.6775 - val_loss: 1.0936 - val_sparse_categorical_accuracy: 0.6206

Epoch 304/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9128 - sparse_categorical_accuracy: 0.6802 - val_loss: 1.0891 - val_sparse_categorical_accuracy: 0.6203

Epoch 305/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9137 - sparse_categorical_accuracy: 0.6795 - val_loss: 1.0916 - val_sparse_categorical_accuracy: 0.6146

Epoch 306/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9154 - sparse_categorical_accuracy: 0.6779 - val_loss: 1.0996 - val_sparse_categorical_accuracy: 0.6158

Epoch 307/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9141 - sparse_categorical_accuracy: 0.6774 - val_loss: 1.0870 -

val_sparse_categorical_accuracy: 0.6221

Epoch 308/500

49/49 [==============================] - 1s 15ms/step - loss: 0.9086 - sparse_categorical_accuracy: 0.6816 - val_loss: 1.0796 -

val_sparse_categorical_accuracy: 0.6236

Epoch 309/500

49/49 [==============================] - 1s 14ms/step - loss: 0.9127 - sparse_categorical_accuracy: 0.6793 - val_loss: 1.0804 -

val_sparse_categorical_accuracy: 0.6227

Epoch 310/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9120 - sparse_categorical_accuracy: 0.6797 - val_loss: 1.1040 -

val_sparse_categorical_accuracy: 0.6169

Epoch 311/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9086 - sparse_categorical_accuracy: 0.6813 - val_loss: 1.0821 -

val_sparse_categorical_accuracy: 0.6222

Epoch 312/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9103 - sparse_categorical_accuracy: 0.6806 - val_loss: 1.0882 -

val_sparse_categorical_accuracy: 0.6213

Epoch 313/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9100 - sparse_categorical_accuracy: 0.6807 - val_loss: 1.0783 -

val_sparse_categorical_accuracy: 0.6255

Epoch 314/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9035 - sparse_categorical_accuracy: 0.6827 - val_loss: 1.0791 -

val_sparse_categorical_accuracy: 0.6276

Epoch 315/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9013 - sparse_categorical_accuracy: 0.6835 - val_loss: 1.0912 -

val_sparse_categorical_accuracy: 0.6198

Epoch 316/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9080 - sparse_categorical_accuracy: 0.6807 - val_loss: 1.0892 -

val_sparse_categorical_accuracy: 0.6201

Epoch 317/500

49/49 [==============================] - 1s 13ms/step - loss: 0.9038 - sparse_categorical_accuracy: 0.6824 - val_loss: 1.0801 -

val_sparse_categorical_accuracy: 0.6235

Epoch 318/500

49/49 [==============================] - 1s 16ms/step - loss: 0.9041 - sparse_categorical_accuracy: 0.6823 - val_loss: 1.0907 -

val_sparse_categorical_accuracy: 0.6218

Epoch 319/500

49/49 [==============================] - 1s 17ms/step - loss: 0.9052 - sparse_categorical_accuracy: 0.6807 - val_loss: 1.0749 -

val_sparse_categorical_accuracy: 0.6248

Epoch 320/500

49/49 [==============================] - 1s 12ms/step - loss: 0.9012 - sparse_categorical_accuracy: 0.6843 - val_loss: 1.0787 -

val_sparse_categorical_accuracy: 0.6266

Epoch 321/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8995 - sparse_categorical_accuracy: 0.6838 - val_loss: 1.0915 -

val_sparse_categorical_accuracy: 0.6190

Epoch 322/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8966 - sparse_categorical_accuracy: 0.6860 - val_loss: 1.0906 - val_sparse_categorical_accuracy: 0.6228

Epoch 323/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8983 - sparse_categorical_accuracy: 0.6838 - val_loss: 1.0889 - val_sparse_categorical_accuracy: 0.6189

Epoch 324/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8996 - sparse_categorical_accuracy: 0.6839 - val_loss: 1.0882 - val_sparse_categorical_accuracy: 0.6179

Epoch 325/500

49/49 [==============================] - 1s 15ms/step - loss: 0.8967 - sparse_categorical_accuracy: 0.6860 - val_loss: 1.0925 - val_sparse_categorical_accuracy: 0.6233

Epoch 326/500

49/49 [==============================] - 1s 14ms/step - loss: 0.8939 - sparse_categorical_accuracy: 0.6867 - val_loss: 1.0870 - val_sparse_categorical_accuracy: 0.6247

Epoch 327/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8940 - sparse_categorical_accuracy: 0.6872 - val_loss: 1.0803 - val_sparse_categorical_accuracy: 0.6265

Epoch 328/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8907 - sparse_categorical_accuracy: 0.6873 - val_loss: 1.0874 - val_sparse_categorical_accuracy: 0.6199

Epoch 329/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8921 - sparse_categorical_accuracy: 0.6858 - val_loss: 1.0899 - val_sparse_categorical_accuracy: 0.6241

Epoch 330/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8975 - sparse_categorical_accuracy: 0.6843 - val_loss: 1.0865 - val_sparse_categorical_accuracy: 0.6196

Epoch 331/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8893 - sparse_categorical_accuracy: 0.6869 - val_loss: 1.0730 - val_sparse_categorical_accuracy: 0.6300

Epoch 332/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8863 - sparse_categorical_accuracy: 0.6894 - val_loss: 1.0791 - val_sparse_categorical_accuracy: 0.6243

Epoch 333/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8857 - sparse_categorical_accuracy: 0.6888 - val_loss: 1.0873 - val_sparse_categorical_accuracy: 0.6256

Epoch 334/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8879 - sparse_categorical_accuracy: 0.6900 - val_loss: 1.0913 - val_sparse_categorical_accuracy: 0.6210

Epoch 335/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8851 - sparse_categorical_accuracy: 0.6898 - val_loss: 1.0776 - val_sparse_categorical_accuracy: 0.6278

Epoch 336/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8800 - sparse_categorical_accuracy: 0.6909 - val_loss: 1.0857 - val_sparse_categorical_accuracy: 0.6242

Epoch 337/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8840 - sparse_categorical_accuracy: 0.6887 - val_loss: 1.0844 - val_sparse_categorical_accuracy: 0.6247

Epoch 338/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8839 - sparse_categorical_accuracy: 0.6889 - val_loss: 1.0981 - val_sparse_categorical_accuracy: 0.6229

Epoch 339/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8796 - sparse_categorical_accuracy: 0.6921 - val_loss: 1.0930 - val_sparse_categorical_accuracy: 0.6230

Epoch 340/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8795 - sparse_categorical_accuracy: 0.6915 - val_loss: 1.0853 - val_sparse_categorical_accuracy: 0.6241

Epoch 341/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8803 - sparse_categorical_accuracy: 0.6907 - val_loss: 1.0721 - val_sparse_categorical_accuracy: 0.6280

Epoch 342/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8747 - sparse_categorical_accuracy: 0.6931 - val_loss: 1.0801 - val_sparse_categorical_accuracy: 0.6240

Epoch 343/500

49/49 [==============================] - 1s 15ms/step - loss: 0.8805 - sparse_categorical_accuracy: 0.6908 - val_loss: 1.0957 - val_sparse_categorical_accuracy: 0.6216

Epoch 344/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8811 - sparse_categorical_accuracy: 0.6899 - val_loss: 1.1068 - val_sparse_categorical_accuracy: 0.6154

Epoch 345/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8787 - sparse_categorical_accuracy: 0.6914 - val_loss: 1.0800 - val_sparse_categorical_accuracy: 0.6250

Epoch 346/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8748 - sparse_categorical_accuracy: 0.6934 - val_loss: 1.0917 - val_sparse_categorical_accuracy: 0.6186

Epoch 347/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8738 - sparse_categorical_accuracy: 0.6937 - val_loss: 1.0724 - val_sparse_categorical_accuracy: 0.6285

Epoch 348/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8790 - sparse_categorical_accuracy: 0.6911 - val_loss: 1.0908 - val_sparse_categorical_accuracy: 0.6229

Epoch 349/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8704 - sparse_categorical_accuracy: 0.6936 - val_loss: 1.0715 - val_sparse_categorical_accuracy: 0.6302

Epoch 350/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8730 - sparse_categorical_accuracy: 0.6936 - val_loss: 1.0760 - val_sparse_categorical_accuracy: 0.6267

Epoch 351/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8678 - sparse_categorical_accuracy: 0.6956 - val_loss: 1.0819 -

val_sparse_categorical_accuracy: 0.6258

Epoch 352/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8736 - sparse_categorical_accuracy: 0.6939 - val_loss: 1.0730 - val_sparse_categorical_accuracy: 0.6299

Epoch 353/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8675 - sparse_categorical_accuracy: 0.6953 - val_loss: 1.0709 - val_sparse_categorical_accuracy: 0.6289

Epoch 354/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8648 - sparse_categorical_accuracy: 0.6967 - val_loss: 1.0791 - val_sparse_categorical_accuracy: 0.6273

Epoch 355/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8714 - sparse_categorical_accuracy: 0.6943 - val_loss: 1.0733 - val_sparse_categorical_accuracy: 0.6290

Epoch 356/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8655 - sparse_categorical_accuracy: 0.6974 - val_loss: 1.0759 - val_sparse_categorical_accuracy: 0.6300

Epoch 357/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8630 - sparse_categorical_accuracy: 0.6985 - val_loss: 1.0751 - val_sparse_categorical_accuracy: 0.6291

Epoch 358/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8656 - sparse_categorical_accuracy: 0.6963 - val_loss: 1.0951 - val_sparse_categorical_accuracy: 0.6206

Epoch 359/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8666 - sparse_categorical_accuracy: 0.6945 - val_loss: 1.0821 - val_sparse_categorical_accuracy: 0.6246

Epoch 360/500

49/49 [==============================] - 1s 15ms/step - loss: 0.8667 - sparse_categorical_accuracy: 0.6939 - val_loss: 1.0740 - val_sparse_categorical_accuracy: 0.6299

Epoch 361/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8623 - sparse_categorical_accuracy: 0.6973 - val_loss: 1.0919 - val_sparse_categorical_accuracy: 0.6247

Epoch 362/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8645 - sparse_categorical_accuracy: 0.6961 - val_loss: 1.0829 - val_sparse_categorical_accuracy: 0.6266

Epoch 363/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8637 - sparse_categorical_accuracy: 0.6961 - val_loss: 1.0724 - val_sparse_categorical_accuracy: 0.6322

Epoch 364/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8629 - sparse_categorical_accuracy: 0.6967 - val_loss: 1.0831 - val_sparse_categorical_accuracy: 0.6276

Epoch 365/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8569 - sparse_categorical_accuracy: 0.6993 - val_loss: 1.0714 - val_sparse_categorical_accuracy: 0.6310

Epoch 366/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8535 - sparse_categorical_accuracy: 0.7013 - val_loss: 1.0732 - val_sparse_categorical_accuracy: 0.6335

Epoch 367/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8518 - sparse_categorical_accuracy: 0.7010 - val_loss: 1.0727 - val_sparse_categorical_accuracy: 0.6297

Epoch 368/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8610 - sparse_categorical_accuracy: 0.6979 - val_loss: 1.0680 - val_sparse_categorical_accuracy: 0.6314

Epoch 369/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8534 - sparse_categorical_accuracy: 0.7009 - val_loss: 1.0828 - val_sparse_categorical_accuracy: 0.6251

Epoch 370/500

49/49 [==============================] - 1s 17ms/step - loss: 0.8554 - sparse_categorical_accuracy: 0.7012 - val_loss: 1.0975 - val_sparse_categorical_accuracy: 0.6217

Epoch 371/500

49/49 [==============================] - 1s 15ms/step - loss: 0.8548 - sparse_categorical_accuracy: 0.6990 - val_loss: 1.0729 - val_sparse_categorical_accuracy: 0.6300

Epoch 372/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8471 - sparse_categorical_accuracy: 0.7039 - val_loss: 1.0728 - val_sparse_categorical_accuracy: 0.6347

Epoch 373/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8495 - sparse_categorical_accuracy: 0.7032 - val_loss: 1.0743 - val_sparse_categorical_accuracy: 0.6292

Epoch 374/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8511 - sparse_categorical_accuracy: 0.7018 - val_loss: 1.0753 - val_sparse_categorical_accuracy: 0.6282

Epoch 375/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8451 - sparse_categorical_accuracy: 0.7046 - val_loss: 1.0788 - val_sparse_categorical_accuracy: 0.6291

Epoch 376/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8453 - sparse_categorical_accuracy: 0.7035 - val_loss: 1.0747 - val_sparse_categorical_accuracy: 0.6313

Epoch 377/500

49/49 [==============================] - 1s 14ms/step - loss: 0.8487 - sparse_categorical_accuracy: 0.7019 - val_loss: 1.0633 - val_sparse_categorical_accuracy: 0.6333

Epoch 378/500

49/49 [==============================] - 1s 14ms/step - loss: 0.8529 - sparse_categorical_accuracy: 0.7012 - val_loss: 1.0859 - val_sparse_categorical_accuracy: 0.6255

Epoch 379/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8499 - sparse_categorical_accuracy: 0.7024 - val_loss: 1.0855 - val_sparse_categorical_accuracy: 0.6282

Epoch 380/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8446 - sparse_categorical_accuracy: 0.7034 - val_loss: 1.0726 - val_sparse_categorical_accuracy: 0.6319

Epoch 381/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8428 - sparse_categorical_accuracy: 0.7055 - val_loss: 1.0742 - val_sparse_categorical_accuracy: 0.6319

Epoch 382/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8418 - sparse_categorical_accuracy: 0.7049 - val_loss: 1.0830 - val_sparse_categorical_accuracy: 0.6304

Epoch 383/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8383 - sparse_categorical_accuracy: 0.7062 - val_loss: 1.0711 - val_sparse_categorical_accuracy: 0.6347

Epoch 384/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8390 - sparse_categorical_accuracy: 0.7056 - val_loss: 1.0740 - val_sparse_categorical_accuracy: 0.6301

Epoch 385/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8431 - sparse_categorical_accuracy: 0.7032 - val_loss: 1.0709 - val_sparse_categorical_accuracy: 0.6323

Epoch 386/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8413 - sparse_categorical_accuracy: 0.7062 - val_loss: 1.0780 - val_sparse_categorical_accuracy: 0.6293

Epoch 387/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8383 - sparse_categorical_accuracy: 0.7074 - val_loss: 1.0686 - val_sparse_categorical_accuracy: 0.6339

Epoch 388/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8347 - sparse_categorical_accuracy: 0.7065 - val_loss: 1.0788 - val_sparse_categorical_accuracy: 0.6282

Epoch 389/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8379 - sparse_categorical_accuracy: 0.7055 - val_loss: 1.0774 - val_sparse_categorical_accuracy: 0.6302

Epoch 390/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8363 - sparse_categorical_accuracy: 0.7075 - val_loss: 1.0672 - val_sparse_categorical_accuracy: 0.6370

Epoch 391/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8333 - sparse_categorical_accuracy: 0.7086 - val_loss: 1.0817 - val_sparse_categorical_accuracy: 0.6304

Epoch 392/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8352 - sparse_categorical_accuracy: 0.7081 - val_loss: 1.0753 - val_sparse_categorical_accuracy: 0.6303

Epoch 393/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8316 - sparse_categorical_accuracy: 0.7077 - val_loss: 1.0791 - val_sparse_categorical_accuracy: 0.6300

Epoch 394/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8343 - sparse_categorical_accuracy: 0.7069 - val_loss: 1.0834 - val_sparse_categorical_accuracy: 0.6291

Epoch 395/500

49/49 [==============================] - 1s 14ms/step - loss: 0.8356 - sparse_categorical_accuracy: 0.7072 - val_loss: 1.0774 -

val_sparse_categorical_accuracy: 0.6312

Epoch 396/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8262 - sparse_categorical_accuracy: 0.7107 - val_loss: 1.0684 - val_sparse_categorical_accuracy: 0.6336

Epoch 397/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8301 - sparse_categorical_accuracy: 0.7075 - val_loss: 1.0804 - val_sparse_categorical_accuracy: 0.6297

Epoch 398/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8279 - sparse_categorical_accuracy: 0.7106 - val_loss: 1.0686 - val_sparse_categorical_accuracy: 0.6352

Epoch 399/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8283 - sparse_categorical_accuracy: 0.7095 - val_loss: 1.0787 - val_sparse_categorical_accuracy: 0.6346

Epoch 400/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8291 - sparse_categorical_accuracy: 0.7100 - val_loss: 1.0798 - val_sparse_categorical_accuracy: 0.6313

Epoch 401/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8240 - sparse_categorical_accuracy: 0.7113 - val_loss: 1.0858 - val_sparse_categorical_accuracy: 0.6281

Epoch 402/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8303 - sparse_categorical_accuracy: 0.7088 - val_loss: 1.0685 - val_sparse_categorical_accuracy: 0.6372

Epoch 403/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8275 - sparse_categorical_accuracy: 0.7104 - val_loss: 1.0779 - val_sparse_categorical_accuracy: 0.6301

Epoch 404/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8286 - sparse_categorical_accuracy: 0.7090 - val_loss: 1.0686 - val_sparse_categorical_accuracy: 0.6331

Epoch 405/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8215 - sparse_categorical_accuracy: 0.7119 - val_loss: 1.0664 - val_sparse_categorical_accuracy: 0.6346

Epoch 406/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8294 - sparse_categorical_accuracy: 0.7093 - val_loss: 1.0825 - val_sparse_categorical_accuracy: 0.6302

Epoch 407/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8215 - sparse_categorical_accuracy: 0.7126 - val_loss: 1.0736 - val_sparse_categorical_accuracy: 0.6332

Epoch 408/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8224 - sparse_categorical_accuracy: 0.7130 - val_loss: 1.0655 - val_sparse_categorical_accuracy: 0.6376

Epoch 409/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8185 - sparse_categorical_accuracy: 0.7137 - val_loss: 1.0839 - val_sparse_categorical_accuracy: 0.6312

Epoch 410/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8189 - sparse_categorical_accuracy: 0.7131 - val_loss: 1.0776 - val_sparse_categorical_accuracy: 0.6360

Epoch 411/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8171 - sparse_categorical_accuracy: 0.7150 - val_loss: 1.0733 - val_sparse_categorical_accuracy: 0.6319

Epoch 412/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8185 - sparse_categorical_accuracy: 0.7131 - val_loss: 1.0965 - val_sparse_categorical_accuracy: 0.6273

Epoch 413/500

49/49 [==============================] - 1s 15ms/step - loss: 0.8226 - sparse_categorical_accuracy: 0.7113 - val_loss: 1.0807 - val_sparse_categorical_accuracy: 0.6329

Epoch 414/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8159 - sparse_categorical_accuracy: 0.7140 - val_loss: 1.0752 - val_sparse_categorical_accuracy: 0.6314

Epoch 415/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8121 - sparse_categorical_accuracy: 0.7172 - val_loss: 1.0694 - val_sparse_categorical_accuracy: 0.6370

Epoch 416/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8121 - sparse_categorical_accuracy: 0.7158 - val_loss: 1.0881 - val_sparse_categorical_accuracy: 0.6308

Epoch 417/500

49/49 [==============================] - 1s 13ms/step - loss: 0.8111 - sparse_categorical_accuracy: 0.7149 - val_loss: 1.0806 - val_sparse_categorical_accuracy: 0.6320

Epoch 418/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8124 - sparse_categorical_accuracy: 0.7159 - val_loss: 1.0849 - val_sparse_categorical_accuracy: 0.6265

Epoch 419/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8098 - sparse_categorical_accuracy: 0.7158 - val_loss: 1.0775 - val_sparse_categorical_accuracy: 0.6305

Epoch 420/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8152 - sparse_categorical_accuracy: 0.7137 - val_loss: 1.0855 - val_sparse_categorical_accuracy: 0.6291

Epoch 421/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8127 - sparse_categorical_accuracy: 0.7148 - val_loss: 1.0736 - val_sparse_categorical_accuracy: 0.6295

Epoch 422/500

49/49 [==============================] - 1s 17ms/step - loss: 0.8161 - sparse_categorical_accuracy: 0.7136 - val_loss: 1.0802 - val_sparse_categorical_accuracy: 0.6359

Epoch 423/500

49/49 [==============================] - 1s 14ms/step - loss: 0.8090 - sparse_categorical_accuracy: 0.7176 - val_loss: 1.0793 - val_sparse_categorical_accuracy: 0.6344

Epoch 424/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8063 - sparse_categorical_accuracy: 0.7181 - val_loss: 1.0897 - val_sparse_categorical_accuracy: 0.6326

Epoch 425/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8064 - sparse_categorical_accuracy: 0.7171 - val_loss: 1.0767 - val_sparse_categorical_accuracy: 0.6331

Epoch 426/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8055 - sparse_categorical_accuracy: 0.7175 - val_loss: 1.0744 - val_sparse_categorical_accuracy: 0.6358

Epoch 427/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8064 - sparse_categorical_accuracy: 0.7165 - val_loss: 1.0713 - val_sparse_categorical_accuracy: 0.6366

Epoch 428/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8077 - sparse_categorical_accuracy: 0.7149 - val_loss: 1.0784 - val_sparse_categorical_accuracy: 0.6346

Epoch 429/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7995 - sparse_categorical_accuracy: 0.7197 - val_loss: 1.0796 - val_sparse_categorical_accuracy: 0.6350

Epoch 430/500

49/49 [==============================] - 1s 14ms/step - loss: 0.8080 - sparse_categorical_accuracy: 0.7174 - val_loss: 1.0849 - val_sparse_categorical_accuracy: 0.6285

Epoch 431/500

49/49 [==============================] - 1s 14ms/step - loss: 0.7998 - sparse_categorical_accuracy: 0.7196 - val_loss: 1.0734 - val_sparse_categorical_accuracy: 0.6349

Epoch 432/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7972 - sparse_categorical_accuracy: 0.7215 - val_loss: 1.0890 - val_sparse_categorical_accuracy: 0.6305

Epoch 433/500

49/49 [==============================] - 1s 12ms/step - loss: 0.8042 - sparse_categorical_accuracy: 0.7178 - val_loss: 1.0814 - val_sparse_categorical_accuracy: 0.6350

Epoch 434/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7998 - sparse_categorical_accuracy: 0.7192 - val_loss: 1.0740 - val_sparse_categorical_accuracy: 0.6330

Epoch 435/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7974 - sparse_categorical_accuracy: 0.7215 - val_loss: 1.0685 - val_sparse_categorical_accuracy: 0.6372

Epoch 436/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7961 - sparse_categorical_accuracy: 0.7220 - val_loss: 1.0824 - val_sparse_categorical_accuracy: 0.6332

Epoch 437/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7942 - sparse_categorical_accuracy: 0.7212 - val_loss: 1.0902 - val_sparse_categorical_accuracy: 0.6286

Epoch 438/500

49/49 [==============================] - 1s 13ms/step - loss: 0.7992 - sparse_categorical_accuracy: 0.7204 - val_loss: 1.0891 - val_sparse_categorical_accuracy: 0.6311

Epoch 439/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7964 - sparse_categorical_accuracy: 0.7209 - val_loss: 1.0762 -

val_sparse_categorical_accuracy: 0.6360

Epoch 440/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7967 - sparse_categorical_accuracy: 0.7198 - val_loss: 1.0719 -
val_sparse_categorical_accuracy: 0.6360

Epoch 441/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7942 - sparse_categorical_accuracy: 0.7224 - val_loss: 1.0833 -
val_sparse_categorical_accuracy: 0.6308

Epoch 442/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7925 - sparse_categorical_accuracy: 0.7218 - val_loss: 1.0796 -
val_sparse_categorical_accuracy: 0.6323

Epoch 443/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7906 - sparse_categorical_accuracy: 0.7233 - val_loss: 1.0769 -
val_sparse_categorical_accuracy: 0.6346

Epoch 444/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7880 - sparse_categorical_accuracy: 0.7251 - val_loss: 1.0840 -
val_sparse_categorical_accuracy: 0.6329

Epoch 445/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7895 - sparse_categorical_accuracy: 0.7246 - val_loss: 1.0789 -
val_sparse_categorical_accuracy: 0.6366

Epoch 446/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7910 - sparse_categorical_accuracy: 0.7239 - val_loss: 1.0761 -
val_sparse_categorical_accuracy: 0.6331

Epoch 447/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7858 - sparse_categorical_accuracy: 0.7256 - val_loss: 1.0775 -
val_sparse_categorical_accuracy: 0.6335

Epoch 448/500

49/49 [==============================] - 1s 14ms/step - loss: 0.8007 - sparse_categorical_accuracy: 0.7171 - val_loss: 1.0804 -
val_sparse_categorical_accuracy: 0.6302

Epoch 449/500

49/49 [==============================] - 1s 14ms/step - loss: 0.7885 - sparse_categorical_accuracy: 0.7240 - val_loss: 1.0738 -
val_sparse_categorical_accuracy: 0.6413

Epoch 450/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7854 - sparse_categorical_accuracy: 0.7250 - val_loss: 1.0790 -
val_sparse_categorical_accuracy: 0.6336

Epoch 451/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7852 - sparse_categorical_accuracy: 0.7252 - val_loss: 1.0780 -
val_sparse_categorical_accuracy: 0.6373

Epoch 452/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7869 - sparse_categorical_accuracy: 0.7254 - val_loss: 1.0762 -
val_sparse_categorical_accuracy: 0.6371

Epoch 453/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7802 - sparse_categorical_accuracy: 0.7273 - val_loss: 1.0769 -
val_sparse_categorical_accuracy: 0.6353

Epoch 454/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7798 - sparse_categorical_accuracy: 0.7263 - val_loss: 1.0846 - val_sparse_categorical_accuracy: 0.6358

Epoch 455/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7886 - sparse_categorical_accuracy: 0.7214 - val_loss: 1.0780 - val_sparse_categorical_accuracy: 0.6372

Epoch 456/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7789 - sparse_categorical_accuracy: 0.7283 - val_loss: 1.0745 - val_sparse_categorical_accuracy: 0.6366

Epoch 457/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7825 - sparse_categorical_accuracy: 0.7265 - val_loss: 1.0853 - val_sparse_categorical_accuracy: 0.6336

Epoch 458/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7802 - sparse_categorical_accuracy: 0.7266 - val_loss: 1.0820 - val_sparse_categorical_accuracy: 0.6359

Epoch 459/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7776 - sparse_categorical_accuracy: 0.7279 - val_loss: 1.0827 - val_sparse_categorical_accuracy: 0.6326

Epoch 460/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7775 - sparse_categorical_accuracy: 0.7273 - val_loss: 1.0712 - val_sparse_categorical_accuracy: 0.6381

Epoch 461/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7758 - sparse_categorical_accuracy: 0.7297 - val_loss: 1.0948 - val_sparse_categorical_accuracy: 0.6305

Epoch 462/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7755 - sparse_categorical_accuracy: 0.7291 - val_loss: 1.1131 - val_sparse_categorical_accuracy: 0.6301

Epoch 463/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7880 - sparse_categorical_accuracy: 0.7230 - val_loss: 1.0845 - val_sparse_categorical_accuracy: 0.6345

Epoch 464/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7797 - sparse_categorical_accuracy: 0.7268 - val_loss: 1.0900 - val_sparse_categorical_accuracy: 0.6319

Epoch 465/500

49/49 [==============================] - 1s 13ms/step - loss: 0.7746 - sparse_categorical_accuracy: 0.7277 - val_loss: 1.0904 - val_sparse_categorical_accuracy: 0.6315

Epoch 466/500

49/49 [==============================] - 1s 13ms/step - loss: 0.7733 - sparse_categorical_accuracy: 0.7305 - val_loss: 1.0806 - val_sparse_categorical_accuracy: 0.6332

Epoch 467/500

49/49 [==============================] - 1s 14ms/step - loss: 0.7765 - sparse_categorical_accuracy: 0.7278 - val_loss: 1.0764 - val_sparse_categorical_accuracy: 0.6376

Epoch 468/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7721 - sparse_categorical_accuracy: 0.7304 - val_loss: 1.0810 - val_sparse_categorical_accuracy: 0.6348

Epoch 469/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7705 - sparse_categorical_accuracy: 0.7295 - val_loss: 1.0844 - val_sparse_categorical_accuracy: 0.6337

Epoch 470/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7723 - sparse_categorical_accuracy: 0.7290 - val_loss: 1.0900 - val_sparse_categorical_accuracy: 0.6339

Epoch 471/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7733 - sparse_categorical_accuracy: 0.7289 - val_loss: 1.0732 - val_sparse_categorical_accuracy: 0.6347

Epoch 472/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7695 - sparse_categorical_accuracy: 0.7301 - val_loss: 1.0786 - val_sparse_categorical_accuracy: 0.6374

Epoch 473/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7676 - sparse_categorical_accuracy: 0.7311 - val_loss: 1.0844 - val_sparse_categorical_accuracy: 0.6333

Epoch 474/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7685 - sparse_categorical_accuracy: 0.7317 - val_loss: 1.0867 - val_sparse_categorical_accuracy: 0.6330

Epoch 475/500

49/49 [==============================] - 1s 17ms/step - loss: 0.7650 - sparse_categorical_accuracy: 0.7320 - val_loss: 1.0826 - val_sparse_categorical_accuracy: 0.6361

Epoch 476/500

49/49 [==============================] - 1s 16ms/step - loss: 0.7673 - sparse_categorical_accuracy: 0.7304 - val_loss: 1.0826 - val_sparse_categorical_accuracy: 0.6324

Epoch 477/500

49/49 [==============================] - 1s 13ms/step - loss: 0.7671 - sparse_categorical_accuracy: 0.7312 - val_loss: 1.0846 - val_sparse_categorical_accuracy: 0.6349

Epoch 478/500

49/49 [==============================] - 1s 13ms/step - loss: 0.7646 - sparse_categorical_accuracy: 0.7328 - val_loss: 1.0802 - val_sparse_categorical_accuracy: 0.6365

Epoch 479/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7651 - sparse_categorical_accuracy: 0.7328 - val_loss: 1.0749 - val_sparse_categorical_accuracy: 0.6351

Epoch 480/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7596 - sparse_categorical_accuracy: 0.7354 - val_loss: 1.0969 - val_sparse_categorical_accuracy: 0.6338

Epoch 481/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7653 - sparse_categorical_accuracy: 0.7323 - val_loss: 1.0849 - val_sparse_categorical_accuracy: 0.6346

Epoch 482/500

49/49 [==============================] - 1s 13ms/step - loss: 0.7593 - sparse_categorical_accuracy: 0.7336 - val_loss: 1.0810 - val_sparse_categorical_accuracy: 0.6354

Epoch 483/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7631 - sparse_categorical_accuracy: 0.7319 - val_loss: 1.0868 -

val_sparse_categorical_accuracy: 0.6331

Epoch 484/500

49/49 [==============================] - 1s 15ms/step - loss: 0.7572 - sparse_categorical_accuracy: 0.7334 - val_loss: 1.0743 -

val_sparse_categorical_accuracy: 0.6367

Epoch 485/500

49/49 [==============================] - 1s 13ms/step - loss: 0.7576 - sparse_categorical_accuracy: 0.7354 - val_loss: 1.0897 -

val_sparse_categorical_accuracy: 0.6384

Epoch 486/500

49/49 [==============================] - 1s 13ms/step - loss: 0.7597 - sparse_categorical_accuracy: 0.7354 - val_loss: 1.1050 -

val_sparse_categorical_accuracy: 0.6275

Epoch 487/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7626 - sparse_categorical_accuracy: 0.7330 - val_loss: 1.0878 -

val_sparse_categorical_accuracy: 0.6329

Epoch 488/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7575 - sparse_categorical_accuracy: 0.7353 - val_loss: 1.0928 -

val_sparse_categorical_accuracy: 0.6323

Epoch 489/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7548 - sparse_categorical_accuracy: 0.7369 - val_loss: 1.0946 -

val_sparse_categorical_accuracy: 0.6344

Epoch 490/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7531 - sparse_categorical_accuracy: 0.7355 - val_loss: 1.0890 -

val_sparse_categorical_accuracy: 0.6370

Epoch 491/500

49/49 [==============================] - 1s 13ms/step - loss: 0.7547 - sparse_categorical_accuracy: 0.7357 - val_loss: 1.0881 -

val_sparse_categorical_accuracy: 0.6337

Epoch 492/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7614 - sparse_categorical_accuracy: 0.7322 - val_loss: 1.1056 -

val_sparse_categorical_accuracy: 0.6303

Epoch 493/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7584 - sparse_categorical_accuracy: 0.7365 - val_loss: 1.1075 -

val_sparse_categorical_accuracy: 0.6317

Epoch 494/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7594 - sparse_categorical_accuracy: 0.7314 - val_loss: 1.0866 -

val_sparse_categorical_accuracy: 0.6326

Epoch 495/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7489 - sparse_categorical_accuracy: 0.7377 - val_loss: 1.0922 -

val_sparse_categorical_accuracy: 0.6345

Epoch 496/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7499 - sparse_categorical_accuracy: 0.7379 - val_loss: 1.0912 -

val_sparse_categorical_accuracy: 0.6325

Epoch 497/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7537 - sparse_categorical_accuracy: 0.7378 - val_loss: 1.0811 -

val_sparse_categorical_accuracy: 0.6375

Epoch 498/500

49/49 [==============================] - 1s 12ms/step - loss: 0.7466 - sparse_categorical_accuracy: 0.7382 - val_loss: 1.0868 - val_sparse_categorical_accuracy: 0.6331

Epoch 499/500

49/49 [==============================] - 1s 13ms/step - loss: 0.7455 - sparse_categorical_accuracy: 0.7400 - val_loss: 1.0819 - val_sparse_categorical_accuracy: 0.6345

Epoch 500/500

49/49 [==============================] - 1s 13ms/step - loss: 0.7459 - sparse_categorical_accuracy: 0.7387 - val_loss: 1.0934 - val_sparse_categorical_accuracy: 0.6344

Model: "le_net5"

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Layer (type)	Output Shape	Param #
conv2d (Conv2D)	multiple	456
max_pooling2d (MaxPooling2D) multiple		0
conv2d_1 (Conv2D)	multiple	2416
max_pooling2d_1 (MaxPooling2 multiple		0
flatten (Flatten)	multiple	0
dense (Dense)	multiple	48120
dense_1 (Dense)	multiple	10164
dense_2 (Dense)	multiple	850

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Total params: 62,006

Trainable params: 62,006

Non-trainable params: 0

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Training and Validation Accuracy / Training and Valiidation Loss