

Epoch 1/60  
562/562 [=====] - 32s 51ms/step - loss: 2.0080 - accuracy: 0.2918 - val\_loss: 1.7058 - val\_accuracy: 0.3934

Epoch 2/60  
562/562 [=====] - 28s 49ms/step - loss: 1.6164 - accuracy: 0.4328 - val\_loss: 1.4983 - val\_accuracy: 0.4753

Epoch 3/60  
562/562 [=====] - 28s 49ms/step - loss: 1.4745 - accuracy: 0.4861 - val\_loss: 1.3888 - val\_accuracy: 0.5109

Epoch 4/60  
562/562 [=====] - 28s 49ms/step - loss: 1.3796 - accuracy: 0.5216 - val\_loss: 1.3137 - val\_accuracy: 0.5394

Epoch 5/60  
562/562 [=====] - 27s 49ms/step - loss: 1.3116 - accuracy: 0.5435 - val\_loss: 1.2719 - val\_accuracy: 0.5521

Epoch 6/60  
562/562 [=====] - 27s 49ms/step - loss: 1.2640 - accuracy: 0.5670 - val\_loss: 1.2211 - val\_accuracy: 0.5750

Epoch 7/60  
562/562 [=====] - 28s 49ms/step - loss: 1.2180 - accuracy: 0.5800 - val\_loss: 1.2009 - val\_accuracy: 0.5819

Epoch 8/60  
562/562 [=====] - 27s 48ms/step - loss: 1.1710 - accuracy: 0.5985 - val\_loss: 1.1755 - val\_accuracy: 0.5890

Epoch 9/60  
562/562 [=====] - 28s 49ms/step - loss: 1.1434 - accuracy: 0.6086 - val\_loss: 1.1393 - val\_accuracy: 0.6030

Epoch 10/60  
562/562 [=====] - 27s 48ms/step - loss: 1.1098 - accuracy: 0.6215 - val\_loss: 1.1279 - val\_accuracy: 0.6135

Epoch 11/60  
562/562 [=====] - 27s 49ms/step - loss: 1.0844 - accuracy: 0.6293 - val\_loss: 1.1078 - val\_accuracy: 0.6146

Epoch 12/60  
562/562 [=====] - 27s 48ms/step - loss: 1.0572 - accuracy: 0.6401 - val\_loss: 1.0937 - val\_accuracy: 0.6231

Epoch 13/60  
562/562 [=====] - 27s 48ms/step - loss: 1.0286 - accuracy: 0.6489 - val\_loss: 1.0936 - val\_accuracy: 0.6251

Epoch 14/60  
562/562 [=====] - 27s 49ms/step - loss: 1.0178 - accuracy: 0.6520 - val\_loss: 1.0714 - val\_accuracy: 0.6313

Epoch 15/60  
562/562 [=====] - 27s 48ms/step - loss: 0.9920 - accuracy: 0.6601 - val\_loss: 1.0659 - val\_accuracy: 0.6335

Epoch 16/60

562/562 [=====] - 27s 49ms/step - loss: 0.9754 - accuracy: 0.6694 - val\_loss: 1.0472 - val\_accuracy: 0.6435  
Epoch 17/60  
562/562 [=====] - 27s 48ms/step - loss: 0.9522 - accuracy: 0.6767 - val\_loss: 1.0421 - val\_accuracy: 0.6429  
Epoch 18/60  
562/562 [=====] - 27s 48ms/step - loss: 0.9407 - accuracy: 0.6817 - val\_loss: 1.0348 - val\_accuracy: 0.6444  
Epoch 19/60  
562/562 [=====] - 27s 48ms/step - loss: 0.9254 - accuracy: 0.6832 - val\_loss: 1.0237 - val\_accuracy: 0.6500  
Epoch 20/60  
562/562 [=====] - 28s 49ms/step - loss: 0.9027 - accuracy: 0.6955 - val\_loss: 1.0150 - val\_accuracy: 0.6498  
Epoch 21/60  
562/562 [=====] - 27s 48ms/step - loss: 0.8892 - accuracy: 0.6992 - val\_loss: 1.0064 - val\_accuracy: 0.6573  
Epoch 22/60  
562/562 [=====] - 27s 48ms/step - loss: 0.8776 - accuracy: 0.7001 - val\_loss: 1.0057 - val\_accuracy: 0.6591  
Epoch 23/60  
562/562 [=====] - 27s 48ms/step - loss: 0.8613 - accuracy: 0.7089 - val\_loss: 0.9902 - val\_accuracy: 0.6615  
Epoch 24/60  
562/562 [=====] - 27s 48ms/step - loss: 0.8505 - accuracy: 0.7103 - val\_loss: 0.9949 - val\_accuracy: 0.6582  
Epoch 25/60  
562/562 [=====] - 27s 49ms/step - loss: 0.8334 - accuracy: 0.7151 - val\_loss: 0.9794 - val\_accuracy: 0.6633  
Epoch 26/60  
562/562 [=====] - 27s 48ms/step - loss: 0.8170 - accuracy: 0.7238 - val\_loss: 0.9812 - val\_accuracy: 0.6662  
Epoch 27/60  
562/562 [=====] - 27s 48ms/step - loss: 0.8065 - accuracy: 0.7281 - val\_loss: 0.9805 - val\_accuracy: 0.6691  
Epoch 28/60  
562/562 [=====] - 27s 48ms/step - loss: 0.7973 - accuracy: 0.7275 - val\_loss: 0.9630 - val\_accuracy: 0.6738  
Epoch 29/60  
562/562 [=====] - 27s 48ms/step - loss: 0.7830 - accuracy: 0.7358 - val\_loss: 0.9733 - val\_accuracy: 0.6698  
Epoch 30/60  
562/562 [=====] - 27s 47ms/step - loss: 0.7701 - accuracy: 0.7380 - val\_loss: 0.9683 - val\_accuracy: 0.6709  
Epoch 31/60  
562/562 [=====] - 27s 48ms/step - loss: 0.7628 - accuracy: 0.7415 - val\_loss: 0.9689 - val\_accuracy: 0.6689

Epoch 32/60  
562/562 [=====] - 27s 48ms/step - loss: 0.7486 -  
accuracy: 0.7477 - val\_loss: 0.9641 - val\_accuracy: 0.6771  
Epoch 33/60  
562/562 [=====] - 27s 48ms/step - loss: 0.7401 -  
accuracy: 0.7520 - val\_loss: 0.9572 - val\_accuracy: 0.6773  
Epoch 34/60  
562/562 [=====] - 27s 48ms/step - loss: 0.7237 -  
accuracy: 0.7548 - val\_loss: 0.9582 - val\_accuracy: 0.6820  
Epoch 35/60  
562/562 [=====] - 27s 48ms/step - loss: 0.7187 -  
accuracy: 0.7549 - val\_loss: 0.9505 - val\_accuracy: 0.6796  
Epoch 36/60  
562/562 [=====] - 27s 48ms/step - loss: 0.7072 -  
accuracy: 0.7625 - val\_loss: 0.9547 - val\_accuracy: 0.6818  
Epoch 37/60  
562/562 [=====] - 27s 48ms/step - loss: 0.7011 -  
accuracy: 0.7620 - val\_loss: 0.9508 - val\_accuracy: 0.6753  
Epoch 38/60  
562/562 [=====] - 27s 48ms/step - loss: 0.6896 -  
accuracy: 0.7667 - val\_loss: 0.9521 - val\_accuracy: 0.6825  
Epoch 39/60  
562/562 [=====] - 27s 48ms/step - loss: 0.6831 -  
accuracy: 0.7708 - val\_loss: 0.9667 - val\_accuracy: 0.6802  
Epoch 40/60  
562/562 [=====] - 27s 48ms/step - loss: 0.6705 -  
accuracy: 0.7764 - val\_loss: 0.9517 - val\_accuracy: 0.6847  
Epoch 41/60  
562/562 [=====] - 27s 48ms/step - loss: 0.6628 -  
accuracy: 0.7776 - val\_loss: 0.9534 - val\_accuracy: 0.6887  
Epoch 42/60  
562/562 [=====] - 27s 48ms/step - loss: 0.6566 -  
accuracy: 0.7807 - val\_loss: 0.9539 - val\_accuracy: 0.6880  
Epoch 43/60  
562/562 [=====] - 27s 48ms/step - loss: 0.6456 -  
accuracy: 0.7805 - val\_loss: 0.9527 - val\_accuracy: 0.6943  
Epoch 44/60  
562/562 [=====] - 27s 48ms/step - loss: 0.6412 -  
accuracy: 0.7857 - val\_loss: 0.9498 - val\_accuracy: 0.6918  
Epoch 45/60  
562/562 [=====] - 27s 48ms/step - loss: 0.6274 -  
accuracy: 0.7878 - val\_loss: 0.9637 - val\_accuracy: 0.6896  
Epoch 46/60  
562/562 [=====] - 27s 48ms/step - loss: 0.6247 -  
accuracy: 0.7901 - val\_loss: 0.9624 - val\_accuracy: 0.6931  
Epoch 47/60

562/562 [=====] - 28s 49ms/step - loss: 0.6128 -  
accuracy: 0.7945 - val\_loss: 0.9593 - val\_accuracy: 0.6951  
Epoch 48/60  
562/562 [=====] - 27s 47ms/step - loss: 0.6033 -  
accuracy: 0.8015 - val\_loss: 0.9569 - val\_accuracy: 0.6963  
Epoch 49/60  
562/562 [=====] - 27s 48ms/step - loss: 0.6015 -  
accuracy: 0.7962 - val\_loss: 0.9608 - val\_accuracy: 0.6978  
Epoch 50/60  
562/562 [=====] - 27s 48ms/step - loss: 0.5959 -  
accuracy: 0.8007 - val\_loss: 0.9457 - val\_accuracy: 0.7007  
Epoch 51/60  
562/562 [=====] - 27s 49ms/step - loss: 0.5848 -  
accuracy: 0.8057 - val\_loss: 0.9597 - val\_accuracy: 0.6943  
Epoch 52/60  
562/562 [=====] - 27s 48ms/step - loss: 0.5815 -  
accuracy: 0.8047 - val\_loss: 0.9686 - val\_accuracy: 0.6980  
Epoch 53/60  
562/562 [=====] - 27s 48ms/step - loss: 0.5743 -  
accuracy: 0.8111 - val\_loss: 0.9545 - val\_accuracy: 0.7023  
Epoch 54/60  
562/562 [=====] - 27s 49ms/step - loss: 0.5685 -  
accuracy: 0.8091 - val\_loss: 0.9546 - val\_accuracy: 0.7038  
Epoch 55/60  
562/562 [=====] - 27s 48ms/step - loss: 0.5562 -  
accuracy: 0.8120 - val\_loss: 0.9798 - val\_accuracy: 0.6992  
Epoch 56/60  
562/562 [=====] - 27s 48ms/step - loss: 0.5538 -  
accuracy: 0.8173 - val\_loss: 0.9702 - val\_accuracy: 0.7040  
Epoch 57/60  
562/562 [=====] - 27s 48ms/step - loss: 0.5476 -  
accuracy: 0.8188 - val\_loss: 0.9642 - val\_accuracy: 0.7054  
Epoch 58/60  
562/562 [=====] - 27s 48ms/step - loss: 0.5365 -  
accuracy: 0.8198 - val\_loss: 0.9829 - val\_accuracy: 0.7054  
Epoch 59/60  
562/562 [=====] - 27s 48ms/step - loss: 0.5332 -  
accuracy: 0.8235 - val\_loss: 0.9763 - val\_accuracy: 0.7058  
Epoch 60/60  
562/562 [=====] - 27s 48ms/step - loss: 0.5283 -  
accuracy: 0.8272 - val\_loss: 0.9973 - val\_accuracy: 0.7054