Downloading: "<https://download.pytorch.org/models/resnet50-0676ba61.pth>" to /root/.cache/torch/hub/checkpoints/resnet50-0676ba61.pth

100%|██████████| 97.8M/97.8M [00:00<00:00, 122MB/s]

ResNet(

(conv1): Conv2d(3, 64, kernel\_size=(7, 7), stride=(2, 2), padding=(3, 3), bias=False)

(bn1): BatchNorm2d(64, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(relu): ReLU(inplace=True)

(maxpool): MaxPool2d(kernel\_size=3, stride=2, padding=1, dilation=1, ceil\_mode=False)

(layer1): Sequential(

(0): Bottleneck(

(conv1): Conv2d(64, 64, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn1): BatchNorm2d(64, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv2): Conv2d(64, 64, kernel\_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)

(bn2): BatchNorm2d(64, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv3): Conv2d(64, 256, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn3): BatchNorm2d(256, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(relu): ReLU(inplace=True)

(downsample): Sequential(

(0): Conv2d(64, 256, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(1): BatchNorm2d(256, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

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(1): Bottleneck(

(conv1): Conv2d(256, 64, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn1): BatchNorm2d(64, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv2): Conv2d(64, 64, kernel\_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)

(bn2): BatchNorm2d(64, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv3): Conv2d(64, 256, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn3): BatchNorm2d(256, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(relu): ReLU(inplace=True)

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(2): Bottleneck(

(conv1): Conv2d(256, 64, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn1): BatchNorm2d(64, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv2): Conv2d(64, 64, kernel\_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)

(bn2): BatchNorm2d(64, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv3): Conv2d(64, 256, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn3): BatchNorm2d(256, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(relu): ReLU(inplace=True)

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(layer2): Sequential(

(0): Bottleneck(

(conv1): Conv2d(256, 128, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn1): BatchNorm2d(128, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv2): Conv2d(128, 128, kernel\_size=(3, 3), stride=(2, 2), padding=(1, 1), bias=False)

(bn2): BatchNorm2d(128, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv3): Conv2d(128, 512, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn3): BatchNorm2d(512, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(relu): ReLU(inplace=True)

(downsample): Sequential(

(0): Conv2d(256, 512, kernel\_size=(1, 1), stride=(2, 2), bias=False)

(1): BatchNorm2d(512, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

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(1): Bottleneck(

(conv1): Conv2d(512, 128, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn1): BatchNorm2d(128, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv2): Conv2d(128, 128, kernel\_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)

(bn2): BatchNorm2d(128, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv3): Conv2d(128, 512, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn3): BatchNorm2d(512, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(relu): ReLU(inplace=True)

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(2): Bottleneck(

(conv1): Conv2d(512, 128, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn1): BatchNorm2d(128, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv2): Conv2d(128, 128, kernel\_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)

(bn2): BatchNorm2d(128, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv3): Conv2d(128, 512, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn3): BatchNorm2d(512, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(relu): ReLU(inplace=True)

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(3): Bottleneck(

(conv1): Conv2d(512, 128, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn1): BatchNorm2d(128, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv2): Conv2d(128, 128, kernel\_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)

(bn2): BatchNorm2d(128, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv3): Conv2d(128, 512, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn3): BatchNorm2d(512, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(relu): ReLU(inplace=True)

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(layer3): Sequential(

(0): Bottleneck(

(conv1): Conv2d(512, 256, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn1): BatchNorm2d(256, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv2): Conv2d(256, 256, kernel\_size=(3, 3), stride=(2, 2), padding=(1, 1), bias=False)

(bn2): BatchNorm2d(256, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv3): Conv2d(256, 1024, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn3): BatchNorm2d(1024, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(relu): ReLU(inplace=True)

(downsample): Sequential(

(0): Conv2d(512, 1024, kernel\_size=(1, 1), stride=(2, 2), bias=False)

(1): BatchNorm2d(1024, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

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(1): Bottleneck(

(conv1): Conv2d(1024, 256, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn1): BatchNorm2d(256, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv2): Conv2d(256, 256, kernel\_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)

(bn2): BatchNorm2d(256, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv3): Conv2d(256, 1024, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn3): BatchNorm2d(1024, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(relu): ReLU(inplace=True)

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(2): Bottleneck(

(conv1): Conv2d(1024, 256, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn1): BatchNorm2d(256, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv2): Conv2d(256, 256, kernel\_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)

(bn2): BatchNorm2d(256, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv3): Conv2d(256, 1024, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn3): BatchNorm2d(1024, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(relu): ReLU(inplace=True)

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(3): Bottleneck(

(conv1): Conv2d(1024, 256, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn1): BatchNorm2d(256, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv2): Conv2d(256, 256, kernel\_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)

(bn2): BatchNorm2d(256, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv3): Conv2d(256, 1024, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn3): BatchNorm2d(1024, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(relu): ReLU(inplace=True)

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(4): Bottleneck(

(conv1): Conv2d(1024, 256, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn1): BatchNorm2d(256, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv2): Conv2d(256, 256, kernel\_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)

(bn2): BatchNorm2d(256, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv3): Conv2d(256, 1024, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn3): BatchNorm2d(1024, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(relu): ReLU(inplace=True)

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(5): Bottleneck(

(conv1): Conv2d(1024, 256, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn1): BatchNorm2d(256, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv2): Conv2d(256, 256, kernel\_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)

(bn2): BatchNorm2d(256, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv3): Conv2d(256, 1024, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn3): BatchNorm2d(1024, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(relu): ReLU(inplace=True)

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(layer4): Sequential(

(0): Bottleneck(

(conv1): Conv2d(1024, 512, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn1): BatchNorm2d(512, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv2): Conv2d(512, 512, kernel\_size=(3, 3), stride=(2, 2), padding=(1, 1), bias=False)

(bn2): BatchNorm2d(512, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv3): Conv2d(512, 2048, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn3): BatchNorm2d(2048, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(relu): ReLU(inplace=True)

(downsample): Sequential(

(0): Conv2d(1024, 2048, kernel\_size=(1, 1), stride=(2, 2), bias=False)

(1): BatchNorm2d(2048, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

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(1): Bottleneck(

(conv1): Conv2d(2048, 512, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn1): BatchNorm2d(512, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv2): Conv2d(512, 512, kernel\_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)

(bn2): BatchNorm2d(512, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv3): Conv2d(512, 2048, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn3): BatchNorm2d(2048, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(relu): ReLU(inplace=True)

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(2): Bottleneck(

(conv1): Conv2d(2048, 512, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn1): BatchNorm2d(512, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv2): Conv2d(512, 512, kernel\_size=(3, 3), stride=(1, 1), padding=(1, 1), bias=False)

(bn2): BatchNorm2d(512, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(conv3): Conv2d(512, 2048, kernel\_size=(1, 1), stride=(1, 1), bias=False)

(bn3): BatchNorm2d(2048, eps=1e-05, momentum=0.1, affine=True, track\_running\_stats=True)

(relu): ReLU(inplace=True)

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(avgpool): AdaptiveAvgPool2d(output\_size=(1, 1))

(fc): Linear(in\_features=2048, out\_features=105, bias=True)

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/usr/local/lib/python3.10/dist-packages/torch/optim/lr\_scheduler.py:28: UserWarning: The verbose parameter is deprecated. Please use get\_last\_lr() to access the learning rate.

warnings.warn("The verbose parameter is deprecated. Please use get\_last\_lr() "

Epoch [1/50], Train Loss: 4.2250, Val Loss: 3.7016, Train Acc: 0.0411, Val Acc: 0.0975, Epoch Time: 3414.78 s

Epoch [2/50], Train Loss: 3.2890, Val Loss: 3.0151, Train Acc: 0.1606, Val Acc: 0.2198, Epoch Time: 3456.21 s

Epoch [3/50], Train Loss: 2.6518, Val Loss: 2.7013, Train Acc: 0.2965, Val Acc: 0.2908, Epoch Time: 3395.73 s

Epoch [4/50], Train Loss: 2.0766, Val Loss: 2.0109, Train Acc: 0.4307, Val Acc: 0.4576, Epoch Time: 3456.83 s

Epoch [5/50], Train Loss: 1.5884, Val Loss: 1.6095, Train Acc: 0.5650, Val Acc: 0.5509, Epoch Time: 3379.65 s

Epoch [6/50], Train Loss: 1.2308, Val Loss: 1.3329, Train Acc: 0.6523, Val Acc: 0.6371, Epoch Time: 3403.56 s

Epoch [7/50], Train Loss: 0.9688, Val Loss: 1.3772, Train Acc: 0.7190, Val Acc: 0.6258, Epoch Time: 3385.56 s

Epoch [8/50], Train Loss: 0.7523, Val Loss: 1.1820, Train Acc: 0.7826, Val Acc: 0.6748, Epoch Time: 3429.40 s

Epoch [9/50], Train Loss: 0.5977, Val Loss: 1.1078, Train Acc: 0.8258, Val Acc: 0.7013, Epoch Time: 3428.69 s

Epoch [10/50], Train Loss: 0.4677, Val Loss: 1.1352, Train Acc: 0.8602, Val Acc: 0.6971, Epoch Time: 3421.67 s

Epoch [11/50], Train Loss: 0.3775, Val Loss: 1.1337, Train Acc: 0.8886, Val Acc: 0.7103, Epoch Time: 3419.33 s

Epoch [12/50], Train Loss: 0.2913, Val Loss: 1.0811, Train Acc: 0.9125, Val Acc: 0.7309, Epoch Time: 3439.18 s

Epoch [13/50], Train Loss: 0.2525, Val Loss: 1.1460, Train Acc: 0.9239, Val Acc: 0.7205, Epoch Time: 3440.96 s

Epoch [14/50], Train Loss: 0.2136, Val Loss: 0.9909, Train Acc: 0.9369, Val Acc: 0.7597, Epoch Time: 3418.72 s

Epoch [15/50], Train Loss: 0.1891, Val Loss: 1.2234, Train Acc: 0.9430, Val Acc: 0.7067, Epoch Time: 3404.65 s

Epoch [16/50], Train Loss: 0.1825, Val Loss: 1.2350, Train Acc: 0.9459, Val Acc: 0.7202, Epoch Time: 3414.85 s

Epoch [17/50], Train Loss: 0.1578, Val Loss: 1.0644, Train Acc: 0.9502, Val Acc: 0.7585, Epoch Time: 3522.94 s

Epoch [18/50], Train Loss: 0.1290, Val Loss: 1.1018, Train Acc: 0.9607, Val Acc: 0.7444, Epoch Time: 3434.92 s

Training finished.

Early stopping triggered.