

Epoch 1/30

Train Loss: 0.0431, Train Accuracy: 0.9862

Train Precision: 0.9864, Train Recall: 0.9866, Train F1: 0.9865

Validation Loss: 0.2246, Validation Accuracy: 0.9571

Validation Precision: 0.9562, Validation Recall: 0.9618, Validation F1: 0.9581

Epoch 2/30

Train Loss: 0.0462, Train Accuracy: 0.9861

Train Precision: 0.9863, Train Recall: 0.9862, Train F1: 0.9862

Validation Loss: 0.2327, Validation Accuracy: 0.9535

Validation Precision: 0.9545, Validation Recall: 0.9572, Validation F1: 0.9540

Epoch 3/30

Train Loss: 0.0467, Train Accuracy: 0.9852

Train Precision: 0.9853, Train Recall: 0.9852, Train F1: 0.9853

Validation Loss: 0.2615, Validation Accuracy: 0.9642

Validation Precision: 0.9626, Validation Recall: 0.9682, Validation F1: 0.9647

Epoch 4/30

Train Loss: 0.0329, Train Accuracy: 0.9907

Train Precision: 0.9907, Train Recall: 0.9908, Train F1: 0.9907

Validation Loss: 0.2019, Validation Accuracy: 0.9649

Validation Precision: 0.9634, Validation Recall: 0.9683, Validation F1: 0.9653

Epoch 5/30

Train Loss: 0.0355, Train Accuracy: 0.9888

Train Precision: 0.9888, Train Recall: 0.9888, Train F1: 0.9888

Validation Loss: 0.2111, Validation Accuracy: 0.9695

Validation Precision: 0.9687, Validation Recall: 0.9732, Validation F1: 0.9702

Epoch 6/30

Train Loss: 0.0333, Train Accuracy: 0.9897

Train Precision: 0.9900, Train Recall: 0.9898, Train F1: 0.9899

Validation Loss: 0.4690, Validation Accuracy: 0.9369

Validation Precision: 0.9434, Validation Recall: 0.9409, Validation F1: 0.9383

Epoch 7/30

Train Loss: 0.0361, Train Accuracy: 0.9887

Train Precision: 0.9889, Train Recall: 0.9889, Train F1: 0.9889

Validation Loss: 0.3058, Validation Accuracy: 0.9609

Validation Precision: 0.9602, Validation Recall: 0.9654, Validation F1: 0.9617

Epoch 8/30

Train Loss: 0.0347, Train Accuracy: 0.9887

Train Precision: 0.9889, Train Recall: 0.9887, Train F1: 0.9888

Validation Loss: 0.2849, Validation Accuracy: 0.9649

Validation Precision: 0.9632, Validation Recall: 0.9690, Validation F1: 0.9653

Epoch 9/30

Train Loss: 0.0236, Train Accuracy: 0.9921

Train Precision: 0.9924, Train Recall: 0.9921, Train F1: 0.9923

Validation Loss: 0.3057, Validation Accuracy: 0.9616

Validation Precision: 0.9600, Validation Recall: 0.9661, Validation F1: 0.9620

Epoch 10/30

Train Loss: 0.0284, Train Accuracy: 0.9910
Train Precision: 0.9911, Train Recall: 0.9911, Train F1: 0.9911
Validation Loss: 0.3000, Validation Accuracy: 0.9609
Validation Precision: 0.9593, Validation Recall: 0.9644, Validation F1:
0.9614

Epoch 11/30

Train Loss: 0.0232, Train Accuracy: 0.9925
Train Precision: 0.9922, Train Recall: 0.9925, Train F1: 0.9923
Validation Loss: 0.2784, Validation Accuracy: 0.9692
Validation Precision: 0.9676, Validation Recall: 0.9728, Validation F1:
0.9697

Epoch 12/30

Train Loss: 0.0240, Train Accuracy: 0.9922
Train Precision: 0.9920, Train Recall: 0.9920, Train F1: 0.9920
Validation Loss: 0.3212, Validation Accuracy: 0.9541
Validation Precision: 0.9539, Validation Recall: 0.9595, Validation F1:
0.9553

Epoch 13/30

Train Loss: 0.0213, Train Accuracy: 0.9933
Train Precision: 0.9933, Train Recall: 0.9934, Train F1: 0.9933
Validation Loss: 0.2165, Validation Accuracy: 0.9707
Validation Precision: 0.9689, Validation Recall: 0.9740, Validation F1:
0.9709

Epoch 14/30

Train Loss: 0.0240, Train Accuracy: 0.9925
Train Precision: 0.9926, Train Recall: 0.9925, Train F1: 0.9926
Validation Loss: 0.2764, Validation Accuracy: 0.9639
Validation Precision: 0.9619, Validation Recall: 0.9684, Validation F1:
0.9642

Epoch 15/30

Train Loss: 0.0247, Train Accuracy: 0.9919
Train Precision: 0.9919, Train Recall: 0.9921, Train F1: 0.9920
Validation Loss: 0.2578, Validation Accuracy: 0.9700

Epoch 16/30

Train Loss: 0.0197, Train Accuracy: 0.9945
Train Precision: 0.9946, Train Recall: 0.9946, Train F1: 0.9946
Validation Loss: 0.2499, Validation Accuracy: 0.9642
Validation Precision: 0.9631, Validation Recall: 0.9677, Validation F1:
0.9647

Epoch 17/30

Train Loss: 0.0160, Train Accuracy: 0.9947
Train Precision: 0.9946, Train Recall: 0.9948, Train F1: 0.9947
Validation Loss: 0.3374, Validation Accuracy: 0.9576
Validation Precision: 0.9565, Validation Recall: 0.9630, Validation F1:
0.9585

Epoch 18/30

Train Loss: 0.0202, Train Accuracy: 0.9932
Train Precision: 0.9932, Train Recall: 0.9934, Train F1: 0.9933
Validation Loss: 0.2217, Validation Accuracy: 0.9588
Validation Precision: 0.9568, Validation Recall: 0.9623, Validation F1:
0.9589

Epoch 19/30

Train Loss: 0.0167, Train Accuracy: 0.9943
Train Precision: 0.9944, Train Recall: 0.9944, Train F1: 0.9944

Validation Loss: 0.2607, Validation Accuracy: 0.9697
Validation Precision: 0.9677, Validation Recall: 0.9732, Validation F1:
0.9698

Epoch 20/30

Train Loss: 0.0211, Train Accuracy: 0.9937
Train Precision: 0.9937, Train Recall: 0.9938, Train F1: 0.9938
Validation Loss: 0.1996, Validation Accuracy: 0.9705
Validation Precision: 0.9689, Validation Recall: 0.9736, Validation F1:
0.9707

Epoch 21/30

Train Loss: 0.0184, Train Accuracy: 0.9942
Train Precision: 0.9942, Train Recall: 0.9942, Train F1: 0.9942
Validation Loss: 0.3094, Validation Accuracy: 0.9692
Validation Precision: 0.9678, Validation Recall: 0.9728, Validation F1:
0.9697

Epoch 22/30

Train Loss: 0.0199, Train Accuracy: 0.9937
Train Precision: 0.9934, Train Recall: 0.9934, Train F1: 0.9934
Validation Loss: 0.3005, Validation Accuracy: 0.9684
Validation Precision: 0.9673, Validation Recall: 0.9720, Validation F1:
0.9689

Epoch 23/30

Train Loss: 0.0176, Train Accuracy: 0.9940
Train Precision: 0.9937, Train Recall: 0.9938, Train F1: 0.9938
Validation Loss: 0.2807, Validation Accuracy: 0.9682
Validation Precision: 0.9668, Validation Recall: 0.9720, Validation F1:
0.9687

Epoch 24/30

Train Loss: 0.0147, Train Accuracy: 0.9953
Train Precision: 0.9955, Train Recall: 0.9953, Train F1: 0.9954
Validation Loss: 0.3850, Validation Accuracy: 0.9639
Validation Precision: 0.9618, Validation Recall: 0.9672, Validation F1:
0.9637

Epoch 25/30

Train Loss: 0.0179, Train Accuracy: 0.9952
Train Precision: 0.9952, Train Recall: 0.9953, Train F1: 0.9952
Validation Loss: 0.2502, Validation Accuracy: 0.9669
Validation Precision: 0.9651, Validation Recall: 0.9709, Validation F1:
0.9673

Epoch 26/30

Train Loss: 0.0195, Train Accuracy: 0.9936
Train Precision: 0.9937, Train Recall: 0.9938, Train F1: 0.9938
Validation Loss: 0.2547, Validation Accuracy: 0.9702
Validation Precision: 0.9691, Validation Recall: 0.9735, Validation F1:
0.9707

Epoch 27/30

Train Loss: 0.0136, Train Accuracy: 0.9960
Train Precision: 0.9959, Train Recall: 0.9959, Train F1: 0.9959
Validation Loss: 0.2527, Validation Accuracy: 0.9672
Validation Precision: 0.9655, Validation Recall: 0.9713, Validation F1:
0.9677

Epoch 28/30

Train Loss: 0.0146, Train Accuracy: 0.9948
Train Precision: 0.9949, Train Recall: 0.9950, Train F1: 0.9950

Validation Loss: 0.2976, Validation Accuracy: 0.9684
Validation Precision: 0.9665, Validation Recall: 0.9719, Validation F1:
0.9686
Epoch 29/30
Train Loss: 0.0268, Train Accuracy: 0.9930
Train Precision: 0.9930, Train Recall: 0.9930, Train F1: 0.9930
Validation Loss: 0.2272, Validation Accuracy: 0.9662
Validation Precision: 0.9641, Validation Recall: 0.9701, Validation F1:
0.9663
Epoch 30/30
Train Loss: 0.0204, Train Accuracy: 0.9941
Train Precision: 0.9941, Train Recall: 0.9943, Train F1: 0.9942
Validation Loss: 0.2506, Validation Accuracy: 0.9649
Validation Precision: 0.9632, Validation Recall: 0.9686, Validation F1:
0.9653