Noise

Running on NVIDIA L4

Downloading: "<https://download.pytorch.org/models/fasterrcnn_resnet50_fpn_coco-258fb6c6.pth>" to /root/.cache/torch/hub/checkpoints/fasterrcnn\_resnet50\_fpn\_coco-258fb6c6.pth

100%|██████████| 160M/160M [00:00<00:00, 169MB/s]

Epoch 1/10 - Training: 100%|█████████▉| 802/803 [18:48<00:01, 1.40s/it]/usr/local/lib/python3.10/dist-packages/torch/nn/modules/conv.py:456: UserWarning: Plan failed with a cudnnException: CUDNN\_BACKEND\_EXECUTION\_PLAN\_DESCRIPTOR: cudnnFinalize Descriptor Failed cudnn\_status: CUDNN\_STATUS\_NOT\_SUPPORTED (Triggered internally at ../aten/src/ATen/native/cudnn/Conv\_v8.cpp:919.)

return F.conv2d(input, weight, bias, self.stride,

Epoch 1/10 - Training: 100%|██████████| 803/803 [18:50<00:00, 1.41s/it]

Epoch 1/10 - Training - Loss: 0.5158800824010654

Epoch 1/10 - Validation: 100%|██████████| 108/108 [01:23<00:00, 1.29it/s]

Epoch 1/10 - Validation - Loss: 0.31833774058355224

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.1.pth

Epoch 2/10 - Training: 100%|██████████| 803/803 [18:48<00:00, 1.41s/it]

Epoch 2/10 - Training - Loss: 0.4158310687556807

Epoch 2/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.29it/s]

Epoch 2/10 - Validation - Loss: 0.3018777514635413

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.1.pth

Epoch 3/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 3/10 - Training - Loss: 0.39763075922375746

Epoch 3/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 3/10 - Validation - Loss: 0.28821528565000604

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.1.pth

Epoch 4/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 4/10 - Training - Loss: 0.39037510238652806

Epoch 4/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 4/10 - Validation - Loss: 0.2993198702180827

Epoch 5/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 5/10 - Training - Loss: 0.3809189952882111

Epoch 5/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.29it/s]

Epoch 5/10 - Validation - Loss: 0.2850049158075341

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.1.pth

Epoch 6/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 6/10 - Training - Loss: 0.37400576902801635

Epoch 6/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 6/10 - Validation - Loss: 0.2826988693257725

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.1.pth

Epoch 7/10 - Training: 100%|██████████| 803/803 [18:50<00:00, 1.41s/it]

Epoch 7/10 - Training - Loss: 0.37083970442655523

Epoch 7/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 7/10 - Validation - Loss: 0.29109771121983175

Epoch 8/10 - Training: 100%|██████████| 803/803 [18:50<00:00, 1.41s/it]

Epoch 8/10 - Training - Loss: 0.3650546685547787

Epoch 8/10 - Validation: 100%|██████████| 108/108 [01:23<00:00, 1.29it/s]

Epoch 8/10 - Validation - Loss: 0.28163805459108615

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.1.pth

Epoch 9/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 9/10 - Training - Loss: 0.36088093241229

Epoch 9/10 - Validation: 100%|██████████| 108/108 [01:23<00:00, 1.29it/s]

Epoch 9/10 - Validation - Loss: 0.28083852002466164

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.1.pth

Epoch 10/10 - Training: 100%|██████████| 803/803 [18:50<00:00, 1.41s/it]

Epoch 10/10 - Training - Loss: 0.3555599739624287

Epoch 10/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 10/10 - Validation - Loss: 0.2827041741046641

Training completed in 12141.97s

Losses saved to /content/experiment/Research/logs/exp1/noise\_0.1.csv

Evaluation: 100%|██████████| 2569/2569 [01:42<00:00, 24.97it/s]

{'map': tensor(0.2258), 'map\_50': tensor(0.3805), 'map\_75': tensor(0.2441), 'map\_small': tensor(0.0946), 'map\_medium': tensor(0.1987), 'map\_large': tensor(0.3191), 'mar\_1': tensor(0.2455), 'mar\_10': tensor(0.3043), 'mar\_100': tensor(0.3048), 'mar\_small': tensor(0.1295), 'mar\_medium': tensor(0.2831), 'mar\_large': tensor(0.3938), 'map\_per\_class': tensor([0.0000, 0.1703, 0.2149, 0.2170, 0.1557, 0.4684, 0.2441, 0.3588, 0.0459,

0.2229, 0.2244, 0.3561, 0.1536, 0.2651, 0.3427, 0.1258, 0.1629, 0.1773,

0.3676, 0.2429]), 'mar\_100\_per\_class': tensor([0.0000, 0.2698, 0.2979, 0.2971, 0.2253, 0.5319, 0.3322, 0.4295, 0.0947,

0.3103, 0.3088, 0.4563, 0.2790, 0.4000, 0.4346, 0.1975, 0.2119, 0.2374,

0.4462, 0.3348]), 'classes': tensor([ 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17,

18, 19], dtype=torch.int32)}

Noise

Running on NVIDIA L4

Epoch 1/10 - Training: 100%|██████████| 803/803 [18:48<00:00, 1.41s/it]

Epoch 1/10 - Training - Loss: 0.6048153025349823

Epoch 1/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 1/10 - Validation - Loss: 0.3231583746771018

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.2.pth

Epoch 2/10 - Training: 100%|██████████| 803/803 [18:48<00:00, 1.41s/it]

Epoch 2/10 - Training - Loss: 0.5070068839181257

Epoch 2/10 - Validation: 100%|██████████| 108/108 [01:23<00:00, 1.29it/s]

Epoch 2/10 - Validation - Loss: 0.32100016389180114

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.2.pth

Epoch 3/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 3/10 - Training - Loss: 0.4889620990117787

Epoch 3/10 - Validation: 100%|██████████| 108/108 [01:23<00:00, 1.29it/s]

Epoch 3/10 - Validation - Loss: 0.2943554026661096

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.2.pth

Epoch 4/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 4/10 - Training - Loss: 0.4780631558610078

Epoch 4/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 4/10 - Validation - Loss: 0.28764681214535676

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.2.pth

Epoch 5/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 5/10 - Training - Loss: 0.47163361305391804

Epoch 5/10 - Validation: 100%|██████████| 108/108 [01:23<00:00, 1.29it/s]

Epoch 5/10 - Validation - Loss: 0.3115826202211557

Epoch 6/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 6/10 - Training - Loss: 0.4634859016162818

Epoch 6/10 - Validation: 100%|██████████| 108/108 [01:23<00:00, 1.29it/s]

Epoch 6/10 - Validation - Loss: 0.30503103557836125

Validation loss did not improve for 2 epochs. Reducing learning rate and restoring best model weights.

Model loaded from /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.2.pth

Epoch 7/10 - Training: 100%|██████████| 803/803 [18:50<00:00, 1.41s/it]

Epoch 7/10 - Training - Loss: 0.4585188998937013

Epoch 7/10 - Validation: 100%|██████████| 108/108 [01:23<00:00, 1.29it/s]

Epoch 7/10 - Validation - Loss: 0.2893266882057543

Epoch 8/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 8/10 - Training - Loss: 0.45161506036298804

Epoch 8/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.29it/s]

Epoch 8/10 - Validation - Loss: 0.2896539642027131

Validation loss did not improve for 2 epochs. Reducing learning rate and restoring best model weights.

Model loaded from /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.2.pth

Epoch 9/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 9/10 - Training - Loss: 0.4633954407677407

Epoch 9/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.29it/s]

Epoch 9/10 - Validation - Loss: 0.29182270928113546

Epoch 10/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 10/10 - Training - Loss: 0.4591664847260246

Epoch 10/10 - Validation: 100%|██████████| 108/108 [01:23<00:00, 1.29it/s]

Epoch 10/10 - Validation - Loss: 0.29232711745081125

Validation loss did not improve for 2 epochs. Reducing learning rate and restoring best model weights.

Model loaded from /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.2.pth

Training completed in 12135.62s

Losses saved to /content/experiment/Research/logs/exp1/noise\_0.2.csv

Evaluation: 100%|██████████| 2569/2569 [01:40<00:00, 25.52it/s]

{'map': tensor(0.2237), 'map\_50': tensor(0.4008), 'map\_75': tensor(0.2303), 'map\_small': tensor(0.0882), 'map\_medium': tensor(0.1805), 'map\_large': tensor(0.3281), 'mar\_1': tensor(0.2450), 'mar\_10': tensor(0.3138), 'mar\_100': tensor(0.3184), 'mar\_small': tensor(0.1423), 'mar\_medium': tensor(0.2841), 'mar\_large': tensor(0.4111), 'map\_per\_class': tensor([0.0000, 0.2213, 0.2251, 0.1571, 0.1762, 0.4213, 0.2369, 0.3444, 0.1024,

0.1759, 0.2426, 0.3263, 0.1940, 0.2434, 0.3385, 0.1358, 0.2298, 0.1765,

0.3265, 0.2009]), 'mar\_100\_per\_class': tensor([0.0000, 0.2931, 0.3296, 0.2853, 0.2529, 0.4846, 0.3403, 0.4415, 0.1863,

0.2916, 0.3439, 0.4417, 0.3590, 0.3514, 0.4516, 0.2309, 0.3147, 0.2244,

0.4118, 0.3326]), 'classes': tensor([ 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17,

18, 19], dtype=torch.int32)}

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Epoch 1/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 1/10 - Training - Loss: 0.6779457099485219

Epoch 1/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 1/10 - Validation - Loss: 0.3351235046154923

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.3.pth

Epoch 2/10 - Training: 100%|██████████| 803/803 [18:50<00:00, 1.41s/it]

Epoch 2/10 - Training - Loss: 0.581142980350207

Epoch 2/10 - Validation: 100%|██████████| 108/108 [01:23<00:00, 1.29it/s]

Epoch 2/10 - Validation - Loss: 0.32687854297735075

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.3.pth

Epoch 3/10 - Training: 100%|██████████| 803/803 [18:50<00:00, 1.41s/it]

Epoch 3/10 - Training - Loss: 0.5662344089183831

Epoch 3/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 3/10 - Validation - Loss: 0.3198166640682353

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.3.pth

Epoch 4/10 - Training: 100%|██████████| 803/803 [18:51<00:00, 1.41s/it]

Epoch 4/10 - Training - Loss: 0.5560455642185947

Epoch 4/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.29it/s]

Epoch 4/10 - Validation - Loss: 0.3078610139588515

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.3.pth

Epoch 5/10 - Training: 100%|██████████| 803/803 [18:51<00:00, 1.41s/it]

Epoch 5/10 - Training - Loss: 0.5432372985600238

Epoch 5/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 5/10 - Validation - Loss: 0.3271392782529195

Epoch 6/10 - Training: 100%|██████████| 803/803 [18:51<00:00, 1.41s/it]

Epoch 6/10 - Training - Loss: 0.5368810128675748

Epoch 6/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 6/10 - Validation - Loss: 0.33012190571537725

Validation loss did not improve for 2 epochs. Reducing learning rate and restoring best model weights.

Model loaded from /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.3.pth

Epoch 7/10 - Training: 100%|██████████| 803/803 [18:51<00:00, 1.41s/it]

Epoch 7/10 - Training - Loss: 0.5296670687599467

Epoch 7/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 7/10 - Validation - Loss: 0.31054069653705313

Epoch 8/10 - Training: 100%|██████████| 803/803 [18:52<00:00, 1.41s/it]

Epoch 8/10 - Training - Loss: 0.5257749274131815

Epoch 8/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 8/10 - Validation - Loss: 0.3042688038614061

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.3.pth

Epoch 9/10 - Training: 100%|██████████| 803/803 [18:52<00:00, 1.41s/it]

Epoch 9/10 - Training - Loss: 0.5207409197708144

Epoch 9/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 9/10 - Validation - Loss: 0.30524238999243136

Epoch 10/10 - Training: 100%|██████████| 803/803 [18:52<00:00, 1.41s/it]

Epoch 10/10 - Training - Loss: 0.5174211491906034

Epoch 10/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 10/10 - Validation - Loss: 0.3026557377091161

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.3.pth

Training completed in 12157.92s

Losses saved to /content/experiment/Research/logs/exp1/noise\_0.3.csv

Evaluation: 100%|██████████| 2569/2569 [01:40<00:00, 25.46it/s]

{'map': tensor(0.2670), 'map\_50': tensor(0.4403), 'map\_75': tensor(0.2882), 'map\_small': tensor(0.1112), 'map\_medium': tensor(0.2256), 'map\_large': tensor(0.3876), 'mar\_1': tensor(0.2777), 'mar\_10': tensor(0.3506), 'mar\_100': tensor(0.3521), 'mar\_small': tensor(0.1554), 'mar\_medium': tensor(0.3170), 'mar\_large': tensor(0.4690), 'map\_per\_class': tensor([0.0000, 0.2957, 0.2859, 0.1727, 0.2384, 0.4578, 0.3020, 0.3768, 0.1371,

0.2152, 0.2522, 0.3986, 0.2306, 0.3359, 0.3632, 0.1463, 0.2592, 0.2385,

0.3794, 0.2547]), 'mar\_100\_per\_class': tensor([0.0000, 0.3836, 0.3894, 0.2287, 0.3004, 0.5253, 0.4064, 0.4622, 0.2428,

0.3131, 0.3430, 0.4947, 0.3543, 0.4533, 0.4731, 0.2574, 0.3271, 0.3206,

0.4355, 0.3312]), 'classes': tensor([ 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17,

18, 19], dtype=torch.int32)}

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Epoch 1/10 - Training: 100%|██████████| 803/803 [18:48<00:00, 1.41s/it]

Epoch 1/10 - Training - Loss: 0.7620048208595955

Epoch 1/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 1/10 - Validation - Loss: 0.38017374166735896

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.4.pth

Epoch 2/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 2/10 - Training - Loss: 0.6578742673581148

Epoch 2/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 2/10 - Validation - Loss: 0.3247154087380127

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.4.pth

Epoch 3/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 3/10 - Training - Loss: 0.6403879973837923

Epoch 3/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 3/10 - Validation - Loss: 0.3331296199725734

Epoch 4/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 4/10 - Training - Loss: 0.6279089323164962

Epoch 4/10 - Validation: 100%|██████████| 108/108 [01:23<00:00, 1.29it/s]

Epoch 4/10 - Validation - Loss: 0.3446549890493905

Validation loss did not improve for 2 epochs. Reducing learning rate and restoring best model weights.

Model loaded from /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.4.pth

Epoch 5/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 5/10 - Training - Loss: 0.6232983440272093

Epoch 5/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 5/10 - Validation - Loss: 0.3377354368567467

Epoch 6/10 - Training: 100%|██████████| 803/803 [18:50<00:00, 1.41s/it]

Epoch 6/10 - Training - Loss: 0.6220494483134815

Epoch 6/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 6/10 - Validation - Loss: 0.3374693090165103

Validation loss did not improve for 2 epochs. Reducing learning rate and restoring best model weights.

Model loaded from /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.4.pth

Epoch 7/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 7/10 - Training - Loss: 0.6273592857094215

Epoch 7/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 7/10 - Validation - Loss: 0.33261252511982564

Epoch 8/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 8/10 - Training - Loss: 0.6233022765976702

Epoch 8/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 8/10 - Validation - Loss: 0.3373002236088117

Validation loss did not improve for 2 epochs. Reducing learning rate and restoring best model weights.

Model loaded from /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.4.pth

Epoch 9/10 - Training: 100%|██████████| 803/803 [18:50<00:00, 1.41s/it]

Epoch 9/10 - Training - Loss: 0.6349288998624011

Epoch 9/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 9/10 - Validation - Loss: 0.33025217842724586

Epoch 10/10 - Training: 100%|██████████| 803/803 [18:50<00:00, 1.41s/it]

Epoch 10/10 - Training - Loss: 0.6310222752735594

Epoch 10/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 10/10 - Validation - Loss: 0.33039162942656763

Validation loss did not improve for 2 epochs. Reducing learning rate and restoring best model weights.

Model loaded from /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.4.pth

Training completed in 12139.85s

Losses saved to /content/experiment/Research/logs/exp1/noise\_0.4.csv

Evaluation: 100%|██████████| 2569/2569 [01:40<00:00, 25.47it/s]

{'map': tensor(0.1962), 'map\_50': tensor(0.3594), 'map\_75': tensor(0.1984), 'map\_small': tensor(0.0743), 'map\_medium': tensor(0.1845), 'map\_large': tensor(0.2854), 'mar\_1': tensor(0.2155), 'mar\_10': tensor(0.2766), 'mar\_100': tensor(0.2768), 'mar\_small': tensor(0.1121), 'mar\_medium': tensor(0.2616), 'mar\_large': tensor(0.3646), 'map\_per\_class': tensor([0.0000, 0.2580, 0.2452, 0.1284, 0.1937, 0.3514, 0.2176, 0.2907, 0.0878,

0.1399, 0.1785, 0.2962, 0.1493, 0.1752, 0.3209, 0.1423, 0.1631, 0.1307,

0.2667, 0.1882]), 'mar\_100\_per\_class': tensor([0.0000, 0.3500, 0.3296, 0.1868, 0.2622, 0.4308, 0.3140, 0.3793, 0.1623,

0.2234, 0.2386, 0.3846, 0.2848, 0.2981, 0.4380, 0.2210, 0.2353, 0.1649,

0.3387, 0.2928]), 'classes': tensor([ 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17,

18, 19], dtype=torch.int32)}

Noise

Running on NVIDIA L4

Epoch 1/10 - Training: 100%|██████████| 803/803 [18:48<00:00, 1.41s/it]

Epoch 1/10 - Training - Loss: 0.8308115285330662

Epoch 1/10 - Validation: 100%|██████████| 108/108 [01:23<00:00, 1.29it/s]

Epoch 1/10 - Validation - Loss: 0.3793749617481673

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.5.pth

Epoch 2/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 2/10 - Training - Loss: 0.7265611314684487

Epoch 2/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.29it/s]

Epoch 2/10 - Validation - Loss: 0.3624627187296196

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.5.pth

Epoch 3/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 3/10 - Training - Loss: 0.7044489443079472

Epoch 3/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 3/10 - Validation - Loss: 0.3344874271640071

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.5.pth

Epoch 4/10 - Training: 100%|██████████| 803/803 [18:49<00:00, 1.41s/it]

Epoch 4/10 - Training - Loss: 0.6937255487866598

Epoch 4/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 4/10 - Validation - Loss: 0.3546769722468323

Epoch 5/10 - Training: 100%|██████████| 803/803 [18:50<00:00, 1.41s/it]

Epoch 5/10 - Training - Loss: 0.6851995349449951

Epoch 5/10 - Validation: 100%|██████████| 108/108 [01:23<00:00, 1.29it/s]

Epoch 5/10 - Validation - Loss: 0.32280535747607547

Model saved to /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.5.pth

Epoch 6/10 - Training: 100%|██████████| 803/803 [18:52<00:00, 1.41s/it]

Epoch 6/10 - Training - Loss: 0.6792322853730892

Epoch 6/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.27it/s]

Epoch 6/10 - Validation - Loss: 0.35939426099260646

Epoch 7/10 - Training: 100%|██████████| 803/803 [18:52<00:00, 1.41s/it]

Epoch 7/10 - Training - Loss: 0.6712370593179653

Epoch 7/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.27it/s]

Epoch 7/10 - Validation - Loss: 0.36159190232003174

Validation loss did not improve for 2 epochs. Reducing learning rate and restoring best model weights.

Model loaded from /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.5.pth

Epoch 8/10 - Training: 100%|██████████| 803/803 [18:52<00:00, 1.41s/it]

Epoch 8/10 - Training - Loss: 0.6575231422597118

Epoch 8/10 - Validation: 100%|██████████| 108/108 [01:25<00:00, 1.27it/s]

Epoch 8/10 - Validation - Loss: 0.32473667193618083

Epoch 9/10 - Training: 100%|██████████| 803/803 [18:52<00:00, 1.41s/it]

Epoch 9/10 - Training - Loss: 0.6546716811054225

Epoch 9/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.27it/s]

Epoch 9/10 - Validation - Loss: 0.3292773941324817

Validation loss did not improve for 2 epochs. Reducing learning rate and restoring best model weights.

Model loaded from /content/experiment/Research/FCNN-models/exp1/run\_0\_noise0.5.pth

Epoch 10/10 - Training: 100%|██████████| 803/803 [18:50<00:00, 1.41s/it]

Epoch 10/10 - Training - Loss: 0.6631810094692638

Epoch 10/10 - Validation: 100%|██████████| 108/108 [01:24<00:00, 1.28it/s]

Epoch 10/10 - Validation - Loss: 0.33294161160786945

Training completed in 12155.31s

Losses saved to /content/experiment/Research/logs/exp1/noise\_0.5.csv

Evaluation: 100%|██████████| 2569/2569 [01:40<00:00, 25.48it/s]

{'map': tensor(0.2536), 'map\_50': tensor(0.4209), 'map\_75': tensor(0.2657), 'map\_small': tensor(0.1122), 'map\_medium': tensor(0.2130), 'map\_large': tensor(0.3599), 'mar\_1': tensor(0.2685), 'mar\_10': tensor(0.3398), 'mar\_100': tensor(0.3433), 'mar\_small': tensor(0.1656), 'mar\_medium': tensor(0.3042), 'mar\_large': tensor(0.4396), 'map\_per\_class': tensor([0.0000, 0.2637, 0.2520, 0.2200, 0.1457, 0.5120, 0.2879, 0.3914, 0.1283,

0.2770, 0.1724, 0.3862, 0.2028, 0.3449, 0.3577, 0.1781, 0.2710, 0.1774,

0.2492, 0.2547]), 'mar\_100\_per\_class': tensor([0.0000, 0.3603, 0.3667, 0.3081, 0.2267, 0.5736, 0.3808, 0.4886, 0.2033,

0.3449, 0.2886, 0.4733, 0.3571, 0.4733, 0.4783, 0.2870, 0.3289, 0.2344,

0.3301, 0.3623]), 'classes': tensor([ 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17,

18, 19], dtype=torch.int32)}