test_all_0.01_50

April 17, 2025

```python
[9]: from tqdm import tqdm
     import torch
     import torch.nn as nn
     import torch.optim as optim
     from sklearn.metrics import accuracy_score, classification_report
     import pandas as pd
     from social_lstm_classifier import SocialLSTMClassifier

     trajectory_features = ['Positionx', 'Positiony', 'Distance', 'Speed', 'Speed
      ↪Change', 'Direction', 'Direction Change']

     feature_combos = {
         'xy_2': ['Positionx', 'Positiony'],
         'xyd_3': ['Positionx', 'Positiony', 'Distance'],
         'xydsdc_7': ['Positionx', 'Positiony', 'Distance', 'Speed', 'Direction',
      ↪'Speed Change', 'Direction Change'],
         'xysd_4': ['Positionx', 'Positiony', 'Speed', 'Direction'],
         'xyds_4': ['Positionx', 'Positiony', 'Distance', 'Speed'],
         'xydd_4': ['Positionx', 'Positiony', 'Distance', 'Direction'],
         'xydsc_5': ['Positionx', 'Positiony', 'Distance', 'Speed', 'Speed Change'],
         'xyddc_5': ['Positionx', 'Positiony', 'Distance', 'Direction', 'Direction
      ↪Change'],
         'xys_3': ['Positionx', 'Positiony', 'Speed'],
         'xydi_3': ['Positionx', 'Positiony', 'Direction'],
         'xysc_4': ['Positionx', 'Positiony', 'Speed', 'Speed Change'],
         'xydc_4': ['Positionx', 'Positiony', 'Direction', 'Direction Change']
     }

     train_data = torch.load("./train_social_lstm_full.pt")
     test_data = torch.load("./test_social_lstm_full.pt")

     results = []

     def run_experiment(feature_set, name):
         input_size = len(feature_set)
         index_map = [trajectory_features.index(f) for f in feature_set]
```

```python
model = SocialLSTMClassifier(input_size=input_size)
criterion = nn.CrossEntropyLoss()
optimizer = optim.Adam(model.parameters(), lr=0.001)
epochs = 50

model.train()
for epoch in range(epochs):
    total_loss = 0.0
    for sample in tqdm(train_data, desc=f"Epoch {epoch+1}/{epochs}"):
        # traj = sample['trajectory'][:, index_map].unsqueeze(1)
        # neighbors = sample['neighbors'][:, :, index_map]
        traj = sample['trajectory'][:, index_map]  # [T, 1, D]
        neighbors = [frame[:, index_map] for frame in sample['neighbors']] ␣
↪# list[T][N_i, D]

        mask = sample['neighbor_mask']
        label = torch.tensor([int(sample['cluster']) - 1], dtype=torch.long)

        optimizer.zero_grad()
        logits = model(traj, neighbors, mask)
        loss = criterion(logits, label)
        loss.backward()
        optimizer.step()

        total_loss += loss.item()

    avg_loss = total_loss / len(train_data)
    print(f"\n[Feature Set: {name}] Epoch [{epoch+1}/{epochs}] - Avg Loss:␣
↪{avg_loss:.4f}")


# model.eval()
# y_true = []
# y_pred = []
# with torch.no_grad():
#     for sample in tqdm(train_data, desc=f"Epoch {epoch+1}/{epochs}"):
#         # traj = sample['trajectory'][:, index_map].unsqueeze(1)
#         # neighbors = sample['neighbors'][:, :, index_map]
#         traj = sample['trajectory'][:, index_map] # [T, 1, D]
#         neighbors = [frame[:, index_map] for frame in␣
↪sample['neighbors']]  # list[T][N_i, D]
#         mask = sample['neighbor_mask']
#         label = int(sample['cluster']) - 1
#         logits = model(traj, neighbors, mask)
#         pred = logits.argmax(dim=1).item()
#         y_true.append(label)
#         y_pred.append(pred)
```

```
    model.eval()
    y_true = []
    y_pred = []
    with torch.no_grad():
        for sample in tqdm(test_data, desc=f"[Eval] {name}"):
            traj = sample['trajectory'][:, index_map]
            neighbors = [frame[:, index_map] for frame in sample['neighbors']]
            mask = sample['neighbor_mask']
            label = int(sample['cluster']) - 1
            logits = model(traj, neighbors, mask)
            pred = logits.argmax(dim=1).item()
            y_true.append(label)
            y_pred.append(pred)


    acc = accuracy_score(y_true, y_pred)
    clf_report = classification_report(y_true, y_pred, output_dict=True)
    results.append({
        "Feature_Set": name,
        "Accuracy": acc,
        "Macro_F1": clf_report['macro avg']['f1-score'],
        "Weighted_F1": clf_report['weighted avg']['f1-score']
    })

for name, feats in feature_combos.items():
    run_experiment(feats, name)
```

/var/folders/nt/7f1y5h8s6qd2mh1ypgjkgbpw0000gn/T/ipykernel_2483/2232192587.py:26
: FutureWarning: You are using `torch.load` with `weights_only=False` (the
current default value), which uses the default pickle module implicitly. It is
possible to construct malicious pickle data which will execute arbitrary code
during unpickling (See
https://github.com/pytorch/pytorch/blob/main/SECURITY.md#untrusted-models for
more details). In a future release, the default value for `weights_only` will be
flipped to `True`. This limits the functions that could be executed during
unpickling. Arbitrary objects will no longer be allowed to be loaded via this
mode unless they are explicitly allowlisted by the user via
`torch.serialization.add_safe_globals`. We recommend you start setting
`weights_only=True` for any use case where you don't have full control of the
loaded file. Please open an issue on GitHub for any issues related to this
experimental feature.
  train_data = torch.load("./train_social_lstm_full.pt")
/var/folders/nt/7f1y5h8s6qd2mh1ypgjkgbpw0000gn/T/ipykernel_2483/2232192587.py:27
: FutureWarning: You are using `torch.load` with `weights_only=False` (the
current default value), which uses the default pickle module implicitly. It is
possible to construct malicious pickle data which will execute arbitrary code
during unpickling (See

https://github.com/pytorch/pytorch/blob/main/SECURITY.md#untrusted-models for
more details). In a future release, the default value for `weights_only` will be
flipped to `True`. This limits the functions that could be executed during
unpickling. Arbitrary objects will no longer be allowed to be loaded via this
mode unless they are explicitly allowlisted by the user via
`torch.serialization.add_safe_globals`. We recommend you start setting
`weights_only=True` for any use case where you don't have full control of the
loaded file. Please open an issue on GitHub for any issues related to this
experimental feature.
  test_data = torch.load("./test_social_lstm_full.pt")
Epoch 1/50: 100%| | 570/570 [00:03<00:00, 175.74it/s]

[Feature Set: xy_2] Epoch [1/50] - Avg Loss: 0.6751

Epoch 2/50: 100%| | 570/570 [00:03<00:00, 180.85it/s]

[Feature Set: xy_2] Epoch [2/50] - Avg Loss: 0.6654

Epoch 3/50: 100%| | 570/570 [00:03<00:00, 177.55it/s]

[Feature Set: xy_2] Epoch [3/50] - Avg Loss: 0.6585

Epoch 4/50: 100%| | 570/570 [00:03<00:00, 182.61it/s]

[Feature Set: xy_2] Epoch [4/50] - Avg Loss: 0.6551

Epoch 5/50: 100%| | 570/570 [00:03<00:00, 182.02it/s]

[Feature Set: xy_2] Epoch [5/50] - Avg Loss: 0.6465

Epoch 6/50: 100%| | 570/570 [00:03<00:00, 183.47it/s]

[Feature Set: xy_2] Epoch [6/50] - Avg Loss: 0.6403

Epoch 7/50: 100%| | 570/570 [00:03<00:00, 183.09it/s]

[Feature Set: xy_2] Epoch [7/50] - Avg Loss: 0.6303

Epoch 8/50: 100%| | 570/570 [00:03<00:00, 181.06it/s]

[Feature Set: xy_2] Epoch [8/50] - Avg Loss: 0.6188

Epoch 9/50: 100%| | 570/570 [00:03<00:00, 182.43it/s]

[Feature Set: xy_2] Epoch [9/50] - Avg Loss: 0.6114

Epoch 10/50: 100%| | 570/570 [00:03<00:00, 179.70it/s]

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[Feature Set: xy_2] Epoch [10/50] - Avg Loss: 0.6007
Epoch 11/50: 100%|     | 570/570 [00:03<00:00, 182.77it/s]

[Feature Set: xy_2] Epoch [11/50] - Avg Loss: 0.5872
Epoch 12/50: 100%|     | 570/570 [00:03<00:00, 173.35it/s]

[Feature Set: xy_2] Epoch [12/50] - Avg Loss: 0.5820
Epoch 13/50: 100%|     | 570/570 [00:03<00:00, 171.92it/s]

[Feature Set: xy_2] Epoch [13/50] - Avg Loss: 0.5687
Epoch 14/50: 100%|     | 570/570 [00:03<00:00, 182.66it/s]

[Feature Set: xy_2] Epoch [14/50] - Avg Loss: 0.5586
Epoch 15/50: 100%|     | 570/570 [00:03<00:00, 178.58it/s]

[Feature Set: xy_2] Epoch [15/50] - Avg Loss: 0.5382
Epoch 16/50: 100%|     | 570/570 [00:03<00:00, 181.71it/s]

[Feature Set: xy_2] Epoch [16/50] - Avg Loss: 0.5240
Epoch 17/50: 100%|     | 570/570 [00:03<00:00, 178.91it/s]

[Feature Set: xy_2] Epoch [17/50] - Avg Loss: 0.5160
Epoch 18/50: 100%|     | 570/570 [00:03<00:00, 182.83it/s]

[Feature Set: xy_2] Epoch [18/50] - Avg Loss: 0.4978
Epoch 19/50: 100%|     | 570/570 [00:03<00:00, 182.24it/s]

[Feature Set: xy_2] Epoch [19/50] - Avg Loss: 0.4887
Epoch 20/50: 100%|     | 570/570 [00:03<00:00, 183.87it/s]

[Feature Set: xy_2] Epoch [20/50] - Avg Loss: 0.4780
Epoch 21/50: 100%|     | 570/570 [00:03<00:00, 182.35it/s]

[Feature Set: xy_2] Epoch [21/50] - Avg Loss: 0.4650
Epoch 22/50: 100%|     | 570/570 [00:03<00:00, 184.27it/s]
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[Feature Set: xy_2] Epoch [22/50] - Avg Loss: 0.4455
Epoch 23/50: 100%|      | 570/570 [00:03<00:00, 183.08it/s]

[Feature Set: xy_2] Epoch [23/50] - Avg Loss: 0.4337
Epoch 24/50: 100%|      | 570/570 [00:03<00:00, 184.04it/s]

[Feature Set: xy_2] Epoch [24/50] - Avg Loss: 0.4384
Epoch 25/50: 100%|      | 570/570 [00:03<00:00, 182.93it/s]

[Feature Set: xy_2] Epoch [25/50] - Avg Loss: 0.4225
Epoch 26/50: 100%|      | 570/570 [00:03<00:00, 180.36it/s]

[Feature Set: xy_2] Epoch [26/50] - Avg Loss: 0.4010
Epoch 27/50: 100%|      | 570/570 [00:03<00:00, 183.16it/s]

[Feature Set: xy_2] Epoch [27/50] - Avg Loss: 0.4092
Epoch 28/50: 100%|      | 570/570 [00:03<00:00, 183.73it/s]

[Feature Set: xy_2] Epoch [28/50] - Avg Loss: 0.3826
Epoch 29/50: 100%|      | 570/570 [00:03<00:00, 182.55it/s]

[Feature Set: xy_2] Epoch [29/50] - Avg Loss: 0.3995
Epoch 30/50: 100%|      | 570/570 [00:03<00:00, 183.29it/s]

[Feature Set: xy_2] Epoch [30/50] - Avg Loss: 0.3932
Epoch 31/50: 100%|      | 570/570 [00:03<00:00, 177.30it/s]

[Feature Set: xy_2] Epoch [31/50] - Avg Loss: 0.3867
Epoch 32/50: 100%|      | 570/570 [00:03<00:00, 181.00it/s]

[Feature Set: xy_2] Epoch [32/50] - Avg Loss: 0.3740
Epoch 33/50: 100%|      | 570/570 [00:03<00:00, 179.41it/s]

[Feature Set: xy_2] Epoch [33/50] - Avg Loss: 0.3601
Epoch 34/50: 100%|      | 570/570 [00:03<00:00, 182.73it/s]
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[Feature Set: xy_2] Epoch [34/50] - Avg Loss: 0.3598
Epoch 35/50: 100%|        | 570/570 [00:03<00:00, 181.93it/s]

[Feature Set: xy_2] Epoch [35/50] - Avg Loss: 0.3471
Epoch 36/50: 100%|        | 570/570 [00:03<00:00, 182.58it/s]

[Feature Set: xy_2] Epoch [36/50] - Avg Loss: 0.3429
Epoch 37/50: 100%|        | 570/570 [00:03<00:00, 179.13it/s]

[Feature Set: xy_2] Epoch [37/50] - Avg Loss: 0.3428
Epoch 38/50: 100%|        | 570/570 [00:03<00:00, 178.91it/s]

[Feature Set: xy_2] Epoch [38/50] - Avg Loss: 0.3321
Epoch 39/50: 100%|        | 570/570 [00:03<00:00, 173.93it/s]

[Feature Set: xy_2] Epoch [39/50] - Avg Loss: 0.3388
Epoch 40/50: 100%|        | 570/570 [00:03<00:00, 183.33it/s]

[Feature Set: xy_2] Epoch [40/50] - Avg Loss: 0.3257
Epoch 41/50: 100%|        | 570/570 [00:03<00:00, 182.59it/s]

[Feature Set: xy_2] Epoch [41/50] - Avg Loss: 0.3294
Epoch 42/50: 100%|        | 570/570 [00:03<00:00, 184.05it/s]

[Feature Set: xy_2] Epoch [42/50] - Avg Loss: 0.3231
Epoch 43/50: 100%|        | 570/570 [00:03<00:00, 182.68it/s]

[Feature Set: xy_2] Epoch [43/50] - Avg Loss: 0.3226
Epoch 44/50: 100%|        | 570/570 [00:03<00:00, 184.15it/s]

[Feature Set: xy_2] Epoch [44/50] - Avg Loss: 0.3183
Epoch 45/50: 100%|        | 570/570 [00:03<00:00, 183.03it/s]

[Feature Set: xy_2] Epoch [45/50] - Avg Loss: 0.3061
Epoch 46/50: 100%|        | 570/570 [00:03<00:00, 183.87it/s]
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[Feature Set: xy_2] Epoch [46/50] - Avg Loss: 0.3030
Epoch 47/50: 100%|     | 570/570 [00:03<00:00, 182.22it/s]

[Feature Set: xy_2] Epoch [47/50] - Avg Loss: 0.2849
Epoch 48/50: 100%|     | 570/570 [00:03<00:00, 182.16it/s]

[Feature Set: xy_2] Epoch [48/50] - Avg Loss: 0.2871
Epoch 49/50: 100%|     | 570/570 [00:03<00:00, 182.17it/s]

[Feature Set: xy_2] Epoch [49/50] - Avg Loss: 0.2969
Epoch 50/50: 100%|     | 570/570 [00:03<00:00, 182.43it/s]

[Feature Set: xy_2] Epoch [50/50] - Avg Loss: 0.2678
[Eval] xy_2: 100%|     | 143/143 [00:00<00:00, 311.99it/s]
Epoch 1/50: 100%|     | 570/570 [00:03<00:00, 181.15it/s]

[Feature Set: xyd_3] Epoch [1/50] - Avg Loss: 0.6770
Epoch 2/50: 100%|     | 570/570 [00:03<00:00, 182.71it/s]

[Feature Set: xyd_3] Epoch [2/50] - Avg Loss: 0.6644
Epoch 3/50: 100%|     | 570/570 [00:03<00:00, 181.12it/s]

[Feature Set: xyd_3] Epoch [3/50] - Avg Loss: 0.6637
Epoch 4/50: 100%|     | 570/570 [00:03<00:00, 182.80it/s]

[Feature Set: xyd_3] Epoch [4/50] - Avg Loss: 0.6562
Epoch 5/50: 100%|     | 570/570 [00:03<00:00, 181.73it/s]

[Feature Set: xyd_3] Epoch [5/50] - Avg Loss: 0.6476
Epoch 6/50: 100%|     | 570/570 [00:03<00:00, 183.01it/s]

[Feature Set: xyd_3] Epoch [6/50] - Avg Loss: 0.6410
Epoch 7/50: 100%|     | 570/570 [00:03<00:00, 181.93it/s]

[Feature Set: xyd_3] Epoch [7/50] - Avg Loss: 0.6259
```

```
Epoch 8/50: 100%|     | 570/570 [00:03<00:00, 182.45it/s]


[Feature Set: xyd_3] Epoch [8/50] - Avg Loss: 0.6242

Epoch 9/50: 100%|     | 570/570 [00:03<00:00, 178.77it/s]


[Feature Set: xyd_3] Epoch [9/50] - Avg Loss: 0.6122

Epoch 10/50: 100%|     | 570/570 [00:03<00:00, 182.61it/s]


[Feature Set: xyd_3] Epoch [10/50] - Avg Loss: 0.5968

Epoch 11/50: 100%|     | 570/570 [00:03<00:00, 181.81it/s]


[Feature Set: xyd_3] Epoch [11/50] - Avg Loss: 0.5889

Epoch 12/50: 100%|     | 570/570 [00:03<00:00, 183.23it/s]


[Feature Set: xyd_3] Epoch [12/50] - Avg Loss: 0.5788

Epoch 13/50: 100%|     | 570/570 [00:03<00:00, 181.86it/s]


[Feature Set: xyd_3] Epoch [13/50] - Avg Loss: 0.5633

Epoch 14/50: 100%|     | 570/570 [00:03<00:00, 182.73it/s]


[Feature Set: xyd_3] Epoch [14/50] - Avg Loss: 0.5508

Epoch 15/50: 100%|     | 570/570 [00:03<00:00, 181.92it/s]


[Feature Set: xyd_3] Epoch [15/50] - Avg Loss: 0.5432

Epoch 16/50: 100%|     | 570/570 [00:03<00:00, 179.25it/s]


[Feature Set: xyd_3] Epoch [16/50] - Avg Loss: 0.5286

Epoch 17/50: 100%|     | 570/570 [00:03<00:00, 173.81it/s]


[Feature Set: xyd_3] Epoch [17/50] - Avg Loss: 0.5196

Epoch 18/50: 100%|     | 570/570 [00:03<00:00, 173.07it/s]


[Feature Set: xyd_3] Epoch [18/50] - Avg Loss: 0.5124

Epoch 19/50: 100%|     | 570/570 [00:03<00:00, 168.42it/s]


[Feature Set: xyd_3] Epoch [19/50] - Avg Loss: 0.4819
```

```
Epoch 20/50: 100%|      | 570/570 [00:03<00:00, 160.55it/s]

[Feature Set: xyd_3] Epoch [20/50] - Avg Loss: 0.4826
Epoch 21/50: 100%|      | 570/570 [00:03<00:00, 171.85it/s]

[Feature Set: xyd_3] Epoch [21/50] - Avg Loss: 0.4644
Epoch 22/50: 100%|      | 570/570 [00:03<00:00, 179.20it/s]

[Feature Set: xyd_3] Epoch [22/50] - Avg Loss: 0.4467
Epoch 23/50: 100%|      | 570/570 [00:03<00:00, 182.37it/s]

[Feature Set: xyd_3] Epoch [23/50] - Avg Loss: 0.4419
Epoch 24/50: 100%|      | 570/570 [00:03<00:00, 180.67it/s]

[Feature Set: xyd_3] Epoch [24/50] - Avg Loss: 0.4274
Epoch 25/50: 100%|      | 570/570 [00:03<00:00, 182.39it/s]

[Feature Set: xyd_3] Epoch [25/50] - Avg Loss: 0.4251
Epoch 26/50: 100%|      | 570/570 [00:03<00:00, 181.83it/s]

[Feature Set: xyd_3] Epoch [26/50] - Avg Loss: 0.4042
Epoch 27/50: 100%|      | 570/570 [00:03<00:00, 182.15it/s]

[Feature Set: xyd_3] Epoch [27/50] - Avg Loss: 0.4133
Epoch 28/50: 100%|      | 570/570 [00:03<00:00, 180.94it/s]

[Feature Set: xyd_3] Epoch [28/50] - Avg Loss: 0.4172
Epoch 29/50: 100%|      | 570/570 [00:03<00:00, 183.67it/s]

[Feature Set: xyd_3] Epoch [29/50] - Avg Loss: 0.3926
Epoch 30/50: 100%|      | 570/570 [00:03<00:00, 181.68it/s]

[Feature Set: xyd_3] Epoch [30/50] - Avg Loss: 0.3787
Epoch 31/50: 100%|      | 570/570 [00:03<00:00, 183.39it/s]

[Feature Set: xyd_3] Epoch [31/50] - Avg Loss: 0.3688
```

```
Epoch 32/50: 100%|        | 570/570 [00:03<00:00, 181.96it/s]


[Feature Set: xyd_3] Epoch [32/50] - Avg Loss: 0.3497

Epoch 33/50: 100%|        | 570/570 [00:03<00:00, 181.30it/s]


[Feature Set: xyd_3] Epoch [33/50] - Avg Loss: 0.3524

Epoch 34/50: 100%|        | 570/570 [00:03<00:00, 179.44it/s]


[Feature Set: xyd_3] Epoch [34/50] - Avg Loss: 0.3665

Epoch 35/50: 100%|        | 570/570 [00:03<00:00, 182.81it/s]


[Feature Set: xyd_3] Epoch [35/50] - Avg Loss: 0.3478

Epoch 36/50: 100%|        | 570/570 [00:03<00:00, 181.27it/s]


[Feature Set: xyd_3] Epoch [36/50] - Avg Loss: 0.3618

Epoch 37/50: 100%|        | 570/570 [00:03<00:00, 182.06it/s]


[Feature Set: xyd_3] Epoch [37/50] - Avg Loss: 0.3349

Epoch 38/50: 100%|        | 570/570 [00:03<00:00, 181.48it/s]


[Feature Set: xyd_3] Epoch [38/50] - Avg Loss: 0.3397

Epoch 39/50: 100%|        | 570/570 [00:03<00:00, 183.60it/s]


[Feature Set: xyd_3] Epoch [39/50] - Avg Loss: 0.3314

Epoch 40/50: 100%|        | 570/570 [00:03<00:00, 179.41it/s]


[Feature Set: xyd_3] Epoch [40/50] - Avg Loss: 0.3589

Epoch 41/50: 100%|        | 570/570 [00:03<00:00, 183.53it/s]


[Feature Set: xyd_3] Epoch [41/50] - Avg Loss: 0.3185

Epoch 42/50: 100%|        | 570/570 [00:03<00:00, 181.80it/s]


[Feature Set: xyd_3] Epoch [42/50] - Avg Loss: 0.3509

Epoch 43/50: 100%|        | 570/570 [00:03<00:00, 182.41it/s]


[Feature Set: xyd_3] Epoch [43/50] - Avg Loss: 0.3236
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Epoch 44/50: 100%| | 570/570 [00:03<00:00, 181.91it/s]

[Feature Set: xyd_3] Epoch [44/50] - Avg Loss: 0.3048

Epoch 45/50: 100%| | 570/570 [00:03<00:00, 173.27it/s]

[Feature Set: xyd_3] Epoch [45/50] - Avg Loss: 0.3135

Epoch 46/50: 100%| | 570/570 [00:03<00:00, 174.72it/s]

[Feature Set: xyd_3] Epoch [46/50] - Avg Loss: 0.3082

Epoch 47/50: 100%| | 570/570 [00:03<00:00, 175.01it/s]

[Feature Set: xyd_3] Epoch [47/50] - Avg Loss: 0.3102

Epoch 48/50: 100%| | 570/570 [00:03<00:00, 178.10it/s]

[Feature Set: xyd_3] Epoch [48/50] - Avg Loss: 0.3144

Epoch 49/50: 100%| | 570/570 [00:03<00:00, 174.34it/s]

[Feature Set: xyd_3] Epoch [49/50] - Avg Loss: 0.2849

Epoch 50/50: 100%| | 570/570 [00:03<00:00, 182.06it/s]

[Feature Set: xyd_3] Epoch [50/50] - Avg Loss: 0.3107

[Eval] xyd_3: 100%| | 143/143 [00:00<00:00, 307.06it/s]

Epoch 1/50: 100%| | 570/570 [00:03<00:00, 177.98it/s]

[Feature Set: xydsdc_7] Epoch [1/50] - Avg Loss: 0.6763

Epoch 2/50: 100%| | 570/570 [00:03<00:00, 180.06it/s]

[Feature Set: xydsdc_7] Epoch [2/50] - Avg Loss: 0.6669

Epoch 3/50: 100%| | 570/570 [00:03<00:00, 182.05it/s]

[Feature Set: xydsdc_7] Epoch [3/50] - Avg Loss: 0.6549

Epoch 4/50: 100%| | 570/570 [00:03<00:00, 180.05it/s]

[Feature Set: xydsdc_7] Epoch [4/50] - Avg Loss: 0.6397

Epoch 5/50: 100%| | 570/570 [00:03<00:00, 181.75it/s]

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[Feature Set: xydsdc_7] Epoch [5/50] - Avg Loss: 0.6066
Epoch 6/50: 100%|        | 570/570 [00:03<00:00, 180.35it/s]

[Feature Set: xydsdc_7] Epoch [6/50] - Avg Loss: 0.5727
Epoch 7/50: 100%|        | 570/570 [00:03<00:00, 169.30it/s]

[Feature Set: xydsdc_7] Epoch [7/50] - Avg Loss: 0.5556
Epoch 8/50: 100%|        | 570/570 [00:03<00:00, 179.11it/s]

[Feature Set: xydsdc_7] Epoch [8/50] - Avg Loss: 0.4973
Epoch 9/50: 100%|        | 570/570 [00:03<00:00, 180.91it/s]

[Feature Set: xydsdc_7] Epoch [9/50] - Avg Loss: 0.4435
Epoch 10/50: 100%|        | 570/570 [00:03<00:00, 177.61it/s]

[Feature Set: xydsdc_7] Epoch [10/50] - Avg Loss: 0.4315
Epoch 11/50: 100%|        | 570/570 [00:03<00:00, 181.67it/s]

[Feature Set: xydsdc_7] Epoch [11/50] - Avg Loss: 0.4365
Epoch 12/50: 100%|        | 570/570 [00:03<00:00, 179.87it/s]

[Feature Set: xydsdc_7] Epoch [12/50] - Avg Loss: 0.4048
Epoch 13/50: 100%|        | 570/570 [00:03<00:00, 181.37it/s]

[Feature Set: xydsdc_7] Epoch [13/50] - Avg Loss: 0.3448
Epoch 14/50: 100%|        | 570/570 [00:03<00:00, 180.60it/s]

[Feature Set: xydsdc_7] Epoch [14/50] - Avg Loss: 0.3336
Epoch 15/50: 100%|        | 570/570 [00:03<00:00, 181.66it/s]

[Feature Set: xydsdc_7] Epoch [15/50] - Avg Loss: 0.3043
Epoch 16/50: 100%|        | 570/570 [00:03<00:00, 181.04it/s]

[Feature Set: xydsdc_7] Epoch [16/50] - Avg Loss: 0.2642
Epoch 17/50: 100%|        | 570/570 [00:03<00:00, 181.41it/s]
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[Feature Set: xydsdc_7] Epoch [17/50] - Avg Loss: 0.2490
Epoch 18/50: 100%|      | 570/570 [00:03<00:00, 179.92it/s]

[Feature Set: xydsdc_7] Epoch [18/50] - Avg Loss: 0.2544
Epoch 19/50: 100%|      | 570/570 [00:03<00:00, 180.69it/s]

[Feature Set: xydsdc_7] Epoch [19/50] - Avg Loss: 0.2157
Epoch 20/50: 100%|      | 570/570 [00:03<00:00, 180.92it/s]

[Feature Set: xydsdc_7] Epoch [20/50] - Avg Loss: 0.2184
Epoch 21/50: 100%|      | 570/570 [00:03<00:00, 181.78it/s]

[Feature Set: xydsdc_7] Epoch [21/50] - Avg Loss: 0.2159
Epoch 22/50: 100%|      | 570/570 [00:03<00:00, 174.60it/s]

[Feature Set: xydsdc_7] Epoch [22/50] - Avg Loss: 0.2095
Epoch 23/50: 100%|      | 570/570 [00:03<00:00, 181.63it/s]

[Feature Set: xydsdc_7] Epoch [23/50] - Avg Loss: 0.1864
Epoch 24/50: 100%|      | 570/570 [00:03<00:00, 180.76it/s]

[Feature Set: xydsdc_7] Epoch [24/50] - Avg Loss: 0.1680
Epoch 25/50: 100%|      | 570/570 [00:03<00:00, 181.47it/s]

[Feature Set: xydsdc_7] Epoch [25/50] - Avg Loss: 0.1789
Epoch 26/50: 100%|      | 570/570 [00:03<00:00, 179.39it/s]

[Feature Set: xydsdc_7] Epoch [26/50] - Avg Loss: 0.1510
Epoch 27/50: 100%|      | 570/570 [00:03<00:00, 181.82it/s]

[Feature Set: xydsdc_7] Epoch [27/50] - Avg Loss: 0.1305
Epoch 28/50: 100%|      | 570/570 [00:03<00:00, 170.52it/s]

[Feature Set: xydsdc_7] Epoch [28/50] - Avg Loss: 0.1818
Epoch 29/50: 100%|      | 570/570 [00:03<00:00, 170.11it/s]
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[Feature Set: xydsdc_7] Epoch [29/50] - Avg Loss: 0.1111

Epoch 30/50: 100%| | 570/570 [00:03<00:00, 181.61it/s]

[Feature Set: xydsdc_7] Epoch [30/50] - Avg Loss: 0.1308

Epoch 31/50: 100%| | 570/570 [00:03<00:00, 180.03it/s]

[Feature Set: xydsdc_7] Epoch [31/50] - Avg Loss: 0.1582

Epoch 32/50: 100%| | 570/570 [00:03<00:00, 181.63it/s]

[Feature Set: xydsdc_7] Epoch [32/50] - Avg Loss: 0.1571

Epoch 33/50: 100%| | 570/570 [00:03<00:00, 178.70it/s]

[Feature Set: xydsdc_7] Epoch [33/50] - Avg Loss: 0.0734

Epoch 34/50: 100%| | 570/570 [00:03<00:00, 180.38it/s]

[Feature Set: xydsdc_7] Epoch [34/50] - Avg Loss: 0.1205

Epoch 35/50: 100%| | 570/570 [00:03<00:00, 180.81it/s]

[Feature Set: xydsdc_7] Epoch [35/50] - Avg Loss: 0.1513

Epoch 36/50: 100%| | 570/570 [00:03<00:00, 182.07it/s]

[Feature Set: xydsdc_7] Epoch [36/50] - Avg Loss: 0.0750

Epoch 37/50: 100%| | 570/570 [00:03<00:00, 181.04it/s]

[Feature Set: xydsdc_7] Epoch [37/50] - Avg Loss: 0.0461

Epoch 38/50: 100%| | 570/570 [00:03<00:00, 181.95it/s]

[Feature Set: xydsdc_7] Epoch [38/50] - Avg Loss: 0.0677

Epoch 39/50: 100%| | 570/570 [00:03<00:00, 180.52it/s]

[Feature Set: xydsdc_7] Epoch [39/50] - Avg Loss: 0.1017

Epoch 40/50: 100%| | 570/570 [00:03<00:00, 181.71it/s]

[Feature Set: xydsdc_7] Epoch [40/50] - Avg Loss: 0.0714

Epoch 41/50: 100%| | 570/570 [00:03<00:00, 179.53it/s]

[Feature Set: xydsdc_7] Epoch [41/50] - Avg Loss: 0.0737

Epoch 42/50: 100%| | 570/570 [00:03<00:00, 182.32it/s]

[Feature Set: xydsdc_7] Epoch [42/50] - Avg Loss: 0.1292

Epoch 43/50: 100%| | 570/570 [00:03<00:00, 180.49it/s]

[Feature Set: xydsdc_7] Epoch [43/50] - Avg Loss: 0.0809

Epoch 44/50: 100%| | 570/570 [00:03<00:00, 181.96it/s]

[Feature Set: xydsdc_7] Epoch [44/50] - Avg Loss: 0.0783

Epoch 45/50: 100%| | 570/570 [00:03<00:00, 180.18it/s]

[Feature Set: xydsdc_7] Epoch [45/50] - Avg Loss: 0.0998

Epoch 46/50: 100%| | 570/570 [00:03<00:00, 181.05it/s]

[Feature Set: xydsdc_7] Epoch [46/50] - Avg Loss: 0.0489

Epoch 47/50: 100%| | 570/570 [00:03<00:00, 179.44it/s]

[Feature Set: xydsdc_7] Epoch [47/50] - Avg Loss: 0.0834

Epoch 48/50: 100%| | 570/570 [00:03<00:00, 179.02it/s]

[Feature Set: xydsdc_7] Epoch [48/50] - Avg Loss: 0.0715

Epoch 49/50: 100%| | 570/570 [00:03<00:00, 181.61it/s]

[Feature Set: xydsdc_7] Epoch [49/50] - Avg Loss: 0.0643

Epoch 50/50: 100%| | 570/570 [00:03<00:00, 179.48it/s]

[Feature Set: xydsdc_7] Epoch [50/50] - Avg Loss: 0.0538
[Eval] xydsdc_7: 100%| | 143/143 [00:00<00:00, 319.09it/s]
Epoch 1/50: 100%| | 570/570 [00:03<00:00, 176.43it/s]

[Feature Set: xysd_4] Epoch [1/50] - Avg Loss: 0.6751

Epoch 2/50: 100%| | 570/570 [00:03<00:00, 172.04it/s]

[Feature Set: xysd_4] Epoch [2/50] - Avg Loss: 0.6671

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Epoch 3/50: 100%|        | 570/570 [00:03<00:00, 172.31it/s]

[Feature Set: xysd_4] Epoch [3/50] - Avg Loss: 0.6573
Epoch 4/50: 100%|        | 570/570 [00:03<00:00, 179.90it/s]

[Feature Set: xysd_4] Epoch [4/50] - Avg Loss: 0.6481
Epoch 5/50: 100%|        | 570/570 [00:03<00:00, 181.81it/s]

[Feature Set: xysd_4] Epoch [5/50] - Avg Loss: 0.6382
Epoch 6/50: 100%|        | 570/570 [00:03<00:00, 183.13it/s]

[Feature Set: xysd_4] Epoch [6/50] - Avg Loss: 0.6155
Epoch 7/50: 100%|        | 570/570 [00:03<00:00, 181.05it/s]

[Feature Set: xysd_4] Epoch [7/50] - Avg Loss: 0.5894
Epoch 8/50: 100%|        | 570/570 [00:03<00:00, 181.63it/s]

[Feature Set: xysd_4] Epoch [8/50] - Avg Loss: 0.5608
Epoch 9/50: 100%|        | 570/570 [00:03<00:00, 180.44it/s]

[Feature Set: xysd_4] Epoch [9/50] - Avg Loss: 0.5330
Epoch 10/50: 100%|        | 570/570 [00:03<00:00, 182.64it/s]

[Feature Set: xysd_4] Epoch [10/50] - Avg Loss: 0.5151
Epoch 11/50: 100%|        | 570/570 [00:03<00:00, 181.54it/s]

[Feature Set: xysd_4] Epoch [11/50] - Avg Loss: 0.4768
Epoch 12/50: 100%|        | 570/570 [00:03<00:00, 182.93it/s]

[Feature Set: xysd_4] Epoch [12/50] - Avg Loss: 0.4514
Epoch 13/50: 100%|        | 570/570 [00:03<00:00, 181.67it/s]

[Feature Set: xysd_4] Epoch [13/50] - Avg Loss: 0.4250
Epoch 14/50: 100%|        | 570/570 [00:03<00:00, 178.04it/s]

[Feature Set: xysd_4] Epoch [14/50] - Avg Loss: 0.3818
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Epoch 15/50: 100%|        | 570/570 [00:03<00:00, 173.90it/s]

[Feature Set: xysd_4] Epoch [15/50] - Avg Loss: 0.3703
Epoch 16/50: 100%|        | 570/570 [00:03<00:00, 180.46it/s]

[Feature Set: xysd_4] Epoch [16/50] - Avg Loss: 0.3211
Epoch 17/50: 100%|        | 570/570 [00:03<00:00, 172.05it/s]

[Feature Set: xysd_4] Epoch [17/50] - Avg Loss: 0.2867
Epoch 18/50: 100%|        | 570/570 [00:03<00:00, 181.34it/s]

[Feature Set: xysd_4] Epoch [18/50] - Avg Loss: 0.3058
Epoch 19/50: 100%|        | 570/570 [00:03<00:00, 179.98it/s]

[Feature Set: xysd_4] Epoch [19/50] - Avg Loss: 0.2645
Epoch 20/50: 100%|        | 570/570 [00:03<00:00, 182.45it/s]

[Feature Set: xysd_4] Epoch [20/50] - Avg Loss: 0.2853
Epoch 21/50: 100%|        | 570/570 [00:03<00:00, 181.24it/s]

[Feature Set: xysd_4] Epoch [21/50] - Avg Loss: 0.2394
Epoch 22/50: 100%|        | 570/570 [00:03<00:00, 182.76it/s]

[Feature Set: xysd_4] Epoch [22/50] - Avg Loss: 0.2392
Epoch 23/50: 100%|        | 570/570 [00:03<00:00, 181.00it/s]

[Feature Set: xysd_4] Epoch [23/50] - Avg Loss: 0.2314
Epoch 24/50: 100%|        | 570/570 [00:03<00:00, 182.65it/s]

[Feature Set: xysd_4] Epoch [24/50] - Avg Loss: 0.2200
Epoch 25/50: 100%|        | 570/570 [00:03<00:00, 181.30it/s]

[Feature Set: xysd_4] Epoch [25/50] - Avg Loss: 0.2140
Epoch 26/50: 100%|        | 570/570 [00:03<00:00, 182.31it/s]

[Feature Set: xysd_4] Epoch [26/50] - Avg Loss: 0.1686
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Epoch 27/50: 100%|        | 570/570 [00:03<00:00, 182.13it/s]

[Feature Set: xysd_4] Epoch [27/50] - Avg Loss: 0.2391
Epoch 28/50: 100%|        | 570/570 [00:03<00:00, 183.69it/s]

[Feature Set: xysd_4] Epoch [28/50] - Avg Loss: 0.1681
Epoch 29/50: 100%|        | 570/570 [00:03<00:00, 180.70it/s]

[Feature Set: xysd_4] Epoch [29/50] - Avg Loss: 0.1593
Epoch 30/50: 100%|        | 570/570 [00:03<00:00, 183.05it/s]

[Feature Set: xysd_4] Epoch [30/50] - Avg Loss: 0.1654
Epoch 31/50: 100%|        | 570/570 [00:03<00:00, 181.44it/s]

[Feature Set: xysd_4] Epoch [31/50] - Avg Loss: 0.1900
Epoch 32/50: 100%|        | 570/570 [00:03<00:00, 182.08it/s]

[Feature Set: xysd_4] Epoch [32/50] - Avg Loss: 0.1827
Epoch 33/50: 100%|        | 570/570 [00:03<00:00, 181.49it/s]

[Feature Set: xysd_4] Epoch [33/50] - Avg Loss: 0.1563
Epoch 34/50: 100%|        | 570/570 [00:03<00:00, 183.65it/s]

[Feature Set: xysd_4] Epoch [34/50] - Avg Loss: 0.1319
Epoch 35/50: 100%|        | 570/570 [00:03<00:00, 182.12it/s]

[Feature Set: xysd_4] Epoch [35/50] - Avg Loss: 0.1124
Epoch 36/50: 100%|        | 570/570 [00:03<00:00, 179.99it/s]

[Feature Set: xysd_4] Epoch [36/50] - Avg Loss: 0.1512
Epoch 37/50: 100%|        | 570/570 [00:03<00:00, 182.26it/s]

[Feature Set: xysd_4] Epoch [37/50] - Avg Loss: 0.1107
Epoch 38/50: 100%|        | 570/570 [00:03<00:00, 183.17it/s]

[Feature Set: xysd_4] Epoch [38/50] - Avg Loss: 0.1096
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Epoch 39/50: 100%|      | 570/570 [00:03<00:00, 181.98it/s]

[Feature Set: xysd_4] Epoch [39/50] - Avg Loss: 0.1040
Epoch 40/50: 100%|      | 570/570 [00:03<00:00, 182.93it/s]

[Feature Set: xysd_4] Epoch [40/50] - Avg Loss: 0.1221
Epoch 41/50: 100%|      | 570/570 [00:03<00:00, 176.66it/s]

[Feature Set: xysd_4] Epoch [41/50] - Avg Loss: 0.0975
Epoch 42/50: 100%|      | 570/570 [00:03<00:00, 182.58it/s]

[Feature Set: xysd_4] Epoch [42/50] - Avg Loss: 0.0866
Epoch 43/50: 100%|      | 570/570 [00:03<00:00, 181.29it/s]

[Feature Set: xysd_4] Epoch [43/50] - Avg Loss: 0.0652
Epoch 44/50: 100%|      | 570/570 [00:03<00:00, 183.13it/s]

[Feature Set: xysd_4] Epoch [44/50] - Avg Loss: 0.0833
Epoch 45/50: 100%|      | 570/570 [00:03<00:00, 181.89it/s]

[Feature Set: xysd_4] Epoch [45/50] - Avg Loss: 0.1252
Epoch 46/50: 100%|      | 570/570 [00:03<00:00, 181.76it/s]

[Feature Set: xysd_4] Epoch [46/50] - Avg Loss: 0.1441
Epoch 47/50: 100%|      | 570/570 [00:03<00:00, 183.19it/s]

[Feature Set: xysd_4] Epoch [47/50] - Avg Loss: 0.0937
Epoch 48/50: 100%|      | 570/570 [00:03<00:00, 182.36it/s]

[Feature Set: xysd_4] Epoch [48/50] - Avg Loss: 0.1184
Epoch 49/50: 100%|      | 570/570 [00:03<00:00, 182.93it/s]

[Feature Set: xysd_4] Epoch [49/50] - Avg Loss: 0.1083
Epoch 50/50: 100%|      | 570/570 [00:03<00:00, 181.44it/s]

[Feature Set: xysd_4] Epoch [50/50] - Avg Loss: 0.0724
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[Eval] xysd_4: 100%|        | 143/143 [00:00<00:00, 316.21it/s]
Epoch 1/50: 100%|        | 570/570 [00:03<00:00, 182.94it/s]


[Feature Set: xyds_4] Epoch [1/50] - Avg Loss: 0.6765

Epoch 2/50: 100%|        | 570/570 [00:03<00:00, 176.07it/s]


[Feature Set: xyds_4] Epoch [2/50] - Avg Loss: 0.6664

Epoch 3/50: 100%|        | 570/570 [00:03<00:00, 179.49it/s]


[Feature Set: xyds_4] Epoch [3/50] - Avg Loss: 0.6621

Epoch 4/50: 100%|        | 570/570 [00:03<00:00, 180.90it/s]


[Feature Set: xyds_4] Epoch [4/50] - Avg Loss: 0.6540

Epoch 5/50: 100%|        | 570/570 [00:03<00:00, 179.99it/s]


[Feature Set: xyds_4] Epoch [5/50] - Avg Loss: 0.6427

Epoch 6/50: 100%|        | 570/570 [00:03<00:00, 181.85it/s]


[Feature Set: xyds_4] Epoch [6/50] - Avg Loss: 0.6249

Epoch 7/50: 100%|        | 570/570 [00:03<00:00, 180.82it/s]


[Feature Set: xyds_4] Epoch [7/50] - Avg Loss: 0.6058

Epoch 8/50: 100%|        | 570/570 [00:03<00:00, 180.89it/s]


[Feature Set: xyds_4] Epoch [8/50] - Avg Loss: 0.5875

Epoch 9/50: 100%|        | 570/570 [00:03<00:00, 181.09it/s]


[Feature Set: xyds_4] Epoch [9/50] - Avg Loss: 0.5625

Epoch 10/50: 100%|        | 570/570 [00:03<00:00, 182.51it/s]


[Feature Set: xyds_4] Epoch [10/50] - Avg Loss: 0.5341

Epoch 11/50: 100%|        | 570/570 [00:03<00:00, 180.50it/s]


[Feature Set: xyds_4] Epoch [11/50] - Avg Loss: 0.5235

Epoch 12/50: 100%|        | 570/570 [00:03<00:00, 182.43it/s]
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[Feature Set: xyds_4] Epoch [12/50] - Avg Loss: 0.4967
Epoch 13/50: 100%|     | 570/570 [00:03<00:00, 180.80it/s]

[Feature Set: xyds_4] Epoch [13/50] - Avg Loss: 0.4779
Epoch 14/50: 100%|     | 570/570 [00:03<00:00, 181.18it/s]

[Feature Set: xyds_4] Epoch [14/50] - Avg Loss: 0.4826
Epoch 15/50: 100%|     | 570/570 [00:03<00:00, 180.57it/s]

[Feature Set: xyds_4] Epoch [15/50] - Avg Loss: 0.4526
Epoch 16/50: 100%|     | 570/570 [00:03<00:00, 182.28it/s]

[Feature Set: xyds_4] Epoch [16/50] - Avg Loss: 0.4560
Epoch 17/50: 100%|     | 570/570 [00:03<00:00, 178.46it/s]

[Feature Set: xyds_4] Epoch [17/50] - Avg Loss: 0.4275
Epoch 18/50: 100%|     | 570/570 [00:03<00:00, 181.18it/s]

[Feature Set: xyds_4] Epoch [18/50] - Avg Loss: 0.4033
Epoch 19/50: 100%|     | 570/570 [00:03<00:00, 180.92it/s]

[Feature Set: xyds_4] Epoch [19/50] - Avg Loss: 0.4068
Epoch 20/50: 100%|     | 570/570 [00:03<00:00, 181.44it/s]

[Feature Set: xyds_4] Epoch [20/50] - Avg Loss: 0.3868
Epoch 21/50: 100%|     | 570/570 [00:03<00:00, 180.00it/s]

[Feature Set: xyds_4] Epoch [21/50] - Avg Loss: 0.3746
Epoch 22/50: 100%|     | 570/570 [00:03<00:00, 182.49it/s]

[Feature Set: xyds_4] Epoch [22/50] - Avg Loss: 0.3742
Epoch 23/50: 100%|     | 570/570 [00:03<00:00, 180.77it/s]

[Feature Set: xyds_4] Epoch [23/50] - Avg Loss: 0.3861
Epoch 24/50: 100%|     | 570/570 [00:03<00:00, 181.99it/s]
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[Feature Set: xyds_4] Epoch [24/50] - Avg Loss: 0.3491
Epoch 25/50: 100%|      | 570/570 [00:03<00:00, 180.51it/s]

[Feature Set: xyds_4] Epoch [25/50] - Avg Loss: 0.3472
Epoch 26/50: 100%|      | 570/570 [00:03<00:00, 181.18it/s]

[Feature Set: xyds_4] Epoch [26/50] - Avg Loss: 0.3445
Epoch 27/50: 100%|      | 570/570 [00:03<00:00, 179.80it/s]

[Feature Set: xyds_4] Epoch [27/50] - Avg Loss: 0.3352
Epoch 28/50: 100%|      | 570/570 [00:03<00:00, 181.67it/s]

[Feature Set: xyds_4] Epoch [28/50] - Avg Loss: 0.3243
Epoch 29/50: 100%|      | 570/570 [00:03<00:00, 179.73it/s]

[Feature Set: xyds_4] Epoch [29/50] - Avg Loss: 0.3558
Epoch 30/50: 100%|      | 570/570 [00:03<00:00, 181.61it/s]

[Feature Set: xyds_4] Epoch [30/50] - Avg Loss: 0.3045
Epoch 31/50: 100%|      | 570/570 [00:03<00:00, 180.69it/s]

[Feature Set: xyds_4] Epoch [31/50] - Avg Loss: 0.3068
Epoch 32/50: 100%|      | 570/570 [00:03<00:00, 181.83it/s]

[Feature Set: xyds_4] Epoch [32/50] - Avg Loss: 0.3261
Epoch 33/50: 100%|      | 570/570 [00:03<00:00, 180.52it/s]

[Feature Set: xyds_4] Epoch [33/50] - Avg Loss: 0.3147
Epoch 34/50: 100%|      | 570/570 [00:03<00:00, 181.13it/s]

[Feature Set: xyds_4] Epoch [34/50] - Avg Loss: 0.3153
Epoch 35/50: 100%|      | 570/570 [00:03<00:00, 180.00it/s]

[Feature Set: xyds_4] Epoch [35/50] - Avg Loss: 0.2968
Epoch 36/50: 100%|      | 570/570 [00:03<00:00, 182.02it/s]
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[Feature Set: xyds_4] Epoch [36/50] - Avg Loss: 0.3077

Epoch 37/50: 100%| | 570/570 [00:03<00:00, 180.17it/s]

[Feature Set: xyds_4] Epoch [37/50] - Avg Loss: 0.2939

Epoch 38/50: 100%| | 570/570 [00:03<00:00, 181.63it/s]

[Feature Set: xyds_4] Epoch [38/50] - Avg Loss: 0.2817

Epoch 39/50: 100%| | 570/570 [00:03<00:00, 181.01it/s]

[Feature Set: xyds_4] Epoch [39/50] - Avg Loss: 0.2805

Epoch 40/50: 100%| | 570/570 [00:03<00:00, 180.94it/s]

[Feature Set: xyds_4] Epoch [40/50] - Avg Loss: 0.2642

Epoch 41/50: 100%| | 570/570 [00:03<00:00, 180.11it/s]

[Feature Set: xyds_4] Epoch [41/50] - Avg Loss: 0.2804

Epoch 42/50: 100%| | 570/570 [00:03<00:00, 181.82it/s]

[Feature Set: xyds_4] Epoch [42/50] - Avg Loss: 0.2782

Epoch 43/50: 100%| | 570/570 [00:03<00:00, 180.60it/s]

[Feature Set: xyds_4] Epoch [43/50] - Avg Loss: 0.2801

Epoch 44/50: 100%| | 570/570 [00:03<00:00, 182.31it/s]

[Feature Set: xyds_4] Epoch [44/50] - Avg Loss: 0.2398

Epoch 45/50: 100%| | 570/570 [00:03<00:00, 180.56it/s]

[Feature Set: xyds_4] Epoch [45/50] - Avg Loss: 0.2724

Epoch 46/50: 100%| | 570/570 [00:03<00:00, 181.96it/s]

[Feature Set: xyds_4] Epoch [46/50] - Avg Loss: 0.2649

Epoch 47/50: 100%| | 570/570 [00:03<00:00, 180.46it/s]

[Feature Set: xyds_4] Epoch [47/50] - Avg Loss: 0.2345

Epoch 48/50: 100%| | 570/570 [00:03<00:00, 181.56it/s]

[Feature Set: xyds_4] Epoch [48/50] - Avg Loss: 0.2590

Epoch 49/50: 100%| | 570/570 [00:03<00:00, 181.35it/s]

[Feature Set: xyds_4] Epoch [49/50] - Avg Loss: 0.2666

Epoch 50/50: 100%| | 570/570 [00:03<00:00, 178.51it/s]

[Feature Set: xyds_4] Epoch [50/50] - Avg Loss: 0.2221

[Eval] xyds_4: 100%| | 143/143 [00:00<00:00, 315.65it/s]

Epoch 1/50: 100%| | 570/570 [00:03<00:00, 183.22it/s]

[Feature Set: xydd_4] Epoch [1/50] - Avg Loss: 0.6763

Epoch 2/50: 100%| | 570/570 [00:03<00:00, 183.28it/s]

[Feature Set: xydd_4] Epoch [2/50] - Avg Loss: 0.6678

Epoch 3/50: 100%| | 570/570 [00:03<00:00, 183.00it/s]

[Feature Set: xydd_4] Epoch [3/50] - Avg Loss: 0.6612

Epoch 4/50: 100%| | 570/570 [00:03<00:00, 181.62it/s]

[Feature Set: xydd_4] Epoch [4/50] - Avg Loss: 0.6531

Epoch 5/50: 100%| | 570/570 [00:03<00:00, 182.52it/s]

[Feature Set: xydd_4] Epoch [5/50] - Avg Loss: 0.6399

Epoch 6/50: 100%| | 570/570 [00:03<00:00, 183.44it/s]

[Feature Set: xydd_4] Epoch [6/50] - Avg Loss: 0.6321

Epoch 7/50: 100%| | 570/570 [00:03<00:00, 183.59it/s]

[Feature Set: xydd_4] Epoch [7/50] - Avg Loss: 0.6220

Epoch 8/50: 100%| | 570/570 [00:03<00:00, 179.50it/s]

[Feature Set: xydd_4] Epoch [8/50] - Avg Loss: 0.5971

Epoch 9/50: 100%| | 570/570 [00:03<00:00, 183.20it/s]

[Feature Set: xydd_4] Epoch [9/50] - Avg Loss: 0.5748

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Epoch 10/50: 100%|        | 570/570 [00:03<00:00, 183.38it/s]

[Feature Set: xydd_4] Epoch [10/50] - Avg Loss: 0.5686
Epoch 11/50: 100%|        | 570/570 [00:03<00:00, 183.42it/s]

[Feature Set: xydd_4] Epoch [11/50] - Avg Loss: 0.5547
Epoch 12/50: 100%|        | 570/570 [00:03<00:00, 182.38it/s]

[Feature Set: xydd_4] Epoch [12/50] - Avg Loss: 0.5214
Epoch 13/50: 100%|        | 570/570 [00:03<00:00, 182.98it/s]

[Feature Set: xydd_4] Epoch [13/50] - Avg Loss: 0.5039
Epoch 14/50: 100%|        | 570/570 [00:03<00:00, 183.08it/s]

[Feature Set: xydd_4] Epoch [14/50] - Avg Loss: 0.4788
Epoch 15/50: 100%|        | 570/570 [00:03<00:00, 183.73it/s]

[Feature Set: xydd_4] Epoch [15/50] - Avg Loss: 0.4457
Epoch 16/50: 100%|        | 570/570 [00:03<00:00, 182.05it/s]

[Feature Set: xydd_4] Epoch [16/50] - Avg Loss: 0.4269
Epoch 17/50: 100%|        | 570/570 [00:03<00:00, 183.67it/s]

[Feature Set: xydd_4] Epoch [17/50] - Avg Loss: 0.4202
Epoch 18/50: 100%|        | 570/570 [00:03<00:00, 182.88it/s]

[Feature Set: xydd_4] Epoch [18/50] - Avg Loss: 0.3819
Epoch 19/50: 100%|        | 570/570 [00:03<00:00, 181.99it/s]

[Feature Set: xydd_4] Epoch [19/50] - Avg Loss: 0.4117
Epoch 20/50: 100%|        | 570/570 [00:03<00:00, 183.67it/s]

[Feature Set: xydd_4] Epoch [20/50] - Avg Loss: 0.3714
Epoch 21/50: 100%|        | 570/570 [00:03<00:00, 183.31it/s]

[Feature Set: xydd_4] Epoch [21/50] - Avg Loss: 0.3560
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Epoch 22/50: 100%|        | 570/570 [00:03<00:00, 183.26it/s]

[Feature Set: xydd_4] Epoch [22/50] - Avg Loss: 0.3466

Epoch 23/50: 100%|        | 570/570 [00:03<00:00, 182.35it/s]

[Feature Set: xydd_4] Epoch [23/50] - Avg Loss: 0.3447

Epoch 24/50: 100%|        | 570/570 [00:03<00:00, 183.30it/s]

[Feature Set: xydd_4] Epoch [24/50] - Avg Loss: 0.3216

Epoch 25/50: 100%|        | 570/570 [00:03<00:00, 183.68it/s]

[Feature Set: xydd_4] Epoch [25/50] - Avg Loss: 0.3248

Epoch 26/50: 100%|        | 570/570 [00:03<00:00, 183.90it/s]

[Feature Set: xydd_4] Epoch [26/50] - Avg Loss: 0.3201

Epoch 27/50: 100%|        | 570/570 [00:03<00:00, 181.70it/s]

[Feature Set: xydd_4] Epoch [27/50] - Avg Loss: 0.2807

Epoch 28/50: 100%|        | 570/570 [00:03<00:00, 183.19it/s]

[Feature Set: xydd_4] Epoch [28/50] - Avg Loss: 0.2709

Epoch 29/50: 100%|        | 570/570 [00:03<00:00, 183.46it/s]

[Feature Set: xydd_4] Epoch [29/50] - Avg Loss: 0.2702

Epoch 30/50: 100%|        | 570/570 [00:03<00:00, 181.90it/s]

[Feature Set: xydd_4] Epoch [30/50] - Avg Loss: 0.2673

Epoch 31/50: 100%|        | 570/570 [00:03<00:00, 181.58it/s]

[Feature Set: xydd_4] Epoch [31/50] - Avg Loss: 0.2545

Epoch 32/50: 100%|        | 570/570 [00:03<00:00, 179.34it/s]

[Feature Set: xydd_4] Epoch [32/50] - Avg Loss: 0.2695

Epoch 33/50: 100%|        | 570/570 [00:03<00:00, 183.09it/s]

[Feature Set: xydd_4] Epoch [33/50] - Avg Loss: 0.2298
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Epoch 34/50: 100%|        | 570/570 [00:03<00:00, 176.66it/s]


[Feature Set: xydd_4] Epoch [34/50] - Avg Loss: 0.2231

Epoch 35/50: 100%|        | 570/570 [00:03<00:00, 182.25it/s]


[Feature Set: xydd_4] Epoch [35/50] - Avg Loss: 0.2257

Epoch 36/50: 100%|        | 570/570 [00:03<00:00, 182.13it/s]


[Feature Set: xydd_4] Epoch [36/50] - Avg Loss: 0.1971

Epoch 37/50: 100%|        | 570/570 [00:03<00:00, 183.80it/s]


[Feature Set: xydd_4] Epoch [37/50] - Avg Loss: 0.2068

Epoch 38/50: 100%|        | 570/570 [00:03<00:00, 181.15it/s]


[Feature Set: xydd_4] Epoch [38/50] - Avg Loss: 0.2318

Epoch 39/50: 100%|        | 570/570 [00:03<00:00, 183.23it/s]


[Feature Set: xydd_4] Epoch [39/50] - Avg Loss: 0.1850

Epoch 40/50: 100%|        | 570/570 [00:03<00:00, 182.86it/s]


[Feature Set: xydd_4] Epoch [40/50] - Avg Loss: 0.2241

Epoch 41/50: 100%|        | 570/570 [00:03<00:00, 181.79it/s]


[Feature Set: xydd_4] Epoch [41/50] - Avg Loss: 0.2068

Epoch 42/50: 100%|        | 570/570 [00:03<00:00, 183.24it/s]


[Feature Set: xydd_4] Epoch [42/50] - Avg Loss: 0.1821

Epoch 43/50: 100%|        | 570/570 [00:03<00:00, 183.49it/s]


[Feature Set: xydd_4] Epoch [43/50] - Avg Loss: 0.1852

Epoch 44/50: 100%|        | 570/570 [00:03<00:00, 184.02it/s]


[Feature Set: xydd_4] Epoch [44/50] - Avg Loss: 0.1864

Epoch 45/50: 100%|        | 570/570 [00:03<00:00, 181.84it/s]


[Feature Set: xydd_4] Epoch [45/50] - Avg Loss: 0.1612
```

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Epoch 46/50: 100%|        | 570/570 [00:03<00:00, 183.55it/s]


[Feature Set: xydd_4] Epoch [46/50] - Avg Loss: 0.1645

Epoch 47/50: 100%|        | 570/570 [00:03<00:00, 183.84it/s]


[Feature Set: xydd_4] Epoch [47/50] - Avg Loss: 0.1406

Epoch 48/50: 100%|        | 570/570 [00:03<00:00, 183.43it/s]


[Feature Set: xydd_4] Epoch [48/50] - Avg Loss: 0.1663

Epoch 49/50: 100%|        | 570/570 [00:03<00:00, 181.96it/s]


[Feature Set: xydd_4] Epoch [49/50] - Avg Loss: 0.2051

Epoch 50/50: 100%|        | 570/570 [00:03<00:00, 183.79it/s]


[Feature Set: xydd_4] Epoch [50/50] - Avg Loss: 0.1453

[Eval] xydd_4: 100%|        | 143/143 [00:00<00:00, 327.37it/s]

Epoch 1/50: 100%|        | 570/570 [00:03<00:00, 183.68it/s]


[Feature Set: xydsc_5] Epoch [1/50] - Avg Loss: 0.6747

Epoch 2/50: 100%|        | 570/570 [00:03<00:00, 181.97it/s]


[Feature Set: xydsc_5] Epoch [2/50] - Avg Loss: 0.6671

Epoch 3/50: 100%|        | 570/570 [00:03<00:00, 182.76it/s]


[Feature Set: xydsc_5] Epoch [3/50] - Avg Loss: 0.6614

Epoch 4/50: 100%|        | 570/570 [00:03<00:00, 182.82it/s]


[Feature Set: xydsc_5] Epoch [4/50] - Avg Loss: 0.6538

Epoch 5/50: 100%|        | 570/570 [00:03<00:00, 182.65it/s]


[Feature Set: xydsc_5] Epoch [5/50] - Avg Loss: 0.6389

Epoch 6/50: 100%|        | 570/570 [00:03<00:00, 181.33it/s]


[Feature Set: xydsc_5] Epoch [6/50] - Avg Loss: 0.6122

Epoch 7/50: 100%|        | 570/570 [00:03<00:00, 183.39it/s]
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[Feature Set: xydsc_5] Epoch [7/50] - Avg Loss: 0.5938
Epoch 8/50: 100%| | 570/570 [00:03<00:00, 182.91it/s]

[Feature Set: xydsc_5] Epoch [8/50] - Avg Loss: 0.5737
Epoch 9/50: 100%| | 570/570 [00:03<00:00, 182.67it/s]

[Feature Set: xydsc_5] Epoch [9/50] - Avg Loss: 0.5491
Epoch 10/50: 100%| | 570/570 [00:03<00:00, 182.44it/s]

[Feature Set: xydsc_5] Epoch [10/50] - Avg Loss: 0.5254
Epoch 11/50: 100%| | 570/570 [00:03<00:00, 182.26it/s]

[Feature Set: xydsc_5] Epoch [11/50] - Avg Loss: 0.5020
Epoch 12/50: 100%| | 570/570 [00:03<00:00, 183.39it/s]

[Feature Set: xydsc_5] Epoch [12/50] - Avg Loss: 0.4801
Epoch 13/50: 100%| | 570/570 [00:03<00:00, 181.56it/s]

[Feature Set: xydsc_5] Epoch [13/50] - Avg Loss: 0.4537
Epoch 14/50: 100%| | 570/570 [00:03<00:00, 180.69it/s]

[Feature Set: xydsc_5] Epoch [14/50] - Avg Loss: 0.4321
Epoch 15/50: 100%| | 570/570 [00:03<00:00, 182.37it/s]

[Feature Set: xydsc_5] Epoch [15/50] - Avg Loss: 0.4183
Epoch 16/50: 100%| | 570/570 [00:03<00:00, 182.60it/s]

[Feature Set: xydsc_5] Epoch [16/50] - Avg Loss: 0.3805
Epoch 17/50: 100%| | 570/570 [00:03<00:00, 181.09it/s]

[Feature Set: xydsc_5] Epoch [17/50] - Avg Loss: 0.3894
Epoch 18/50: 100%| | 570/570 [00:03<00:00, 183.69it/s]

[Feature Set: xydsc_5] Epoch [18/50] - Avg Loss: 0.3765
Epoch 19/50: 100%| | 570/570 [00:03<00:00, 183.34it/s]

[Feature Set: xydsc_5] Epoch [19/50] - Avg Loss: 0.3763

Epoch 20/50: 100%| | 570/570 [00:03<00:00, 183.74it/s]

[Feature Set: xydsc_5] Epoch [20/50] - Avg Loss: 0.3299

Epoch 21/50: 100%| | 570/570 [00:03<00:00, 181.53it/s]

[Feature Set: xydsc_5] Epoch [21/50] - Avg Loss: 0.3312

Epoch 22/50: 100%| | 570/570 [00:03<00:00, 183.58it/s]

[Feature Set: xydsc_5] Epoch [22/50] - Avg Loss: 0.3462

Epoch 23/50: 100%| | 570/570 [00:03<00:00, 182.74it/s]

[Feature Set: xydsc_5] Epoch [23/50] - Avg Loss: 0.3070

Epoch 24/50: 100%| | 570/570 [00:03<00:00, 180.63it/s]

[Feature Set: xydsc_5] Epoch [24/50] - Avg Loss: 0.2915

Epoch 25/50: 100%| | 570/570 [00:03<00:00, 181.49it/s]

[Feature Set: xydsc_5] Epoch [25/50] - Avg Loss: 0.2952

Epoch 26/50: 100%| | 570/570 [00:03<00:00, 182.92it/s]

[Feature Set: xydsc_5] Epoch [26/50] - Avg Loss: 0.2919

Epoch 27/50: 100%| | 570/570 [00:03<00:00, 183.08it/s]

[Feature Set: xydsc_5] Epoch [27/50] - Avg Loss: 0.2822

Epoch 28/50: 100%| | 570/570 [00:03<00:00, 183.10it/s]

[Feature Set: xydsc_5] Epoch [28/50] - Avg Loss: 0.2910

Epoch 29/50: 100%| | 570/570 [00:03<00:00, 181.83it/s]

[Feature Set: xydsc_5] Epoch [29/50] - Avg Loss: 0.2534

Epoch 30/50: 100%| | 570/570 [00:03<00:00, 182.62it/s]

[Feature Set: xydsc_5] Epoch [30/50] - Avg Loss: 0.2173

Epoch 31/50: 100%| | 570/570 [00:03<00:00, 183.14it/s]

[Feature Set: xydsc_5] Epoch [31/50] - Avg Loss: 0.2422
Epoch 32/50: 100%| | 570/570 [00:03<00:00, 182.74it/s]

[Feature Set: xydsc_5] Epoch [32/50] - Avg Loss: 0.2774
Epoch 33/50: 100%| | 570/570 [00:03<00:00, 181.91it/s]

[Feature Set: xydsc_5] Epoch [33/50] - Avg Loss: 0.2677
Epoch 34/50: 100%| | 570/570 [00:03<00:00, 182.86it/s]

[Feature Set: xydsc_5] Epoch [34/50] - Avg Loss: 0.1970
Epoch 35/50: 100%| | 570/570 [00:03<00:00, 182.91it/s]

[Feature Set: xydsc_5] Epoch [35/50] - Avg Loss: 0.2143
Epoch 36/50: 100%| | 570/570 [00:03<00:00, 181.74it/s]

[Feature Set: xydsc_5] Epoch [36/50] - Avg Loss: 0.2234
Epoch 37/50: 100%| | 570/570 [00:03<00:00, 182.47it/s]

[Feature Set: xydsc_5] Epoch [37/50] - Avg Loss: 0.2048
Epoch 38/50: 100%| | 570/570 [00:03<00:00, 182.66it/s]

[Feature Set: xydsc_5] Epoch [38/50] - Avg Loss: 0.1878
Epoch 39/50: 100%| | 570/570 [00:03<00:00, 182.53it/s]

[Feature Set: xydsc_5] Epoch [39/50] - Avg Loss: 0.2081
Epoch 40/50: 100%| | 570/570 [00:03<00:00, 180.83it/s]

[Feature Set: xydsc_5] Epoch [40/50] - Avg Loss: 0.1525
Epoch 41/50: 100%| | 570/570 [00:03<00:00, 183.21it/s]

[Feature Set: xydsc_5] Epoch [41/50] - Avg Loss: 0.1374
Epoch 42/50: 100%| | 570/570 [00:03<00:00, 183.17it/s]

[Feature Set: xydsc_5] Epoch [42/50] - Avg Loss: 0.1420
Epoch 43/50: 100%| | 570/570 [00:03<00:00, 182.99it/s]

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[Feature Set: xydsc_5] Epoch [43/50] - Avg Loss: 0.1844
Epoch 44/50: 100%|      | 570/570 [00:03<00:00, 181.46it/s]

[Feature Set: xydsc_5] Epoch [44/50] - Avg Loss: 0.1835
Epoch 45/50: 100%|      | 570/570 [00:03<00:00, 183.40it/s]

[Feature Set: xydsc_5] Epoch [45/50] - Avg Loss: 0.1455
Epoch 46/50: 100%|      | 570/570 [00:03<00:00, 181.41it/s]

[Feature Set: xydsc_5] Epoch [46/50] - Avg Loss: 0.1630
Epoch 47/50: 100%|      | 570/570 [00:03<00:00, 175.72it/s]

[Feature Set: xydsc_5] Epoch [47/50] - Avg Loss: 0.1464
Epoch 48/50: 100%|      | 570/570 [00:03<00:00, 171.84it/s]

[Feature Set: xydsc_5] Epoch [48/50] - Avg Loss: 0.1539
Epoch 49/50: 100%|      | 570/570 [00:03<00:00, 177.93it/s]

[Feature Set: xydsc_5] Epoch [49/50] - Avg Loss: 0.1087
Epoch 50/50: 100%|      | 570/570 [00:03<00:00, 178.47it/s]

[Feature Set: xydsc_5] Epoch [50/50] - Avg Loss: 0.1015
[Eval] xydsc_5: 100%|      | 143/143 [00:00<00:00, 315.43it/s]
Epoch 1/50: 100%|      | 570/570 [00:03<00:00, 180.62it/s]

[Feature Set: xyddc_5] Epoch [1/50] - Avg Loss: 0.6753
Epoch 2/50: 100%|      | 570/570 [00:03<00:00, 181.14it/s]

[Feature Set: xyddc_5] Epoch [2/50] - Avg Loss: 0.6649
Epoch 3/50: 100%|      | 570/570 [00:03<00:00, 173.60it/s]

[Feature Set: xyddc_5] Epoch [3/50] - Avg Loss: 0.6590
Epoch 4/50: 100%|      | 570/570 [00:03<00:00, 171.31it/s]

[Feature Set: xyddc_5] Epoch [4/50] - Avg Loss: 0.6443
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Epoch 5/50: 100%|      | 570/570 [00:03<00:00, 171.70it/s]


[Feature Set: xyddc_5] Epoch [5/50] - Avg Loss: 0.6276

Epoch 6/50: 100%|      | 570/570 [00:03<00:00, 182.22it/s]


[Feature Set: xyddc_5] Epoch [6/50] - Avg Loss: 0.6063

Epoch 7/50: 100%|      | 570/570 [00:03<00:00, 183.71it/s]


[Feature Set: xyddc_5] Epoch [7/50] - Avg Loss: 0.5853

Epoch 8/50: 100%|      | 570/570 [00:03<00:00, 181.83it/s]


[Feature Set: xyddc_5] Epoch [8/50] - Avg Loss: 0.5508

Epoch 9/50: 100%|      | 570/570 [00:03<00:00, 183.00it/s]


[Feature Set: xyddc_5] Epoch [9/50] - Avg Loss: 0.5264

Epoch 10/50: 100%|      | 570/570 [00:03<00:00, 181.85it/s]


[Feature Set: xyddc_5] Epoch [10/50] - Avg Loss: 0.4949

Epoch 11/50: 100%|      | 570/570 [00:03<00:00, 183.02it/s]


[Feature Set: xyddc_5] Epoch [11/50] - Avg Loss: 0.4749

Epoch 12/50: 100%|      | 570/570 [00:03<00:00, 181.51it/s]


[Feature Set: xyddc_5] Epoch [12/50] - Avg Loss: 0.4563

Epoch 13/50: 100%|      | 570/570 [00:03<00:00, 182.35it/s]


[Feature Set: xyddc_5] Epoch [13/50] - Avg Loss: 0.4131

Epoch 14/50: 100%|      | 570/570 [00:03<00:00, 183.45it/s]


[Feature Set: xyddc_5] Epoch [14/50] - Avg Loss: 0.3998

Epoch 15/50: 100%|      | 570/570 [00:03<00:00, 184.14it/s]


[Feature Set: xyddc_5] Epoch [15/50] - Avg Loss: 0.3588

Epoch 16/50: 100%|      | 570/570 [00:03<00:00, 182.21it/s]


[Feature Set: xyddc_5] Epoch [16/50] - Avg Loss: 0.3575
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Epoch 17/50: 100%|          | 570/570 [00:03<00:00, 183.58it/s]

[Feature Set: xyddc_5] Epoch [17/50] - Avg Loss: 0.3316

Epoch 18/50: 100%|          | 570/570 [00:03<00:00, 182.70it/s]

[Feature Set: xyddc_5] Epoch [18/50] - Avg Loss: 0.3171

Epoch 19/50: 100%|          | 570/570 [00:03<00:00, 180.30it/s]

[Feature Set: xyddc_5] Epoch [19/50] - Avg Loss: 0.3130

Epoch 20/50: 100%|          | 570/570 [00:03<00:00, 180.25it/s]

[Feature Set: xyddc_5] Epoch [20/50] - Avg Loss: 0.2899

Epoch 21/50: 100%|          | 570/570 [00:03<00:00, 183.30it/s]

[Feature Set: xyddc_5] Epoch [21/50] - Avg Loss: 0.2953

Epoch 22/50: 100%|          | 570/570 [00:03<00:00, 182.83it/s]

[Feature Set: xyddc_5] Epoch [22/50] - Avg Loss: 0.2774

Epoch 23/50: 100%|          | 570/570 [00:03<00:00, 181.52it/s]

[Feature Set: xyddc_5] Epoch [23/50] - Avg Loss: 0.2321

Epoch 24/50: 100%|          | 570/570 [00:03<00:00, 183.33it/s]

[Feature Set: xyddc_5] Epoch [24/50] - Avg Loss: 0.2225

Epoch 25/50: 100%|          | 570/570 [00:03<00:00, 183.16it/s]

[Feature Set: xyddc_5] Epoch [25/50] - Avg Loss: 0.2244

Epoch 26/50: 100%|          | 570/570 [00:03<00:00, 183.25it/s]

[Feature Set: xyddc_5] Epoch [26/50] - Avg Loss: 0.2270

Epoch 27/50: 100%|          | 570/570 [00:03<00:00, 182.48it/s]

[Feature Set: xyddc_5] Epoch [27/50] - Avg Loss: 0.1938

Epoch 28/50: 100%|          | 570/570 [00:03<00:00, 182.24it/s]

[Feature Set: xyddc_5] Epoch [28/50] - Avg Loss: 0.1975
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Epoch 29/50: 100%|        | 570/570 [00:03<00:00, 182.98it/s]

[Feature Set: xyddc_5] Epoch [29/50] - Avg Loss: 0.1636
Epoch 30/50: 100%|        | 570/570 [00:03<00:00, 183.00it/s]

[Feature Set: xyddc_5] Epoch [30/50] - Avg Loss: 0.1947
Epoch 31/50: 100%|        | 570/570 [00:03<00:00, 182.07it/s]

[Feature Set: xyddc_5] Epoch [31/50] - Avg Loss: 0.2354
Epoch 32/50: 100%|        | 570/570 [00:03<00:00, 182.96it/s]

[Feature Set: xyddc_5] Epoch [32/50] - Avg Loss: 0.1628
Epoch 33/50: 100%|        | 570/570 [00:03<00:00, 183.30it/s]

[Feature Set: xyddc_5] Epoch [33/50] - Avg Loss: 0.1366
Epoch 34/50: 100%|        | 570/570 [00:03<00:00, 183.91it/s]

[Feature Set: xyddc_5] Epoch [34/50] - Avg Loss: 0.1336
Epoch 35/50: 100%|        | 570/570 [00:03<00:00, 182.25it/s]

[Feature Set: xyddc_5] Epoch [35/50] - Avg Loss: 0.1868
Epoch 36/50: 100%|        | 570/570 [00:03<00:00, 183.94it/s]

[Feature Set: xyddc_5] Epoch [36/50] - Avg Loss: 0.1570
Epoch 37/50: 100%|        | 570/570 [00:03<00:00, 183.65it/s]

[Feature Set: xyddc_5] Epoch [37/50] - Avg Loss: 0.1889
Epoch 38/50: 100%|        | 570/570 [00:03<00:00, 182.40it/s]

[Feature Set: xyddc_5] Epoch [38/50] - Avg Loss: 0.1260
Epoch 39/50: 100%|        | 570/570 [00:03<00:00, 174.42it/s]

[Feature Set: xyddc_5] Epoch [39/50] - Avg Loss: 0.1189
Epoch 40/50: 100%|        | 570/570 [00:03<00:00, 174.32it/s]

[Feature Set: xyddc_5] Epoch [40/50] - Avg Loss: 0.1005
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Epoch 41/50: 100%|        | 570/570 [00:03<00:00, 175.47it/s]


[Feature Set: xyddc_5] Epoch [41/50] - Avg Loss: 0.1554

Epoch 42/50: 100%|        | 570/570 [00:03<00:00, 182.02it/s]


[Feature Set: xyddc_5] Epoch [42/50] - Avg Loss: 0.1321

Epoch 43/50: 100%|        | 570/570 [00:03<00:00, 182.99it/s]


[Feature Set: xyddc_5] Epoch [43/50] - Avg Loss: 0.0962

Epoch 44/50: 100%|        | 570/570 [00:03<00:00, 183.56it/s]


[Feature Set: xyddc_5] Epoch [44/50] - Avg Loss: 0.1452

Epoch 45/50: 100%|        | 570/570 [00:03<00:00, 181.77it/s]


[Feature Set: xyddc_5] Epoch [45/50] - Avg Loss: 0.1175

Epoch 46/50: 100%|        | 570/570 [00:03<00:00, 183.23it/s]


[Feature Set: xyddc_5] Epoch [46/50] - Avg Loss: 0.0758

Epoch 47/50: 100%|        | 570/570 [00:03<00:00, 183.42it/s]


[Feature Set: xyddc_5] Epoch [47/50] - Avg Loss: 0.1035

Epoch 48/50: 100%|        | 570/570 [00:03<00:00, 183.24it/s]


[Feature Set: xyddc_5] Epoch [48/50] - Avg Loss: 0.1025

Epoch 49/50: 100%|        | 570/570 [00:03<00:00, 182.00it/s]


[Feature Set: xyddc_5] Epoch [49/50] - Avg Loss: 0.0956

Epoch 50/50: 100%|        | 570/570 [00:03<00:00, 183.63it/s]


[Feature Set: xyddc_5] Epoch [50/50] - Avg Loss: 0.0556
[Eval] xyddc_5: 100%|      | 143/143 [00:00<00:00, 321.70it/s]
Epoch 1/50: 100%|       | 570/570 [00:03<00:00, 183.57it/s]


[Feature Set: xys_3] Epoch [1/50] - Avg Loss: 0.6741

Epoch 2/50: 100%|        | 570/570 [00:03<00:00, 181.48it/s]
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[Feature Set: xys_3] Epoch [2/50] - Avg Loss: 0.6641

Epoch 3/50: 100%| | 570/570 [00:03<00:00, 183.86it/s]

[Feature Set: xys_3] Epoch [3/50] - Avg Loss: 0.6603

Epoch 4/50: 100%| | 570/570 [00:03<00:00, 183.88it/s]

[Feature Set: xys_3] Epoch [4/50] - Avg Loss: 0.6554

Epoch 5/50: 100%| | 570/570 [00:03<00:00, 182.60it/s]

[Feature Set: xys_3] Epoch [5/50] - Avg Loss: 0.6415

Epoch 6/50: 100%| | 570/570 [00:03<00:00, 182.25it/s]

[Feature Set: xys_3] Epoch [6/50] - Avg Loss: 0.6241

Epoch 7/50: 100%| | 570/570 [00:03<00:00, 183.55it/s]

[Feature Set: xys_3] Epoch [7/50] - Avg Loss: 0.5972

Epoch 8/50: 100%| | 570/570 [00:03<00:00, 178.86it/s]

[Feature Set: xys_3] Epoch [8/50] - Avg Loss: 0.5722

Epoch 9/50: 100%| | 570/570 [00:03<00:00, 183.25it/s]

[Feature Set: xys_3] Epoch [9/50] - Avg Loss: 0.5527

Epoch 10/50: 100%| | 570/570 [00:03<00:00, 177.98it/s]

[Feature Set: xys_3] Epoch [10/50] - Avg Loss: 0.5356

Epoch 11/50: 100%| | 570/570 [00:03<00:00, 183.07it/s]

[Feature Set: xys_3] Epoch [11/50] - Avg Loss: 0.5197

Epoch 12/50: 100%| | 570/570 [00:03<00:00, 183.66it/s]

[Feature Set: xys_3] Epoch [12/50] - Avg Loss: 0.4931

Epoch 13/50: 100%| | 570/570 [00:03<00:00, 182.21it/s]

[Feature Set: xys_3] Epoch [13/50] - Avg Loss: 0.4860

Epoch 14/50: 100%| | 570/570 [00:03<00:00, 182.52it/s]

[Feature Set: xys_3] Epoch [14/50] - Avg Loss: 0.4516

Epoch 15/50: 100%| | 570/570 [00:03<00:00, 182.35it/s]

[Feature Set: xys_3] Epoch [15/50] - Avg Loss: 0.4271

Epoch 16/50: 100%| | 570/570 [00:03<00:00, 183.13it/s]

[Feature Set: xys_3] Epoch [16/50] - Avg Loss: 0.4129

Epoch 17/50: 100%| | 570/570 [00:03<00:00, 182.31it/s]

[Feature Set: xys_3] Epoch [17/50] - Avg Loss: 0.4046

Epoch 18/50: 100%| | 570/570 [00:03<00:00, 182.22it/s]

[Feature Set: xys_3] Epoch [18/50] - Avg Loss: 0.3863

Epoch 19/50: 100%| | 570/570 [00:03<00:00, 183.84it/s]

[Feature Set: xys_3] Epoch [19/50] - Avg Loss: 0.3567

Epoch 20/50: 100%| | 570/570 [00:03<00:00, 184.13it/s]

[Feature Set: xys_3] Epoch [20/50] - Avg Loss: 0.3879

Epoch 21/50: 100%| | 570/570 [00:03<00:00, 182.50it/s]

[Feature Set: xys_3] Epoch [21/50] - Avg Loss: 0.3617

Epoch 22/50: 100%| | 570/570 [00:03<00:00, 183.85it/s]

[Feature Set: xys_3] Epoch [22/50] - Avg Loss: 0.3400

Epoch 23/50: 100%| | 570/570 [00:03<00:00, 183.47it/s]

[Feature Set: xys_3] Epoch [23/50] - Avg Loss: 0.3261

Epoch 24/50: 100%| | 570/570 [00:03<00:00, 183.15it/s]

[Feature Set: xys_3] Epoch [24/50] - Avg Loss: 0.3169

Epoch 25/50: 100%| | 570/570 [00:03<00:00, 182.38it/s]

[Feature Set: xys_3] Epoch [25/50] - Avg Loss: 0.3225

Epoch 26/50: 100%| | 570/570 [00:03<00:00, 183.80it/s]

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[Feature Set: xys_3] Epoch [26/50] - Avg Loss: 0.3081
Epoch 27/50: 100%|        | 570/570 [00:03<00:00, 183.19it/s]

[Feature Set: xys_3] Epoch [27/50] - Avg Loss: 0.3200
Epoch 28/50: 100%|        | 570/570 [00:03<00:00, 182.06it/s]

[Feature Set: xys_3] Epoch [28/50] - Avg Loss: 0.3103
Epoch 29/50: 100%|        | 570/570 [00:03<00:00, 182.89it/s]

[Feature Set: xys_3] Epoch [29/50] - Avg Loss: 0.3074
Epoch 30/50: 100%|        | 570/570 [00:03<00:00, 182.41it/s]

[Feature Set: xys_3] Epoch [30/50] - Avg Loss: 0.2619
Epoch 31/50: 100%|        | 570/570 [00:03<00:00, 180.17it/s]

[Feature Set: xys_3] Epoch [31/50] - Avg Loss: 0.2842
Epoch 32/50: 100%|        | 570/570 [00:03<00:00, 181.18it/s]

[Feature Set: xys_3] Epoch [32/50] - Avg Loss: 0.2929
Epoch 33/50: 100%|        | 570/570 [00:03<00:00, 182.90it/s]

[Feature Set: xys_3] Epoch [33/50] - Avg Loss: 0.2841
Epoch 34/50: 100%|        | 570/570 [00:03<00:00, 182.37it/s]

[Feature Set: xys_3] Epoch [34/50] - Avg Loss: 0.2433
Epoch 35/50: 100%|        | 570/570 [00:03<00:00, 182.84it/s]

[Feature Set: xys_3] Epoch [35/50] - Avg Loss: 0.2558
Epoch 36/50: 100%|        | 570/570 [00:03<00:00, 180.97it/s]

[Feature Set: xys_3] Epoch [36/50] - Avg Loss: 0.2604
Epoch 37/50: 100%|        | 570/570 [00:03<00:00, 182.16it/s]

[Feature Set: xys_3] Epoch [37/50] - Avg Loss: 0.2910
Epoch 38/50: 100%|        | 570/570 [00:03<00:00, 183.11it/s]
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[Feature Set: xys_3] Epoch [38/50] - Avg Loss: 0.2432
Epoch 39/50: 100%|     | 570/570 [00:03<00:00, 176.94it/s]


[Feature Set: xys_3] Epoch [39/50] - Avg Loss: 0.2297
Epoch 40/50: 100%|     | 570/570 [00:03<00:00, 163.99it/s]


[Feature Set: xys_3] Epoch [40/50] - Avg Loss: 0.2452
Epoch 41/50: 100%|     | 570/570 [00:03<00:00, 177.05it/s]


[Feature Set: xys_3] Epoch [41/50] - Avg Loss: 0.2615
Epoch 42/50: 100%|     | 570/570 [00:03<00:00, 178.92it/s]


[Feature Set: xys_3] Epoch [42/50] - Avg Loss: 0.2171
Epoch 43/50: 100%|     | 570/570 [00:03<00:00, 180.67it/s]


[Feature Set: xys_3] Epoch [43/50] - Avg Loss: 0.2307
Epoch 44/50: 100%|     | 570/570 [00:03<00:00, 180.60it/s]


[Feature Set: xys_3] Epoch [44/50] - Avg Loss: 0.2402
Epoch 45/50: 100%|     | 570/570 [00:03<00:00, 182.61it/s]


[Feature Set: xys_3] Epoch [45/50] - Avg Loss: 0.2058
Epoch 46/50: 100%|     | 570/570 [00:03<00:00, 180.56it/s]


[Feature Set: xys_3] Epoch [46/50] - Avg Loss: 0.2330
Epoch 47/50: 100%|     | 570/570 [00:03<00:00, 170.14it/s]


[Feature Set: xys_3] Epoch [47/50] - Avg Loss: 0.1746
Epoch 48/50: 100%|     | 570/570 [00:03<00:00, 179.67it/s]


[Feature Set: xys_3] Epoch [48/50] - Avg Loss: 0.2109
Epoch 49/50: 100%|     | 570/570 [00:03<00:00, 180.18it/s]


[Feature Set: xys_3] Epoch [49/50] - Avg Loss: 0.2136
Epoch 50/50: 100%|     | 570/570 [00:03<00:00, 179.92it/s]
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[Feature Set: xys_3] Epoch [50/50] - Avg Loss: 0.1703

[Eval] xys_3: 100%|       | 143/143 [00:00<00:00, 321.87it/s]
Epoch 1/50: 100%|       | 570/570 [00:03<00:00, 182.20it/s]


[Feature Set: xydi_3] Epoch [1/50] - Avg Loss: 0.6741

Epoch 2/50: 100%|       | 570/570 [00:03<00:00, 183.30it/s]


[Feature Set: xydi_3] Epoch [2/50] - Avg Loss: 0.6643

Epoch 3/50: 100%|       | 570/570 [00:03<00:00, 183.54it/s]


[Feature Set: xydi_3] Epoch [3/50] - Avg Loss: 0.6558

Epoch 4/50: 100%|       | 570/570 [00:03<00:00, 182.40it/s]


[Feature Set: xydi_3] Epoch [4/50] - Avg Loss: 0.6445

Epoch 5/50: 100%|       | 570/570 [00:03<00:00, 182.51it/s]


[Feature Set: xydi_3] Epoch [5/50] - Avg Loss: 0.6315

Epoch 6/50: 100%|       | 570/570 [00:03<00:00, 182.11it/s]


[Feature Set: xydi_3] Epoch [6/50] - Avg Loss: 0.6170

Epoch 7/50: 100%|       | 570/570 [00:03<00:00, 183.28it/s]


[Feature Set: xydi_3] Epoch [7/50] - Avg Loss: 0.5981

Epoch 8/50: 100%|       | 570/570 [00:03<00:00, 181.65it/s]


[Feature Set: xydi_3] Epoch [8/50] - Avg Loss: 0.5808

Epoch 9/50: 100%|       | 570/570 [00:03<00:00, 182.57it/s]


[Feature Set: xydi_3] Epoch [9/50] - Avg Loss: 0.5535

Epoch 10/50: 100%|       | 570/570 [00:03<00:00, 183.06it/s]


[Feature Set: xydi_3] Epoch [10/50] - Avg Loss: 0.5315

Epoch 11/50: 100%|       | 570/570 [00:03<00:00, 180.20it/s]


[Feature Set: xydi_3] Epoch [11/50] - Avg Loss: 0.5022
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Epoch 12/50: 100%|        | 570/570 [00:03<00:00, 182.96it/s]


[Feature Set: xydi_3] Epoch [12/50] - Avg Loss: 0.4653

Epoch 13/50: 100%|        | 570/570 [00:03<00:00, 183.45it/s]


[Feature Set: xydi_3] Epoch [13/50] - Avg Loss: 0.4506

Epoch 14/50: 100%|        | 570/570 [00:03<00:00, 181.84it/s]


[Feature Set: xydi_3] Epoch [14/50] - Avg Loss: 0.4267

Epoch 15/50: 100%|        | 570/570 [00:03<00:00, 183.97it/s]


[Feature Set: xydi_3] Epoch [15/50] - Avg Loss: 0.4077

Epoch 16/50: 100%|        | 570/570 [00:03<00:00, 183.46it/s]


[Feature Set: xydi_3] Epoch [16/50] - Avg Loss: 0.3869

Epoch 17/50: 100%|        | 570/570 [00:03<00:00, 182.24it/s]


[Feature Set: xydi_3] Epoch [17/50] - Avg Loss: 0.3734

Epoch 18/50: 100%|        | 570/570 [00:03<00:00, 181.37it/s]


[Feature Set: xydi_3] Epoch [18/50] - Avg Loss: 0.3695

Epoch 19/50: 100%|        | 570/570 [00:03<00:00, 182.98it/s]


[Feature Set: xydi_3] Epoch [19/50] - Avg Loss: 0.3481

Epoch 20/50: 100%|        | 570/570 [00:03<00:00, 182.69it/s]


[Feature Set: xydi_3] Epoch [20/50] - Avg Loss: 0.3313

Epoch 21/50: 100%|        | 570/570 [00:03<00:00, 183.33it/s]


[Feature Set: xydi_3] Epoch [21/50] - Avg Loss: 0.3046

Epoch 22/50: 100%|        | 570/570 [00:03<00:00, 180.98it/s]


[Feature Set: xydi_3] Epoch [22/50] - Avg Loss: 0.3219

Epoch 23/50: 100%|        | 570/570 [00:03<00:00, 182.83it/s]


[Feature Set: xydi_3] Epoch [23/50] - Avg Loss: 0.2790
```

```
Epoch 24/50: 100%|      | 570/570 [00:03<00:00, 178.45it/s]


[Feature Set: xydi_3] Epoch [24/50] - Avg Loss: 0.2823

Epoch 25/50: 100%|      | 570/570 [00:03<00:00, 174.47it/s]


[Feature Set: xydi_3] Epoch [25/50] - Avg Loss: 0.2685

Epoch 26/50: 100%|      | 570/570 [00:03<00:00, 178.61it/s]


[Feature Set: xydi_3] Epoch [26/50] - Avg Loss: 0.2424

Epoch 27/50: 100%|      | 570/570 [00:03<00:00, 180.23it/s]


[Feature Set: xydi_3] Epoch [27/50] - Avg Loss: 0.2584

Epoch 28/50: 100%|      | 570/570 [00:03<00:00, 180.17it/s]


[Feature Set: xydi_3] Epoch [28/50] - Avg Loss: 0.2341

Epoch 29/50: 100%|      | 570/570 [00:03<00:00, 179.03it/s]


[Feature Set: xydi_3] Epoch [29/50] - Avg Loss: 0.2212

Epoch 30/50: 100%|      | 570/570 [00:03<00:00, 181.08it/s]


[Feature Set: xydi_3] Epoch [30/50] - Avg Loss: 0.2078

Epoch 31/50: 100%|      | 570/570 [00:03<00:00, 180.72it/s]


[Feature Set: xydi_3] Epoch [31/50] - Avg Loss: 0.2101

Epoch 32/50: 100%|      | 570/570 [00:03<00:00, 179.29it/s]


[Feature Set: xydi_3] Epoch [32/50] - Avg Loss: 0.2193

Epoch 33/50: 100%|      | 570/570 [00:03<00:00, 178.69it/s]


[Feature Set: xydi_3] Epoch [33/50] - Avg Loss: 0.2116

Epoch 34/50: 100%|      | 570/570 [00:03<00:00, 179.27it/s]


[Feature Set: xydi_3] Epoch [34/50] - Avg Loss: 0.1980

Epoch 35/50: 100%|      | 570/570 [00:03<00:00, 178.89it/s]


[Feature Set: xydi_3] Epoch [35/50] - Avg Loss: 0.2178
```

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Epoch 36/50: 100%|        | 570/570 [00:03<00:00, 177.52it/s]


[Feature Set: xydi_3] Epoch [36/50] - Avg Loss: 0.1667

Epoch 37/50: 100%|        | 570/570 [00:03<00:00, 179.02it/s]


[Feature Set: xydi_3] Epoch [37/50] - Avg Loss: 0.1543

Epoch 38/50: 100%|        | 570/570 [00:03<00:00, 178.48it/s]


[Feature Set: xydi_3] Epoch [38/50] - Avg Loss: 0.1805

Epoch 39/50: 100%|        | 570/570 [00:03<00:00, 178.38it/s]


[Feature Set: xydi_3] Epoch [39/50] - Avg Loss: 0.1656

Epoch 40/50: 100%|        | 570/570 [00:03<00:00, 180.03it/s]


[Feature Set: xydi_3] Epoch [40/50] - Avg Loss: 0.1395

Epoch 41/50: 100%|        | 570/570 [00:03<00:00, 178.23it/s]


[Feature Set: xydi_3] Epoch [41/50] - Avg Loss: 0.1529

Epoch 42/50: 100%|        | 570/570 [00:03<00:00, 180.70it/s]


[Feature Set: xydi_3] Epoch [42/50] - Avg Loss: 0.1601

Epoch 43/50: 100%|        | 570/570 [00:03<00:00, 179.07it/s]


[Feature Set: xydi_3] Epoch [43/50] - Avg Loss: 0.1314

Epoch 44/50: 100%|        | 570/570 [00:03<00:00, 179.39it/s]


[Feature Set: xydi_3] Epoch [44/50] - Avg Loss: 0.1447

Epoch 45/50: 100%|        | 570/570 [00:03<00:00, 180.43it/s]


[Feature Set: xydi_3] Epoch [45/50] - Avg Loss: 0.1685

Epoch 46/50: 100%|        | 570/570 [00:03<00:00, 179.02it/s]


[Feature Set: xydi_3] Epoch [46/50] - Avg Loss: 0.1363

Epoch 47/50: 100%|        | 570/570 [00:03<00:00, 180.14it/s]


[Feature Set: xydi_3] Epoch [47/50] - Avg Loss: 0.1011
```

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Epoch 48/50: 100%|        | 570/570 [00:03<00:00, 179.57it/s]


[Feature Set: xydi_3] Epoch [48/50] - Avg Loss: 0.0918

Epoch 49/50: 100%|        | 570/570 [00:03<00:00, 180.46it/s]


[Feature Set: xydi_3] Epoch [49/50] - Avg Loss: 0.1141

Epoch 50/50: 100%|        | 570/570 [00:03<00:00, 178.75it/s]


[Feature Set: xydi_3] Epoch [50/50] - Avg Loss: 0.1490
[Eval] xydi_3: 100%|       | 143/143 [00:00<00:00, 326.60it/s]
Epoch 1/50: 100%|        | 570/570 [00:03<00:00, 179.96it/s]


[Feature Set: xysc_4] Epoch [1/50] - Avg Loss: 0.6764

Epoch 2/50: 100%|        | 570/570 [00:03<00:00, 180.38it/s]


[Feature Set: xysc_4] Epoch [2/50] - Avg Loss: 0.6686

Epoch 3/50: 100%|        | 570/570 [00:03<00:00, 178.84it/s]


[Feature Set: xysc_4] Epoch [3/50] - Avg Loss: 0.6620

Epoch 4/50: 100%|        | 570/570 [00:03<00:00, 180.61it/s]


[Feature Set: xysc_4] Epoch [4/50] - Avg Loss: 0.6513

Epoch 5/50: 100%|        | 570/570 [00:03<00:00, 178.72it/s]


[Feature Set: xysc_4] Epoch [5/50] - Avg Loss: 0.6308

Epoch 6/50: 100%|        | 570/570 [00:03<00:00, 180.59it/s]


[Feature Set: xysc_4] Epoch [6/50] - Avg Loss: 0.6102

Epoch 7/50: 100%|        | 570/570 [00:03<00:00, 178.81it/s]


[Feature Set: xysc_4] Epoch [7/50] - Avg Loss: 0.5830

Epoch 8/50: 100%|        | 570/570 [00:03<00:00, 180.54it/s]


[Feature Set: xysc_4] Epoch [8/50] - Avg Loss: 0.5580

Epoch 9/50: 100%|        | 570/570 [00:03<00:00, 181.25it/s]
```

```
[Feature Set: xysc_4] Epoch [9/50] - Avg Loss: 0.5373
Epoch 10/50: 100%|      | 570/570 [00:03<00:00, 178.82it/s]


[Feature Set: xysc_4] Epoch [10/50] - Avg Loss: 0.5155
Epoch 11/50: 100%|      | 570/570 [00:03<00:00, 180.31it/s]


[Feature Set: xysc_4] Epoch [11/50] - Avg Loss: 0.4823
Epoch 12/50: 100%|      | 570/570 [00:03<00:00, 178.56it/s]


[Feature Set: xysc_4] Epoch [12/50] - Avg Loss: 0.4547
Epoch 13/50: 100%|      | 570/570 [00:03<00:00, 179.26it/s]


[Feature Set: xysc_4] Epoch [13/50] - Avg Loss: 0.4239
Epoch 14/50: 100%|      | 570/570 [00:03<00:00, 176.64it/s]


[Feature Set: xysc_4] Epoch [14/50] - Avg Loss: 0.4080
Epoch 15/50: 100%|      | 570/570 [00:03<00:00, 180.41it/s]


[Feature Set: xysc_4] Epoch [15/50] - Avg Loss: 0.3954
Epoch 16/50: 100%|      | 570/570 [00:03<00:00, 180.93it/s]


[Feature Set: xysc_4] Epoch [16/50] - Avg Loss: 0.3542
Epoch 17/50: 100%|      | 570/570 [00:03<00:00, 178.65it/s]


[Feature Set: xysc_4] Epoch [17/50] - Avg Loss: 0.3282
Epoch 18/50: 100%|      | 570/570 [00:03<00:00, 180.26it/s]


[Feature Set: xysc_4] Epoch [18/50] - Avg Loss: 0.3396
Epoch 19/50: 100%|      | 570/570 [00:03<00:00, 181.11it/s]


[Feature Set: xysc_4] Epoch [19/50] - Avg Loss: 0.3113
Epoch 20/50: 100%|      | 570/570 [00:03<00:00, 179.84it/s]


[Feature Set: xysc_4] Epoch [20/50] - Avg Loss: 0.3018
Epoch 21/50: 100%|      | 570/570 [00:03<00:00, 179.56it/s]
```

```
[Feature Set: xysc_4] Epoch [21/50] - Avg Loss: 0.2844
Epoch 22/50: 100%|      | 570/570 [00:03<00:00, 180.50it/s]

[Feature Set: xysc_4] Epoch [22/50] - Avg Loss: 0.2844
Epoch 23/50: 100%|      | 570/570 [00:03<00:00, 179.88it/s]

[Feature Set: xysc_4] Epoch [23/50] - Avg Loss: 0.2706
Epoch 24/50: 100%|      | 570/570 [00:03<00:00, 178.86it/s]

[Feature Set: xysc_4] Epoch [24/50] - Avg Loss: 0.2626
Epoch 25/50: 100%|      | 570/570 [00:03<00:00, 180.30it/s]

[Feature Set: xysc_4] Epoch [25/50] - Avg Loss: 0.2387
Epoch 26/50: 100%|      | 570/570 [00:03<00:00, 179.89it/s]

[Feature Set: xysc_4] Epoch [26/50] - Avg Loss: 0.2177
Epoch 27/50: 100%|      | 570/570 [00:03<00:00, 179.83it/s]

[Feature Set: xysc_4] Epoch [27/50] - Avg Loss: 0.2605
Epoch 28/50: 100%|      | 570/570 [00:03<00:00, 178.12it/s]

[Feature Set: xysc_4] Epoch [28/50] - Avg Loss: 0.2192
Epoch 29/50: 100%|      | 570/570 [00:03<00:00, 179.41it/s]

[Feature Set: xysc_4] Epoch [29/50] - Avg Loss: 0.2093
Epoch 30/50: 100%|      | 570/570 [00:03<00:00, 180.32it/s]

[Feature Set: xysc_4] Epoch [30/50] - Avg Loss: 0.2089
Epoch 31/50: 100%|      | 570/570 [00:03<00:00, 180.56it/s]

[Feature Set: xysc_4] Epoch [31/50] - Avg Loss: 0.2067
Epoch 32/50: 100%|      | 570/570 [00:03<00:00, 176.74it/s]

[Feature Set: xysc_4] Epoch [32/50] - Avg Loss: 0.1814
Epoch 33/50: 100%|      | 570/570 [00:03<00:00, 179.86it/s]
```

```
[Feature Set: xysc_4] Epoch [33/50] - Avg Loss: 0.2451
Epoch 34/50: 100%|        | 570/570 [00:03<00:00, 180.64it/s]

[Feature Set: xysc_4] Epoch [34/50] - Avg Loss: 0.1540
Epoch 35/50: 100%|        | 570/570 [00:03<00:00, 179.69it/s]

[Feature Set: xysc_4] Epoch [35/50] - Avg Loss: 0.1435
Epoch 36/50: 100%|        | 570/570 [00:03<00:00, 180.33it/s]

[Feature Set: xysc_4] Epoch [36/50] - Avg Loss: 0.1672
Epoch 37/50: 100%|        | 570/570 [00:03<00:00, 177.60it/s]

[Feature Set: xysc_4] Epoch [37/50] - Avg Loss: 0.1534
Epoch 38/50: 100%|        | 570/570 [00:03<00:00, 180.36it/s]

[Feature Set: xysc_4] Epoch [38/50] - Avg Loss: 0.1330
Epoch 39/50: 100%|        | 570/570 [00:03<00:00, 178.57it/s]

[Feature Set: xysc_4] Epoch [39/50] - Avg Loss: 0.1348
Epoch 40/50: 100%|        | 570/570 [00:03<00:00, 180.34it/s]

[Feature Set: xysc_4] Epoch [40/50] - Avg Loss: 0.1579
Epoch 41/50: 100%|        | 570/570 [00:03<00:00, 181.25it/s]

[Feature Set: xysc_4] Epoch [41/50] - Avg Loss: 0.1240
Epoch 42/50: 100%|        | 570/570 [00:03<00:00, 178.85it/s]

[Feature Set: xysc_4] Epoch [42/50] - Avg Loss: 0.1211
Epoch 43/50: 100%|        | 570/570 [00:03<00:00, 180.41it/s]

[Feature Set: xysc_4] Epoch [43/50] - Avg Loss: 0.0932
Epoch 44/50: 100%|        | 570/570 [00:03<00:00, 180.66it/s]

[Feature Set: xysc_4] Epoch [44/50] - Avg Loss: 0.1134
Epoch 45/50: 100%|        | 570/570 [00:03<00:00, 180.18it/s]
```

[Feature Set: xysc_4] Epoch [45/50] - Avg Loss: 0.1415

Epoch 46/50: 100%| | 570/570 [00:03<00:00, 179.32it/s]

[Feature Set: xysc_4] Epoch [46/50] - Avg Loss: 0.1289

Epoch 47/50: 100%| | 570/570 [00:03<00:00, 180.21it/s]

[Feature Set: xysc_4] Epoch [47/50] - Avg Loss: 0.1267

Epoch 48/50: 100%| | 570/570 [00:03<00:00, 180.46it/s]

[Feature Set: xysc_4] Epoch [48/50] - Avg Loss: 0.1012

Epoch 49/50: 100%| | 570/570 [00:03<00:00, 178.97it/s]

[Feature Set: xysc_4] Epoch [49/50] - Avg Loss: 0.0711

Epoch 50/50: 100%| | 570/570 [00:03<00:00, 180.46it/s]

[Feature Set: xysc_4] Epoch [50/50] - Avg Loss: 0.0972

[Eval] xysc_4: 100%| | 143/143 [00:00<00:00, 331.56it/s]
Epoch 1/50: 100%| | 570/570 [00:03<00:00, 178.07it/s]

[Feature Set: xydc_4] Epoch [1/50] - Avg Loss: 0.6762

Epoch 2/50: 100%| | 570/570 [00:03<00:00, 177.87it/s]

[Feature Set: xydc_4] Epoch [2/50] - Avg Loss: 0.6644

Epoch 3/50: 100%| | 570/570 [00:03<00:00, 178.81it/s]

[Feature Set: xydc_4] Epoch [3/50] - Avg Loss: 0.6550

Epoch 4/50: 100%| | 570/570 [00:03<00:00, 180.59it/s]

[Feature Set: xydc_4] Epoch [4/50] - Avg Loss: 0.6424

Epoch 5/50: 100%| | 570/570 [00:03<00:00, 180.35it/s]

[Feature Set: xydc_4] Epoch [5/50] - Avg Loss: 0.6222

Epoch 6/50: 100%| | 570/570 [00:03<00:00, 178.86it/s]

[Feature Set: xydc_4] Epoch [6/50] - Avg Loss: 0.6006

Epoch 7/50: 100%| | 570/570 [00:03<00:00, 179.86it/s]

[Feature Set: xydc_4] Epoch [7/50] - Avg Loss: 0.5682

Epoch 8/50: 100%| | 570/570 [00:03<00:00, 180.23it/s]

[Feature Set: xydc_4] Epoch [8/50] - Avg Loss: 0.5439

Epoch 9/50: 100%| | 570/570 [00:03<00:00, 180.83it/s]

[Feature Set: xydc_4] Epoch [9/50] - Avg Loss: 0.5159

Epoch 10/50: 100%| | 570/570 [00:03<00:00, 179.38it/s]

[Feature Set: xydc_4] Epoch [10/50] - Avg Loss: 0.4835

Epoch 11/50: 100%| | 570/570 [00:03<00:00, 180.12it/s]

[Feature Set: xydc_4] Epoch [11/50] - Avg Loss: 0.4674

Epoch 12/50: 100%| | 570/570 [00:03<00:00, 180.73it/s]

[Feature Set: xydc_4] Epoch [12/50] - Avg Loss: 0.4378

Epoch 13/50: 100%| | 570/570 [00:03<00:00, 179.56it/s]

[Feature Set: xydc_4] Epoch [13/50] - Avg Loss: 0.4031

Epoch 14/50: 100%| | 570/570 [00:03<00:00, 180.20it/s]

[Feature Set: xydc_4] Epoch [14/50] - Avg Loss: 0.3784

Epoch 15/50: 100%| | 570/570 [00:03<00:00, 180.49it/s]

[Feature Set: xydc_4] Epoch [15/50] - Avg Loss: 0.3611

Epoch 16/50: 100%| | 570/570 [00:03<00:00, 169.35it/s]

[Feature Set: xydc_4] Epoch [16/50] - Avg Loss: 0.3287

Epoch 17/50: 100%| | 570/570 [00:03<00:00, 174.36it/s]

[Feature Set: xydc_4] Epoch [17/50] - Avg Loss: 0.3005

Epoch 18/50: 100%| | 570/570 [00:03<00:00, 180.80it/s]

[Feature Set: xydc_4] Epoch [18/50] - Avg Loss: 0.2959

```
Epoch 19/50: 100%|        | 570/570 [00:03<00:00, 177.19it/s]

[Feature Set: xydc_4] Epoch [19/50] - Avg Loss: 0.2819
Epoch 20/50: 100%|        | 570/570 [00:03<00:00, 178.65it/s]

[Feature Set: xydc_4] Epoch [20/50] - Avg Loss: 0.2654
Epoch 21/50: 100%|        | 570/570 [00:03<00:00, 180.21it/s]

[Feature Set: xydc_4] Epoch [21/50] - Avg Loss: 0.2479
Epoch 22/50: 100%|        | 570/570 [00:03<00:00, 179.90it/s]

[Feature Set: xydc_4] Epoch [22/50] - Avg Loss: 0.2431
Epoch 23/50: 100%|        | 570/570 [00:03<00:00, 179.42it/s]

[Feature Set: xydc_4] Epoch [23/50] - Avg Loss: 0.2162
Epoch 24/50: 100%|        | 570/570 [00:03<00:00, 178.84it/s]

[Feature Set: xydc_4] Epoch [24/50] - Avg Loss: 0.2088
Epoch 25/50: 100%|        | 570/570 [00:03<00:00, 179.80it/s]

[Feature Set: xydc_4] Epoch [25/50] - Avg Loss: 0.2117
Epoch 26/50: 100%|        | 570/570 [00:03<00:00, 180.19it/s]

[Feature Set: xydc_4] Epoch [26/50] - Avg Loss: 0.1618
Epoch 27/50: 100%|        | 570/570 [00:03<00:00, 172.09it/s]

[Feature Set: xydc_4] Epoch [27/50] - Avg Loss: 0.1343
Epoch 28/50: 100%|        | 570/570 [00:03<00:00, 180.15it/s]

[Feature Set: xydc_4] Epoch [28/50] - Avg Loss: 0.1438
Epoch 29/50: 100%|        | 570/570 [00:03<00:00, 179.49it/s]

[Feature Set: xydc_4] Epoch [29/50] - Avg Loss: 0.1607
Epoch 30/50: 100%|        | 570/570 [00:03<00:00, 179.50it/s]

[Feature Set: xydc_4] Epoch [30/50] - Avg Loss: 0.1475
```

Epoch 31/50: 100%| | 570/570 [00:03<00:00, 178.50it/s]

[Feature Set: xydc_4] Epoch [31/50] - Avg Loss: 0.1392

Epoch 32/50: 100%| | 570/570 [00:03<00:00, 179.78it/s]

[Feature Set: xydc_4] Epoch [32/50] - Avg Loss: 0.0857

Epoch 33/50: 100%| | 570/570 [00:03<00:00, 179.30it/s]

[Feature Set: xydc_4] Epoch [33/50] - Avg Loss: 0.1187

Epoch 34/50: 100%| | 570/570 [00:03<00:00, 179.39it/s]

[Feature Set: xydc_4] Epoch [34/50] - Avg Loss: 0.1177

Epoch 35/50: 100%| | 570/570 [00:03<00:00, 177.18it/s]

[Feature Set: xydc_4] Epoch [35/50] - Avg Loss: 0.1230

Epoch 36/50: 100%| | 570/570 [00:03<00:00, 177.43it/s]

[Feature Set: xydc_4] Epoch [36/50] - Avg Loss: 0.0825

Epoch 37/50: 100%| | 570/570 [00:03<00:00, 175.28it/s]

[Feature Set: xydc_4] Epoch [37/50] - Avg Loss: 0.1753

Epoch 38/50: 100%| | 570/570 [00:03<00:00, 177.28it/s]

[Feature Set: xydc_4] Epoch [38/50] - Avg Loss: 0.0917

Epoch 39/50: 100%| | 570/570 [00:03<00:00, 166.24it/s]

[Feature Set: xydc_4] Epoch [39/50] - Avg Loss: 0.0593

Epoch 40/50: 100%| | 570/570 [00:03<00:00, 173.71it/s]

[Feature Set: xydc_4] Epoch [40/50] - Avg Loss: 0.0604

Epoch 41/50: 100%| | 570/570 [00:03<00:00, 170.89it/s]

[Feature Set: xydc_4] Epoch [41/50] - Avg Loss: 0.0909

Epoch 42/50: 100%| | 570/570 [00:03<00:00, 174.91it/s]

[Feature Set: xydc_4] Epoch [42/50] - Avg Loss: 0.1038

```
Epoch 43/50: 100%|        | 570/570 [00:03<00:00, 176.80it/s]


[Feature Set: xydc_4] Epoch [43/50] - Avg Loss: 0.1161

Epoch 44/50: 100%|        | 570/570 [00:03<00:00, 178.81it/s]


[Feature Set: xydc_4] Epoch [44/50] - Avg Loss: 0.0517

Epoch 45/50: 100%|        | 570/570 [00:03<00:00, 179.10it/s]


[Feature Set: xydc_4] Epoch [45/50] - Avg Loss: 0.0855

Epoch 46/50: 100%|        | 570/570 [00:03<00:00, 176.38it/s]


[Feature Set: xydc_4] Epoch [46/50] - Avg Loss: 0.0421

Epoch 47/50: 100%|        | 570/570 [00:03<00:00, 179.00it/s]


[Feature Set: xydc_4] Epoch [47/50] - Avg Loss: 0.1117

Epoch 48/50: 100%|        | 570/570 [00:03<00:00, 178.45it/s]


[Feature Set: xydc_4] Epoch [48/50] - Avg Loss: 0.0878

Epoch 49/50: 100%|        | 570/570 [00:03<00:00, 178.66it/s]


[Feature Set: xydc_4] Epoch [49/50] - Avg Loss: 0.0965

Epoch 50/50: 100%|        | 570/570 [00:03<00:00, 170.39it/s]


[Feature Set: xydc_4] Epoch [50/50] - Avg Loss: 0.0368

[Eval] xydc_4: 100%|        | 143/143 [00:00<00:00, 330.31it/s]
```

```python
[10]: df_results = pd.DataFrame(results)
      print(df_results)
```

```
   Feature_Set  Accuracy  Macro_F1  Weighted_F1
0         xy_2  0.538462  0.518666     0.557575
1        xyd_3  0.587413  0.552390     0.602297
2     xydsdc_7  0.489510  0.441317     0.506723
3        xysd_4  0.566434  0.535325     0.583249
4        xyds_4  0.559441  0.492308     0.565896
5        xydd_4  0.650350  0.615591     0.661666
6       xydsc_5  0.524476  0.501026     0.544143
7       xyddc_5  0.510490  0.482955     0.530515
8         xys_3  0.531469  0.499765     0.549962
9        xydi_3  0.566434  0.538806     0.583800
```

```
10       xysc_4  0.545455  0.497920     0.559499
11       xydc_4  0.531469  0.503395     0.550459
```