xy_2-run_social_lstm

April 11, 2025

```python
[11]: 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=0.005)
epochs = 250

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]
        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]
        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,
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        "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_90241/174963424.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_90241/174963424.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 1/250: 100%| | 570/570 [00:05<00:00, 97.47it/s]

[Feature Set: xy_2] Epoch [1/250] - Avg Loss: 0.6875

Epoch 2/250: 100%| | 570/570 [00:03<00:00, 143.41it/s]

[Feature Set: xy_2] Epoch [2/250] - Avg Loss: 0.6723

Epoch 3/250: 100%| | 570/570 [00:03<00:00, 148.89it/s]

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[Feature Set: xy_2] Epoch [3/250] - Avg Loss: 0.6833
Epoch 4/250: 100%|      | 570/570 [00:03<00:00, 147.66it/s]

[Feature Set: xy_2] Epoch [4/250] - Avg Loss: 0.6737
Epoch 5/250: 100%|      | 570/570 [00:03<00:00, 149.29it/s]

[Feature Set: xy_2] Epoch [5/250] - Avg Loss: 0.6666
Epoch 6/250: 100%|      | 570/570 [00:03<00:00, 152.60it/s]

[Feature Set: xy_2] Epoch [6/250] - Avg Loss: 0.6600
Epoch 7/250: 100%|      | 570/570 [00:03<00:00, 147.34it/s]

[Feature Set: xy_2] Epoch [7/250] - Avg Loss: 0.6670
Epoch 8/250: 100%|      | 570/570 [00:03<00:00, 151.73it/s]

[Feature Set: xy_2] Epoch [8/250] - Avg Loss: 0.6751
Epoch 9/250: 100%|      | 570/570 [00:03<00:00, 152.32it/s]

[Feature Set: xy_2] Epoch [9/250] - Avg Loss: 0.6714
Epoch 10/250: 100%|      | 570/570 [00:03<00:00, 151.21it/s]

[Feature Set: xy_2] Epoch [10/250] - Avg Loss: 0.6621
Epoch 11/250: 100%|      | 570/570 [00:03<00:00, 152.04it/s]

[Feature Set: xy_2] Epoch [11/250] - Avg Loss: 0.6624
Epoch 12/250: 100%|      | 570/570 [00:03<00:00, 151.17it/s]

[Feature Set: xy_2] Epoch [12/250] - Avg Loss: 0.6478
Epoch 13/250: 100%|      | 570/570 [00:03<00:00, 153.65it/s]

[Feature Set: xy_2] Epoch [13/250] - Avg Loss: 0.6426
Epoch 14/250: 100%|      | 570/570 [00:03<00:00, 153.89it/s]

[Feature Set: xy_2] Epoch [14/250] - Avg Loss: 0.6403
Epoch 15/250: 100%|      | 570/570 [00:03<00:00, 147.82it/s]
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[Feature Set: xy_2] Epoch [15/250] - Avg Loss: 0.6585
Epoch 16/250: 100%|        | 570/570 [00:03<00:00, 154.08it/s]

[Feature Set: xy_2] Epoch [16/250] - Avg Loss: 0.6508
Epoch 17/250: 100%|        | 570/570 [00:03<00:00, 154.25it/s]

[Feature Set: xy_2] Epoch [17/250] - Avg Loss: 0.6332
Epoch 18/250: 100%|        | 570/570 [00:03<00:00, 152.88it/s]

[Feature Set: xy_2] Epoch [18/250] - Avg Loss: 0.6327
Epoch 19/250: 100%|        | 570/570 [00:03<00:00, 153.88it/s]

[Feature Set: xy_2] Epoch [19/250] - Avg Loss: 0.6512
Epoch 20/250: 100%|        | 570/570 [00:03<00:00, 152.97it/s]

[Feature Set: xy_2] Epoch [20/250] - Avg Loss: 0.6163
Epoch 21/250: 100%|        | 570/570 [00:03<00:00, 154.79it/s]

[Feature Set: xy_2] Epoch [21/250] - Avg Loss: 0.6100
Epoch 22/250: 100%|        | 570/570 [00:03<00:00, 154.86it/s]

[Feature Set: xy_2] Epoch [22/250] - Avg Loss: 0.5989
Epoch 23/250: 100%|        | 570/570 [00:03<00:00, 149.89it/s]

[Feature Set: xy_2] Epoch [23/250] - Avg Loss: 0.6016
Epoch 24/250: 100%|        | 570/570 [00:03<00:00, 147.29it/s]

[Feature Set: xy_2] Epoch [24/250] - Avg Loss: 0.5781
Epoch 25/250: 100%|        | 570/570 [00:03<00:00, 154.00it/s]

[Feature Set: xy_2] Epoch [25/250] - Avg Loss: 0.6001
Epoch 26/250: 100%|        | 570/570 [00:03<00:00, 152.33it/s]

[Feature Set: xy_2] Epoch [26/250] - Avg Loss: 0.5938
Epoch 27/250: 100%|        | 570/570 [00:03<00:00, 154.95it/s]
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[Feature Set: xy_2] Epoch [27/250] - Avg Loss: 0.5791
Epoch 28/250: 100%|        | 570/570 [00:03<00:00, 154.53it/s]

[Feature Set: xy_2] Epoch [28/250] - Avg Loss: 0.5510
Epoch 29/250: 100%|        | 570/570 [00:03<00:00, 153.69it/s]

[Feature Set: xy_2] Epoch [29/250] - Avg Loss: 0.5766
Epoch 30/250: 100%|        | 570/570 [00:03<00:00, 155.15it/s]

[Feature Set: xy_2] Epoch [30/250] - Avg Loss: 0.5504
Epoch 31/250: 100%|        | 570/570 [00:03<00:00, 154.38it/s]

[Feature Set: xy_2] Epoch [31/250] - Avg Loss: 0.5732
Epoch 32/250: 100%|        | 570/570 [00:03<00:00, 152.02it/s]

[Feature Set: xy_2] Epoch [32/250] - Avg Loss: 0.5976
Epoch 33/250: 100%|        | 570/570 [00:03<00:00, 155.19it/s]

[Feature Set: xy_2] Epoch [33/250] - Avg Loss: 0.6388
Epoch 34/250: 100%|        | 570/570 [00:03<00:00, 154.66it/s]

[Feature Set: xy_2] Epoch [34/250] - Avg Loss: 0.5700
Epoch 35/250: 100%|        | 570/570 [00:03<00:00, 152.53it/s]

[Feature Set: xy_2] Epoch [35/250] - Avg Loss: 0.5437
Epoch 36/250: 100%|        | 570/570 [00:03<00:00, 155.32it/s]

[Feature Set: xy_2] Epoch [36/250] - Avg Loss: 0.5205
Epoch 37/250: 100%|        | 570/570 [00:03<00:00, 153.64it/s]

[Feature Set: xy_2] Epoch [37/250] - Avg Loss: 0.5813
Epoch 38/250: 100%|        | 570/570 [00:03<00:00, 150.56it/s]

[Feature Set: xy_2] Epoch [38/250] - Avg Loss: 0.5381
Epoch 39/250: 100%|        | 570/570 [00:03<00:00, 143.87it/s]
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[Feature Set: xy_2] Epoch [39/250] - Avg Loss: 0.5431
Epoch 40/250: 100%|        | 570/570 [00:03<00:00, 152.51it/s]

[Feature Set: xy_2] Epoch [40/250] - Avg Loss: 0.5422
Epoch 41/250: 100%|        | 570/570 [00:03<00:00, 151.70it/s]

[Feature Set: xy_2] Epoch [41/250] - Avg Loss: 0.5368
Epoch 42/250: 100%|        | 570/570 [00:03<00:00, 155.42it/s]

[Feature Set: xy_2] Epoch [42/250] - Avg Loss: 0.5171
Epoch 43/250: 100%|        | 570/570 [00:03<00:00, 155.60it/s]

[Feature Set: xy_2] Epoch [43/250] - Avg Loss: 0.5490
Epoch 44/250: 100%|        | 570/570 [00:03<00:00, 153.21it/s]

[Feature Set: xy_2] Epoch [44/250] - Avg Loss: 0.5145
Epoch 45/250: 100%|        | 570/570 [00:03<00:00, 155.45it/s]

[Feature Set: xy_2] Epoch [45/250] - Avg Loss: 0.5202
Epoch 46/250: 100%|        | 570/570 [00:03<00:00, 155.74it/s]

[Feature Set: xy_2] Epoch [46/250] - Avg Loss: 0.5428
Epoch 47/250: 100%|        | 570/570 [00:03<00:00, 149.23it/s]

[Feature Set: xy_2] Epoch [47/250] - Avg Loss: 0.5518
Epoch 48/250: 100%|        | 570/570 [00:03<00:00, 155.05it/s]

[Feature Set: xy_2] Epoch [48/250] - Avg Loss: 0.5124
Epoch 49/250: 100%|        | 570/570 [00:03<00:00, 155.15it/s]

[Feature Set: xy_2] Epoch [49/250] - Avg Loss: 0.4996
Epoch 50/250: 100%|        | 570/570 [00:03<00:00, 153.49it/s]

[Feature Set: xy_2] Epoch [50/250] - Avg Loss: 0.4843
Epoch 51/250: 100%|        | 570/570 [00:03<00:00, 154.49it/s]
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[Feature Set: xy_2] Epoch [51/250] - Avg Loss: 0.4911
Epoch 52/250: 100%|        | 570/570 [00:03<00:00, 155.04it/s]

[Feature Set: xy_2] Epoch [52/250] - Avg Loss: 0.4696
Epoch 53/250: 100%|        | 570/570 [00:03<00:00, 152.70it/s]

[Feature Set: xy_2] Epoch [53/250] - Avg Loss: 0.5298
Epoch 54/250: 100%|        | 570/570 [00:04<00:00, 131.73it/s]

[Feature Set: xy_2] Epoch [54/250] - Avg Loss: 0.4720
Epoch 55/250: 100%|        | 570/570 [00:04<00:00, 136.99it/s]

[Feature Set: xy_2] Epoch [55/250] - Avg Loss: 0.4394
Epoch 56/250: 100%|        | 570/570 [00:04<00:00, 132.99it/s]

[Feature Set: xy_2] Epoch [56/250] - Avg Loss: 0.4726
Epoch 57/250: 100%|        | 570/570 [00:04<00:00, 140.39it/s]

[Feature Set: xy_2] Epoch [57/250] - Avg Loss: 0.4399
Epoch 58/250: 100%|        | 570/570 [00:04<00:00, 135.58it/s]

[Feature Set: xy_2] Epoch [58/250] - Avg Loss: 0.4597
Epoch 59/250: 100%|        | 570/570 [00:04<00:00, 142.48it/s]

[Feature Set: xy_2] Epoch [59/250] - Avg Loss: 0.4414
Epoch 60/250: 100%|        | 570/570 [00:04<00:00, 132.94it/s]

[Feature Set: xy_2] Epoch [60/250] - Avg Loss: 0.4095
Epoch 61/250: 100%|        | 570/570 [00:04<00:00, 137.24it/s]

[Feature Set: xy_2] Epoch [61/250] - Avg Loss: 0.4395
Epoch 62/250: 100%|        | 570/570 [00:03<00:00, 143.28it/s]

[Feature Set: xy_2] Epoch [62/250] - Avg Loss: 0.4908
Epoch 63/250: 100%|        | 570/570 [00:04<00:00, 140.82it/s]
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[Feature Set: xy_2] Epoch [63/250] - Avg Loss: 0.5041
Epoch 64/250: 100%|        | 570/570 [00:03<00:00, 146.60it/s]

[Feature Set: xy_2] Epoch [64/250] - Avg Loss: 0.4223
Epoch 65/250: 100%|        | 570/570 [00:03<00:00, 145.47it/s]

[Feature Set: xy_2] Epoch [65/250] - Avg Loss: 0.4862
Epoch 66/250: 100%|        | 570/570 [00:04<00:00, 138.30it/s]

[Feature Set: xy_2] Epoch [66/250] - Avg Loss: 0.4926
Epoch 67/250: 100%|        | 570/570 [00:03<00:00, 147.41it/s]

[Feature Set: xy_2] Epoch [67/250] - Avg Loss: 0.4394
Epoch 68/250: 100%|        | 570/570 [00:03<00:00, 144.07it/s]

[Feature Set: xy_2] Epoch [68/250] - Avg Loss: 0.4512
Epoch 69/250: 100%|        | 570/570 [00:03<00:00, 146.18it/s]

[Feature Set: xy_2] Epoch [69/250] - Avg Loss: 0.4060
Epoch 70/250: 100%|        | 570/570 [00:03<00:00, 146.16it/s]

[Feature Set: xy_2] Epoch [70/250] - Avg Loss: 0.3963
Epoch 71/250: 100%|        | 570/570 [00:03<00:00, 144.44it/s]

[Feature Set: xy_2] Epoch [71/250] - Avg Loss: 0.3971
Epoch 72/250: 100%|        | 570/570 [00:03<00:00, 155.14it/s]

[Feature Set: xy_2] Epoch [72/250] - Avg Loss: 0.3886
Epoch 73/250: 100%|        | 570/570 [00:03<00:00, 154.92it/s]

[Feature Set: xy_2] Epoch [73/250] - Avg Loss: 0.3690
Epoch 74/250: 100%|        | 570/570 [00:03<00:00, 153.15it/s]

[Feature Set: xy_2] Epoch [74/250] - Avg Loss: 0.3998
Epoch 75/250: 100%|        | 570/570 [00:03<00:00, 143.89it/s]
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[Feature Set: xy_2] Epoch [75/250] - Avg Loss: 0.4179
Epoch 76/250: 100%|        | 570/570 [00:03<00:00, 152.34it/s]

[Feature Set: xy_2] Epoch [76/250] - Avg Loss: 0.3931
Epoch 77/250: 100%|        | 570/570 [00:03<00:00, 152.54it/s]

[Feature Set: xy_2] Epoch [77/250] - Avg Loss: 0.3683
Epoch 78/250: 100%|        | 570/570 [00:03<00:00, 154.21it/s]

[Feature Set: xy_2] Epoch [78/250] - Avg Loss: 0.4024
Epoch 79/250: 100%|        | 570/570 [00:03<00:00, 145.90it/s]

[Feature Set: xy_2] Epoch [79/250] - Avg Loss: 0.3497
Epoch 80/250: 100%|        | 570/570 [00:03<00:00, 154.64it/s]

[Feature Set: xy_2] Epoch [80/250] - Avg Loss: 0.4216
Epoch 81/250: 100%|        | 570/570 [00:03<00:00, 155.14it/s]

[Feature Set: xy_2] Epoch [81/250] - Avg Loss: 0.3783
Epoch 82/250: 100%|        | 570/570 [00:03<00:00, 152.38it/s]

[Feature Set: xy_2] Epoch [82/250] - Avg Loss: 0.3630
Epoch 83/250: 100%|        | 570/570 [00:03<00:00, 155.06it/s]

[Feature Set: xy_2] Epoch [83/250] - Avg Loss: 0.3609
Epoch 84/250: 100%|        | 570/570 [00:03<00:00, 155.59it/s]

[Feature Set: xy_2] Epoch [84/250] - Avg Loss: 0.3774
Epoch 85/250: 100%|        | 570/570 [00:03<00:00, 148.80it/s]

[Feature Set: xy_2] Epoch [85/250] - Avg Loss: 0.4318
Epoch 86/250: 100%|        | 570/570 [00:03<00:00, 148.45it/s]

[Feature Set: xy_2] Epoch [86/250] - Avg Loss: 0.4093
Epoch 87/250: 100%|        | 570/570 [00:03<00:00, 153.77it/s]
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[Feature Set: xy_2] Epoch [87/250] - Avg Loss: 0.3322
Epoch 88/250: 100%|        | 570/570 [00:03<00:00, 152.08it/s]

[Feature Set: xy_2] Epoch [88/250] - Avg Loss: 0.4025
Epoch 89/250: 100%|        | 570/570 [00:03<00:00, 152.07it/s]

[Feature Set: xy_2] Epoch [89/250] - Avg Loss: 0.3532
Epoch 90/250: 100%|        | 570/570 [00:03<00:00, 154.20it/s]

[Feature Set: xy_2] Epoch [90/250] - Avg Loss: 0.3977
Epoch 91/250: 100%|        | 570/570 [00:03<00:00, 152.60it/s]

[Feature Set: xy_2] Epoch [91/250] - Avg Loss: 0.4180
Epoch 92/250: 100%|        | 570/570 [00:03<00:00, 154.04it/s]

[Feature Set: xy_2] Epoch [92/250] - Avg Loss: 0.4190
Epoch 93/250: 100%|        | 570/570 [00:03<00:00, 154.44it/s]

[Feature Set: xy_2] Epoch [93/250] - Avg Loss: 0.3265
Epoch 94/250: 100%|        | 570/570 [00:03<00:00, 152.18it/s]

[Feature Set: xy_2] Epoch [94/250] - Avg Loss: 0.3508
Epoch 95/250: 100%|        | 570/570 [00:03<00:00, 153.06it/s]

[Feature Set: xy_2] Epoch [95/250] - Avg Loss: 0.3441
Epoch 96/250: 100%|        | 570/570 [00:03<00:00, 154.78it/s]

[Feature Set: xy_2] Epoch [96/250] - Avg Loss: 0.3132
Epoch 97/250: 100%|        | 570/570 [00:03<00:00, 151.10it/s]

[Feature Set: xy_2] Epoch [97/250] - Avg Loss: 0.4880
Epoch 98/250: 100%|        | 570/570 [00:03<00:00, 150.66it/s]

[Feature Set: xy_2] Epoch [98/250] - Avg Loss: 0.3399
Epoch 99/250: 100%|        | 570/570 [00:03<00:00, 153.02it/s]
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[Feature Set: xy_2] Epoch [99/250] - Avg Loss: 0.4046
Epoch 100/250: 100%|       | 570/570 [00:03<00:00, 149.30it/s]

[Feature Set: xy_2] Epoch [100/250] - Avg Loss: 0.3214
Epoch 101/250: 100%|       | 570/570 [00:03<00:00, 150.64it/s]

[Feature Set: xy_2] Epoch [101/250] - Avg Loss: 0.3394
Epoch 102/250: 100%|       | 570/570 [00:03<00:00, 147.54it/s]

[Feature Set: xy_2] Epoch [102/250] - Avg Loss: 0.3992
Epoch 103/250: 100%|       | 570/570 [00:03<00:00, 150.56it/s]

[Feature Set: xy_2] Epoch [103/250] - Avg Loss: 0.3331
Epoch 104/250: 100%|       | 570/570 [00:03<00:00, 152.97it/s]

[Feature Set: xy_2] Epoch [104/250] - Avg Loss: 0.3264
Epoch 105/250: 100%|       | 570/570 [00:03<00:00, 146.74it/s]

[Feature Set: xy_2] Epoch [105/250] - Avg Loss: 0.4201
Epoch 106/250: 100%|       | 570/570 [00:03<00:00, 152.40it/s]

[Feature Set: xy_2] Epoch [106/250] - Avg Loss: 0.3101
Epoch 107/250: 100%|       | 570/570 [00:03<00:00, 153.62it/s]

[Feature Set: xy_2] Epoch [107/250] - Avg Loss: 0.3705
Epoch 108/250: 100%|       | 570/570 [00:03<00:00, 146.94it/s]

[Feature Set: xy_2] Epoch [108/250] - Avg Loss: 0.3859
Epoch 109/250: 100%|       | 570/570 [00:03<00:00, 152.23it/s]

[Feature Set: xy_2] Epoch [109/250] - Avg Loss: 0.3229
Epoch 110/250: 100%|       | 570/570 [00:03<00:00, 146.10it/s]

[Feature Set: xy_2] Epoch [110/250] - Avg Loss: 0.3183
Epoch 111/250: 100%|       | 570/570 [00:03<00:00, 146.90it/s]
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[Feature Set: xy_2] Epoch [111/250] - Avg Loss: 0.3503
Epoch 112/250: 100%| | 570/570 [00:03<00:00, 146.20it/s]

[Feature Set: xy_2] Epoch [112/250] - Avg Loss: 0.3067
Epoch 113/250: 100%| | 570/570 [00:03<00:00, 143.74it/s]

[Feature Set: xy_2] Epoch [113/250] - Avg Loss: 0.3683
Epoch 114/250: 100%| | 570/570 [00:03<00:00, 150.68it/s]

[Feature Set: xy_2] Epoch [114/250] - Avg Loss: 0.3431
Epoch 115/250: 100%| | 570/570 [00:03<00:00, 153.19it/s]

[Feature Set: xy_2] Epoch [115/250] - Avg Loss: 0.3393
Epoch 116/250: 100%| | 570/570 [00:03<00:00, 150.79it/s]

[Feature Set: xy_2] Epoch [116/250] - Avg Loss: 0.2840
Epoch 117/250: 100%| | 570/570 [00:03<00:00, 148.56it/s]

[Feature Set: xy_2] Epoch [117/250] - Avg Loss: 0.3005
Epoch 118/250: 100%| | 570/570 [00:03<00:00, 149.81it/s]

[Feature Set: xy_2] Epoch [118/250] - Avg Loss: 0.3223
Epoch 119/250: 100%| | 570/570 [00:03<00:00, 151.72it/s]

[Feature Set: xy_2] Epoch [119/250] - Avg Loss: 0.2946
Epoch 120/250: 100%| | 570/570 [00:03<00:00, 154.18it/s]

[Feature Set: xy_2] Epoch [120/250] - Avg Loss: 0.3356
Epoch 121/250: 100%| | 570/570 [00:03<00:00, 154.07it/s]

[Feature Set: xy_2] Epoch [121/250] - Avg Loss: 0.3239
Epoch 122/250: 100%| | 570/570 [00:03<00:00, 151.82it/s]

[Feature Set: xy_2] Epoch [122/250] - Avg Loss: 0.2732
Epoch 123/250: 100%| | 570/570 [00:03<00:00, 154.08it/s]

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[Feature Set: xy_2] Epoch [123/250] - Avg Loss: 0.3351
Epoch 124/250: 100%|        | 570/570 [00:03<00:00, 153.93it/s]

[Feature Set: xy_2] Epoch [124/250] - Avg Loss: 0.2811
Epoch 125/250: 100%|        | 570/570 [00:03<00:00, 151.80it/s]

[Feature Set: xy_2] Epoch [125/250] - Avg Loss: 0.3446
Epoch 126/250: 100%|        | 570/570 [00:03<00:00, 152.87it/s]

[Feature Set: xy_2] Epoch [126/250] - Avg Loss: 0.3484
Epoch 127/250: 100%|        | 570/570 [00:03<00:00, 153.14it/s]

[Feature Set: xy_2] Epoch [127/250] - Avg Loss: 0.3428
Epoch 128/250: 100%|        | 570/570 [00:03<00:00, 152.25it/s]

[Feature Set: xy_2] Epoch [128/250] - Avg Loss: 0.3058
Epoch 129/250: 100%|        | 570/570 [00:03<00:00, 154.51it/s]

[Feature Set: xy_2] Epoch [129/250] - Avg Loss: 0.3198
Epoch 130/250: 100%|        | 570/570 [00:03<00:00, 151.98it/s]

[Feature Set: xy_2] Epoch [130/250] - Avg Loss: 0.3507
Epoch 131/250: 100%|        | 570/570 [00:03<00:00, 154.39it/s]

[Feature Set: xy_2] Epoch [131/250] - Avg Loss: 0.3762
Epoch 132/250: 100%|        | 570/570 [00:03<00:00, 153.70it/s]

[Feature Set: xy_2] Epoch [132/250] - Avg Loss: 0.4249
Epoch 133/250: 100%|        | 570/570 [00:03<00:00, 151.06it/s]

[Feature Set: xy_2] Epoch [133/250] - Avg Loss: 0.3001
Epoch 134/250: 100%|        | 570/570 [00:03<00:00, 148.56it/s]

[Feature Set: xy_2] Epoch [134/250] - Avg Loss: 0.3499
Epoch 135/250: 100%|        | 570/570 [00:03<00:00, 153.25it/s]
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[Feature Set: xy_2] Epoch [135/250] - Avg Loss: 0.2652

Epoch 136/250: 100%| | 570/570 [00:03<00:00, 151.73it/s]

[Feature Set: xy_2] Epoch [136/250] - Avg Loss: 0.2960

Epoch 137/250: 100%| | 570/570 [00:03<00:00, 154.58it/s]

[Feature Set: xy_2] Epoch [137/250] - Avg Loss: 0.3332

Epoch 138/250: 100%| | 570/570 [00:03<00:00, 154.19it/s]

[Feature Set: xy_2] Epoch [138/250] - Avg Loss: 0.2911

Epoch 139/250: 100%| | 570/570 [00:03<00:00, 151.42it/s]

[Feature Set: xy_2] Epoch [139/250] - Avg Loss: 0.2713

Epoch 140/250: 100%| | 570/570 [00:03<00:00, 152.03it/s]

[Feature Set: xy_2] Epoch [140/250] - Avg Loss: 0.3022

Epoch 141/250: 100%| | 570/570 [00:04<00:00, 126.06it/s]

[Feature Set: xy_2] Epoch [141/250] - Avg Loss: 0.2960

Epoch 142/250: 100%| | 570/570 [00:03<00:00, 144.05it/s]

[Feature Set: xy_2] Epoch [142/250] - Avg Loss: 0.2852

Epoch 143/250: 100%| | 570/570 [00:04<00:00, 132.06it/s]

[Feature Set: xy_2] Epoch [143/250] - Avg Loss: 0.2633

Epoch 144/250: 100%| | 570/570 [00:03<00:00, 153.42it/s]

[Feature Set: xy_2] Epoch [144/250] - Avg Loss: 0.2411

Epoch 145/250: 100%| | 570/570 [00:03<00:00, 156.55it/s]

[Feature Set: xy_2] Epoch [145/250] - Avg Loss: 0.2677

Epoch 146/250: 100%| | 570/570 [00:03<00:00, 154.94it/s]

[Feature Set: xy_2] Epoch [146/250] - Avg Loss: 0.2453

Epoch 147/250: 100%| | 570/570 [00:03<00:00, 154.31it/s]

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[Feature Set: xy_2] Epoch [147/250] - Avg Loss: 0.4805
Epoch 148/250: 100%|      | 570/570 [00:03<00:00, 156.12it/s]

[Feature Set: xy_2] Epoch [148/250] - Avg Loss: 0.2945
Epoch 149/250: 100%|      | 570/570 [00:03<00:00, 154.51it/s]

[Feature Set: xy_2] Epoch [149/250] - Avg Loss: 0.2651
Epoch 150/250: 100%|      | 570/570 [00:03<00:00, 151.21it/s]

[Feature Set: xy_2] Epoch [150/250] - Avg Loss: 0.2543
Epoch 151/250: 100%|      | 570/570 [00:03<00:00, 152.59it/s]

[Feature Set: xy_2] Epoch [151/250] - Avg Loss: 0.3447
Epoch 152/250: 100%|      | 570/570 [00:03<00:00, 156.87it/s]

[Feature Set: xy_2] Epoch [152/250] - Avg Loss: 0.2628
Epoch 153/250: 100%|      | 570/570 [00:03<00:00, 155.06it/s]

[Feature Set: xy_2] Epoch [153/250] - Avg Loss: 0.2054
Epoch 154/250: 100%|      | 570/570 [00:03<00:00, 156.60it/s]

[Feature Set: xy_2] Epoch [154/250] - Avg Loss: 0.3133
Epoch 155/250: 100%|      | 570/570 [00:03<00:00, 151.34it/s]

[Feature Set: xy_2] Epoch [155/250] - Avg Loss: 0.2779
Epoch 156/250: 100%|      | 570/570 [00:03<00:00, 157.19it/s]

[Feature Set: xy_2] Epoch [156/250] - Avg Loss: 0.2666
Epoch 157/250: 100%|      | 570/570 [00:03<00:00, 157.00it/s]

[Feature Set: xy_2] Epoch [157/250] - Avg Loss: 0.3885
Epoch 158/250: 100%|      | 570/570 [00:03<00:00, 153.27it/s]

[Feature Set: xy_2] Epoch [158/250] - Avg Loss: 0.2603
Epoch 159/250: 100%|      | 570/570 [00:03<00:00, 157.18it/s]
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[Feature Set: xy_2] Epoch [159/250] - Avg Loss: 0.2994
Epoch 160/250: 100%|      | 570/570 [00:03<00:00, 157.42it/s]

[Feature Set: xy_2] Epoch [160/250] - Avg Loss: 0.3624
Epoch 161/250: 100%|      | 570/570 [00:03<00:00, 154.54it/s]

[Feature Set: xy_2] Epoch [161/250] - Avg Loss: 0.2346
Epoch 162/250: 100%|      | 570/570 [00:03<00:00, 156.29it/s]

[Feature Set: xy_2] Epoch [162/250] - Avg Loss: 0.2738
Epoch 163/250: 100%|      | 570/570 [00:03<00:00, 154.47it/s]

[Feature Set: xy_2] Epoch [163/250] - Avg Loss: 0.4215
Epoch 164/250: 100%|      | 570/570 [00:03<00:00, 152.36it/s]

[Feature Set: xy_2] Epoch [164/250] - Avg Loss: 0.5335
Epoch 165/250: 100%|      | 570/570 [00:03<00:00, 155.38it/s]

[Feature Set: xy_2] Epoch [165/250] - Avg Loss: 0.3627
Epoch 166/250: 100%|      | 570/570 [00:03<00:00, 152.59it/s]

[Feature Set: xy_2] Epoch [166/250] - Avg Loss: 0.2398
Epoch 167/250: 100%|      | 570/570 [00:03<00:00, 153.84it/s]

[Feature Set: xy_2] Epoch [167/250] - Avg Loss: 0.2063
Epoch 168/250: 100%|      | 570/570 [00:03<00:00, 156.73it/s]

[Feature Set: xy_2] Epoch [168/250] - Avg Loss: 0.4218
Epoch 169/250: 100%|      | 570/570 [00:03<00:00, 156.45it/s]

[Feature Set: xy_2] Epoch [169/250] - Avg Loss: 0.2922
Epoch 170/250: 100%|      | 570/570 [00:03<00:00, 154.24it/s]

[Feature Set: xy_2] Epoch [170/250] - Avg Loss: 0.2810
Epoch 171/250: 100%|      | 570/570 [00:03<00:00, 156.68it/s]
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[Feature Set: xy_2] Epoch [171/250] - Avg Loss: 0.2898
Epoch 172/250: 100%|      | 570/570 [00:03<00:00, 156.72it/s]

[Feature Set: xy_2] Epoch [172/250] - Avg Loss: 0.2299
Epoch 173/250: 100%|      | 570/570 [00:03<00:00, 154.26it/s]

[Feature Set: xy_2] Epoch [173/250] - Avg Loss: 0.2737
Epoch 174/250: 100%|      | 570/570 [00:03<00:00, 155.57it/s]

[Feature Set: xy_2] Epoch [174/250] - Avg Loss: 0.3651
Epoch 175/250: 100%|      | 570/570 [00:03<00:00, 149.50it/s]

[Feature Set: xy_2] Epoch [175/250] - Avg Loss: 0.3736
Epoch 176/250: 100%|      | 570/570 [00:03<00:00, 153.26it/s]

[Feature Set: xy_2] Epoch [176/250] - Avg Loss: 0.2812
Epoch 177/250: 100%|      | 570/570 [00:03<00:00, 156.73it/s]

[Feature Set: xy_2] Epoch [177/250] - Avg Loss: 0.2961
Epoch 178/250: 100%|      | 570/570 [00:03<00:00, 155.79it/s]

[Feature Set: xy_2] Epoch [178/250] - Avg Loss: 0.2925
Epoch 179/250: 100%|      | 570/570 [00:03<00:00, 153.98it/s]

[Feature Set: xy_2] Epoch [179/250] - Avg Loss: 0.2655
Epoch 180/250: 100%|      | 570/570 [00:03<00:00, 156.91it/s]

[Feature Set: xy_2] Epoch [180/250] - Avg Loss: 0.2683
Epoch 181/250: 100%|      | 570/570 [00:03<00:00, 156.30it/s]

[Feature Set: xy_2] Epoch [181/250] - Avg Loss: 0.2302
Epoch 182/250: 100%|      | 570/570 [00:03<00:00, 151.83it/s]

[Feature Set: xy_2] Epoch [182/250] - Avg Loss: 0.2842
Epoch 183/250: 100%|      | 570/570 [00:03<00:00, 153.28it/s]
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[Feature Set: xy_2] Epoch [183/250] - Avg Loss: 0.2453

Epoch 184/250: 100%| | 570/570 [00:03<00:00, 155.64it/s]

[Feature Set: xy_2] Epoch [184/250] - Avg Loss: 0.2356

Epoch 185/250: 100%| | 570/570 [00:05<00:00, 109.06it/s]

[Feature Set: xy_2] Epoch [185/250] - Avg Loss: 0.2905

Epoch 186/250: 100%| | 570/570 [00:03<00:00, 148.57it/s]

[Feature Set: xy_2] Epoch [186/250] - Avg Loss: 0.2058

Epoch 187/250: 100%| | 570/570 [00:03<00:00, 156.52it/s]

[Feature Set: xy_2] Epoch [187/250] - Avg Loss: 0.3092

Epoch 188/250: 100%| | 570/570 [00:03<00:00, 157.38it/s]

[Feature Set: xy_2] Epoch [188/250] - Avg Loss: 0.2445

Epoch 189/250: 100%| | 570/570 [00:03<00:00, 154.54it/s]

[Feature Set: xy_2] Epoch [189/250] - Avg Loss: 0.3356

Epoch 190/250: 100%| | 570/570 [00:03<00:00, 156.29it/s]

[Feature Set: xy_2] Epoch [190/250] - Avg Loss: 0.3131

Epoch 191/250: 100%| | 570/570 [00:03<00:00, 156.09it/s]

[Feature Set: xy_2] Epoch [191/250] - Avg Loss: 0.3879

Epoch 192/250: 100%| | 570/570 [00:03<00:00, 155.33it/s]

[Feature Set: xy_2] Epoch [192/250] - Avg Loss: 0.3475

Epoch 193/250: 100%| | 570/570 [00:03<00:00, 157.70it/s]

[Feature Set: xy_2] Epoch [193/250] - Avg Loss: 0.3183

Epoch 194/250: 100%| | 570/570 [00:03<00:00, 156.57it/s]

[Feature Set: xy_2] Epoch [194/250] - Avg Loss: 0.2591

Epoch 195/250: 100%| | 570/570 [00:03<00:00, 154.57it/s]

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[Feature Set: xy_2] Epoch [195/250] - Avg Loss: 0.2671
Epoch 196/250: 100%|      | 570/570 [00:03<00:00, 156.90it/s]

[Feature Set: xy_2] Epoch [196/250] - Avg Loss: 0.2111
Epoch 197/250: 100%|      | 570/570 [00:03<00:00, 157.00it/s]

[Feature Set: xy_2] Epoch [197/250] - Avg Loss: 0.2026
Epoch 198/250: 100%|      | 570/570 [00:03<00:00, 151.78it/s]

[Feature Set: xy_2] Epoch [198/250] - Avg Loss: 0.3274
Epoch 199/250: 100%|      | 570/570 [00:03<00:00, 156.58it/s]

[Feature Set: xy_2] Epoch [199/250] - Avg Loss: 0.2077
Epoch 200/250: 100%|      | 570/570 [00:03<00:00, 157.29it/s]

[Feature Set: xy_2] Epoch [200/250] - Avg Loss: 0.3485
Epoch 201/250: 100%|      | 570/570 [00:03<00:00, 154.10it/s]

[Feature Set: xy_2] Epoch [201/250] - Avg Loss: 0.2999
Epoch 202/250: 100%|      | 570/570 [00:03<00:00, 157.36it/s]

[Feature Set: xy_2] Epoch [202/250] - Avg Loss: 0.2682
Epoch 203/250: 100%|      | 570/570 [00:03<00:00, 157.17it/s]

[Feature Set: xy_2] Epoch [203/250] - Avg Loss: 0.4472
Epoch 204/250: 100%|      | 570/570 [00:03<00:00, 155.00it/s]

[Feature Set: xy_2] Epoch [204/250] - Avg Loss: 0.2203
Epoch 205/250: 100%|      | 570/570 [00:03<00:00, 157.54it/s]

[Feature Set: xy_2] Epoch [205/250] - Avg Loss: 0.2475
Epoch 206/250: 100%|      | 570/570 [00:03<00:00, 157.15it/s]

[Feature Set: xy_2] Epoch [206/250] - Avg Loss: 0.1786
Epoch 207/250: 100%|      | 570/570 [00:03<00:00, 154.42it/s]
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[Feature Set: xy_2] Epoch [207/250] - Avg Loss: 0.2787
Epoch 208/250: 100%|      | 570/570 [00:03<00:00, 156.94it/s]

[Feature Set: xy_2] Epoch [208/250] - Avg Loss: 0.2353
Epoch 209/250: 100%|      | 570/570 [00:03<00:00, 157.29it/s]

[Feature Set: xy_2] Epoch [209/250] - Avg Loss: 0.1978
Epoch 210/250: 100%|      | 570/570 [00:03<00:00, 155.41it/s]

[Feature Set: xy_2] Epoch [210/250] - Avg Loss: 0.2982
Epoch 211/250: 100%|      | 570/570 [00:03<00:00, 156.23it/s]

[Feature Set: xy_2] Epoch [211/250] - Avg Loss: 0.2856
Epoch 212/250: 100%|      | 570/570 [00:03<00:00, 156.57it/s]

[Feature Set: xy_2] Epoch [212/250] - Avg Loss: 0.3444
Epoch 213/250: 100%|      | 570/570 [00:03<00:00, 154.80it/s]

[Feature Set: xy_2] Epoch [213/250] - Avg Loss: 0.2554
Epoch 214/250: 100%|      | 570/570 [00:03<00:00, 154.85it/s]

[Feature Set: xy_2] Epoch [214/250] - Avg Loss: 0.3458
Epoch 215/250: 100%|      | 570/570 [00:03<00:00, 153.60it/s]

[Feature Set: xy_2] Epoch [215/250] - Avg Loss: 0.2114
Epoch 216/250: 100%|      | 570/570 [00:03<00:00, 154.91it/s]

[Feature Set: xy_2] Epoch [216/250] - Avg Loss: 0.2771
Epoch 217/250: 100%|      | 570/570 [00:03<00:00, 155.90it/s]

[Feature Set: xy_2] Epoch [217/250] - Avg Loss: 0.2003
Epoch 218/250: 100%|      | 570/570 [00:03<00:00, 156.92it/s]

[Feature Set: xy_2] Epoch [218/250] - Avg Loss: 0.1873
Epoch 219/250: 100%|      | 570/570 [00:03<00:00, 154.09it/s]
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[Feature Set: xy_2] Epoch [219/250] - Avg Loss: 0.3105
Epoch 220/250: 100%|      | 570/570 [00:03<00:00, 156.33it/s]

[Feature Set: xy_2] Epoch [220/250] - Avg Loss: 0.2143
Epoch 221/250: 100%|      | 570/570 [00:03<00:00, 157.24it/s]

[Feature Set: xy_2] Epoch [221/250] - Avg Loss: 0.2108
Epoch 222/250: 100%|      | 570/570 [00:03<00:00, 154.17it/s]

[Feature Set: xy_2] Epoch [222/250] - Avg Loss: 0.2699
Epoch 223/250: 100%|      | 570/570 [00:03<00:00, 151.56it/s]

[Feature Set: xy_2] Epoch [223/250] - Avg Loss: 0.2546
Epoch 224/250: 100%|      | 570/570 [00:03<00:00, 157.16it/s]

[Feature Set: xy_2] Epoch [224/250] - Avg Loss: 0.3202
Epoch 225/250: 100%|      | 570/570 [00:03<00:00, 154.87it/s]

[Feature Set: xy_2] Epoch [225/250] - Avg Loss: 0.2811
Epoch 226/250: 100%|      | 570/570 [00:03<00:00, 157.34it/s]

[Feature Set: xy_2] Epoch [226/250] - Avg Loss: 0.2938
Epoch 227/250: 100%|      | 570/570 [00:03<00:00, 155.72it/s]

[Feature Set: xy_2] Epoch [227/250] - Avg Loss: 0.2586
Epoch 228/250: 100%|      | 570/570 [00:03<00:00, 155.43it/s]

[Feature Set: xy_2] Epoch [228/250] - Avg Loss: 0.2449
Epoch 229/250: 100%|      | 570/570 [00:03<00:00, 157.42it/s]

[Feature Set: xy_2] Epoch [229/250] - Avg Loss: 0.2568
Epoch 230/250: 100%|      | 570/570 [00:03<00:00, 156.12it/s]

[Feature Set: xy_2] Epoch [230/250] - Avg Loss: 0.1933
Epoch 231/250: 100%|      | 570/570 [00:03<00:00, 151.09it/s]
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[Feature Set: xy_2] Epoch [231/250] - Avg Loss: 0.2337
Epoch 232/250: 100%|        | 570/570 [00:03<00:00, 156.72it/s]

[Feature Set: xy_2] Epoch [232/250] - Avg Loss: 0.2355
Epoch 233/250: 100%|        | 570/570 [00:03<00:00, 155.31it/s]

[Feature Set: xy_2] Epoch [233/250] - Avg Loss: 0.1918
Epoch 234/250: 100%|        | 570/570 [00:03<00:00, 153.71it/s]

[Feature Set: xy_2] Epoch [234/250] - Avg Loss: 0.3228
Epoch 235/250: 100%|        | 570/570 [00:03<00:00, 149.12it/s]

[Feature Set: xy_2] Epoch [235/250] - Avg Loss: 0.2247
Epoch 236/250: 100%|        | 570/570 [00:03<00:00, 149.14it/s]

[Feature Set: xy_2] Epoch [236/250] - Avg Loss: 0.2089
Epoch 237/250: 100%|        | 570/570 [00:03<00:00, 152.96it/s]

[Feature Set: xy_2] Epoch [237/250] - Avg Loss: 0.2139
Epoch 238/250: 100%|        | 570/570 [00:03<00:00, 151.22it/s]

[Feature Set: xy_2] Epoch [238/250] - Avg Loss: 0.2214
Epoch 239/250: 100%|        | 570/570 [00:03<00:00, 149.34it/s]

[Feature Set: xy_2] Epoch [239/250] - Avg Loss: 0.2225
Epoch 240/250: 100%|        | 570/570 [00:03<00:00, 155.56it/s]

[Feature Set: xy_2] Epoch [240/250] - Avg Loss: 0.2145
Epoch 241/250: 100%|        | 570/570 [00:03<00:00, 154.84it/s]

[Feature Set: xy_2] Epoch [241/250] - Avg Loss: 0.2479
Epoch 242/250: 100%|        | 570/570 [00:03<00:00, 154.40it/s]

[Feature Set: xy_2] Epoch [242/250] - Avg Loss: 0.2501
Epoch 243/250: 100%|        | 570/570 [00:04<00:00, 141.69it/s]
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[Feature Set: xy_2] Epoch [243/250] - Avg Loss: 0.2146
Epoch 244/250: 100%|        | 570/570 [00:03<00:00, 148.11it/s]

[Feature Set: xy_2] Epoch [244/250] - Avg Loss: 0.2797
Epoch 245/250: 100%|        | 570/570 [00:03<00:00, 156.79it/s]

[Feature Set: xy_2] Epoch [245/250] - Avg Loss: 0.3198
Epoch 246/250: 100%|        | 570/570 [00:03<00:00, 155.67it/s]

[Feature Set: xy_2] Epoch [246/250] - Avg Loss: 0.2454
Epoch 247/250: 100%|        | 570/570 [00:03<00:00, 152.28it/s]

[Feature Set: xy_2] Epoch [247/250] - Avg Loss: 0.2189
Epoch 248/250: 100%|        | 570/570 [00:03<00:00, 157.15it/s]

[Feature Set: xy_2] Epoch [248/250] - Avg Loss: 0.2542
Epoch 249/250: 100%|        | 570/570 [00:03<00:00, 157.16it/s]

[Feature Set: xy_2] Epoch [249/250] - Avg Loss: 0.3832
Epoch 250/250: 100%|        | 570/570 [00:03<00:00, 155.16it/s]

[Feature Set: xy_2] Epoch [250/250] - Avg Loss: 0.5887
Epoch 250/250: 100%|        | 570/570 [00:01<00:00, 345.19it/s]
```

```python
[12]: df_results = pd.DataFrame(results)
      print(df_results)
```

```
  Feature_Set  Accuracy  Macro_F1  Weighted_F1
0        xy_2  0.919298  0.912764     0.918209
```