```
Train Dataloader - 48
Test Dataloader - 173

Device Used - cuda

Model Used - Base_3DCAE
Feature Extraction - True
Background Subtraction - True
Background Subtraction Algorithm - GMG
Data Augmentation - False

Window Length = 8
Stride = 1
Fair Comparison = True
Dropout = 0.25
Learning Rate = 0.0002
Num Epochs = 20
Chunk Size = 64
Forward Chunk = 8
Forward Chunk Size = 8
Loss Fn = L1Loss()

Training has Begun
epoch [1/20], loss:0.5717
epoch [2/20], loss:0.5709
epoch [3/20], loss:0.5702
epoch [4/20], loss:0.5700
epoch [5/20], loss:0.5699
epoch [6/20], loss:0.5698
epoch [7/20], loss:0.5696
epoch [8/20], loss:0.5696
epoch [9/20], loss:0.5695
epoch [10/20], loss:0.5694
epoch [11/20], loss:0.5693
epoch [12/20], loss:0.5693
epoch [13/20], loss:0.5693
epoch [14/20], loss:0.5692
epoch [15/20], loss:0.5691
epoch [16/20], loss:0.5691
epoch [17/20], loss:0.5691
epoch [18/20], loss:0.5691
epoch [19/20], loss:0.5690
```

```python
# https://docs.opencv.org/4.x/d1/d5c/classcv_1_1bgsegm_1_1BackgroundSubtractorGMG.html
def perform_background_subtraction_GMG(vid_total):
    background_subtracted_vid_total = []

    # Create background subtractor
    bg_subtractor = cv2.bgsegm.createBackgroundSubtractorGMG()
    kernel = cv2.getStructuringElement(cv2.MORPH_ELLIPSE, (3, 3))
    # bg_subtractor.setDecisionThreshold(0.8)  # Default - 0.8
    # bg_subtractor.setDefaultLearningRate(0.025)  # Default - 0.025
    bg_subtractor.setNumFrames(75)  # Default - 120

    for frame in vid_total:
        frame = np.array(frame, dtype=np.float32)
        # print(frame.shape)
        # Perform background subtraction
        foreground_mask = bg_subtractor.apply(frame)
        foreground_mask = cv2.morphologyEx(foreground_mask, cv2.MORPH_OPEN, kernel)
        background_subtracted_vid_total.append(foreground_mask)

        # # To view the images
        # cv2.imshow("Original Frame", frame)
        # cv2.imshow("Foreground Mask - GMG", foreground_mask)
        # # Exit on 'q' press
        # k = cv2.waitKey(30) & 0xFF
        # if k == 27:
        #     break

    return background_subtracted_vid_total
```

c:\Users\abdul\anaconda3\envs\fyp_base_paper_2\lib\site-packages\numpy\lib\npyio.py:528: V
isibleDeprecationWarning: Creating an ndarray from ragged nested sequences (which is a lis
t-or-tuple of lists-or-tuples-or ndarrays with different lengths or shapes) is deprecated.
If you meant to do this, you must specify 'dtype=object' when creating the ndarray.
  arr = np.asanyarray(arr)

```
epoch [20/20], loss:0.5691
Training has Completed

Forward pass occuring
Forward pass completed

Thermal_T3_2024-03-14-04-44-41

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STD Global Classification Results
TPR 0.836, FPR 0.206, Precision 0.061, Recall 0.836
tn 52713, fp 13676, fn 176, tp 896
std_AUROC  0.848
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Mean Global Classification Results
TPR 0.844, FPR 0.251, Precision 0.051, Recall 0.844
tn 49721, fp 16668, fn 167, tp 905
mean_AUROC 0.835
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```
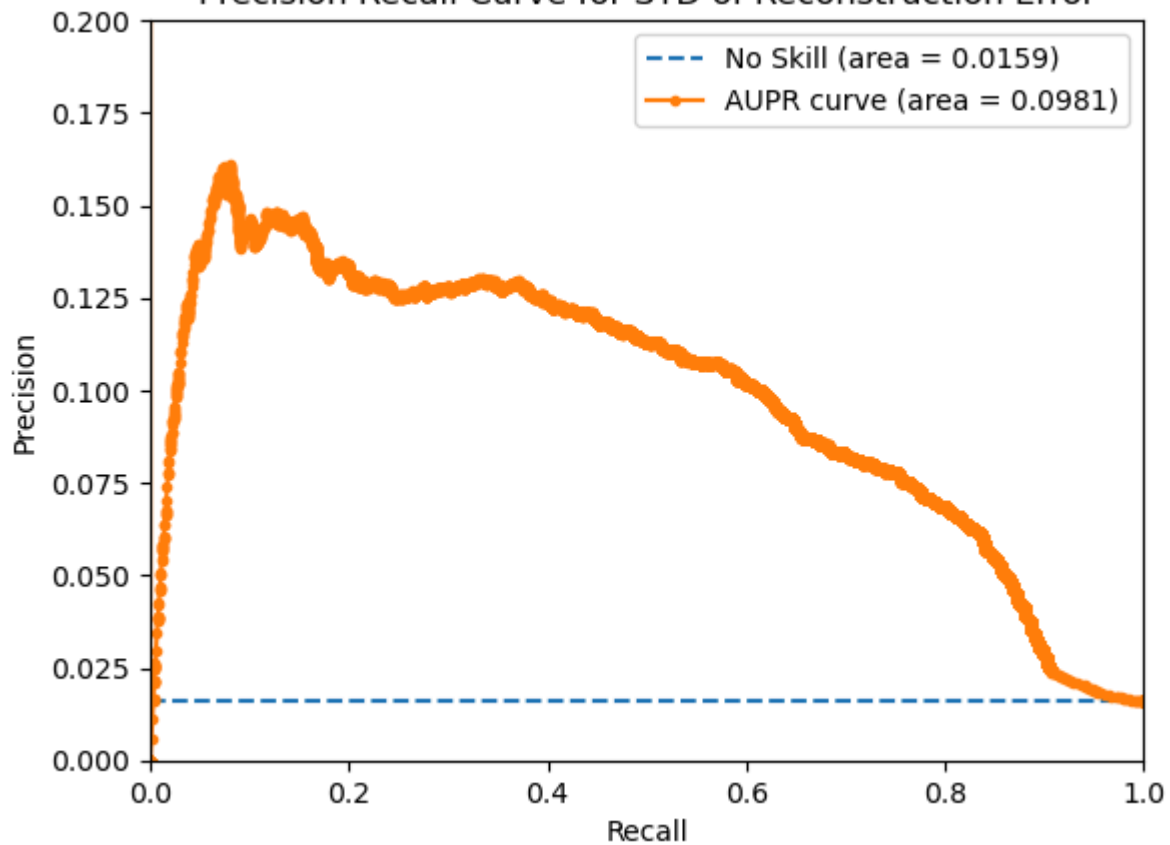
d:\Abdul Rasheed NITT\Academics\Eigth Semester\FYP\Implementation\FallDetection\Code\funct
ions.py:250: RuntimeWarning: Mean of empty slice
  final_performance_mean = np.nanmean(video_metrics, axis=0) # get the mean performance a
cross all videos
c:\Users\abdul\anaconda3\envs\fyp_base_paper_2\lib\site-packages\numpy\lib\nanfunctions.p
y:1670: RuntimeWarning: Degrees of freedom <= 0 for slice.
  var = nanvar(a, axis=axis, dtype=dtype, out=out, ddof=ddof,

Receiver Operating Characteristic for STD of Reconstruction Error
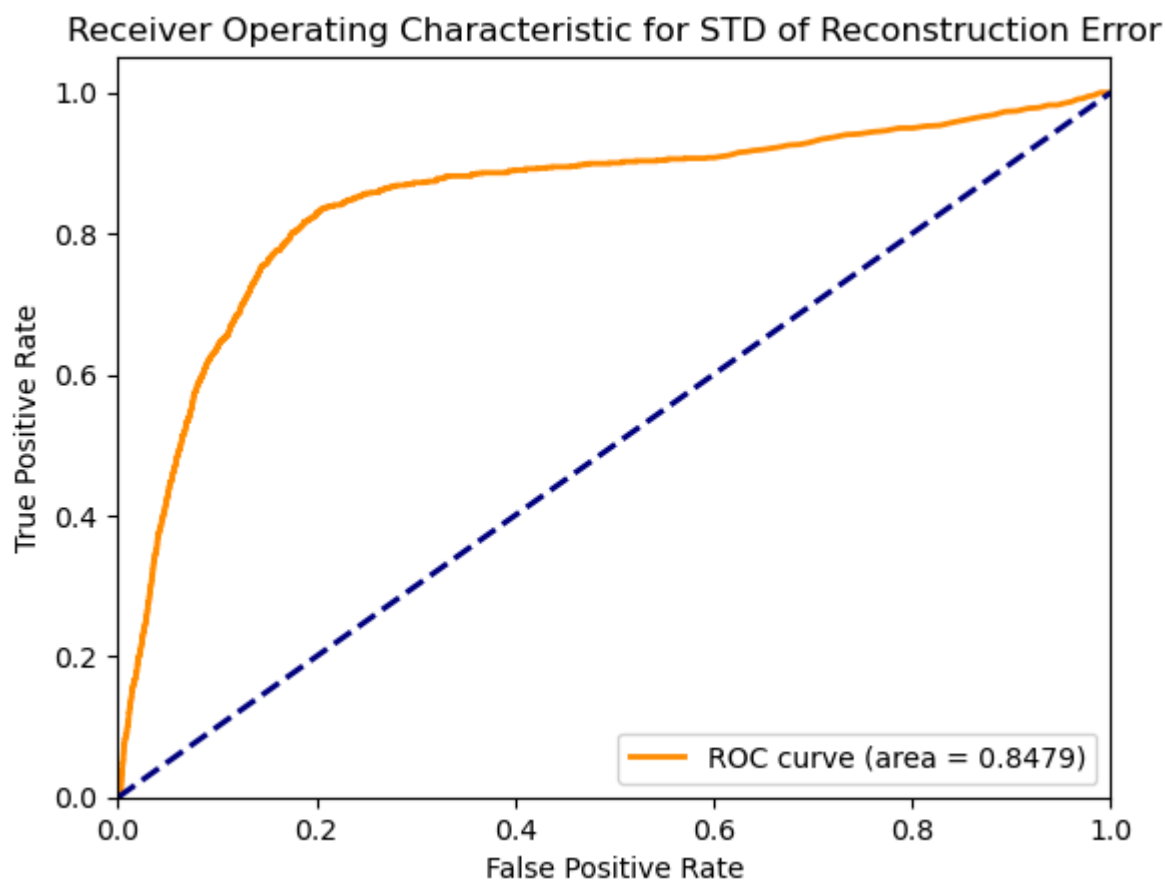
Precision Recall Curve for STD of Reconstruction Error

- - - No Skill (area = 0.0159)
—— AUPR curve (area = 0.0981)

Receiver Operating Characteristic for Mean of Reconstruction Error

—— ROC curve (area = 0.8352)

Precision Recall Curve for Mean of Reconstruction Error