The X_train size is torch.Size([460, 100, 75])

The y_train size is torch.Size([460, 1])

The X_test size is torch.Size([116, 100, 75])

The y_test size is torch.Size([116, 1])

The cuda device is cpu

The frame size is (56, 75)

The number of frames are 2 , the frame size is 50 and stride is 50

Current device: cpu

Model output is tensor([0.4682], grad_fn=<SigmoidBackward0>)
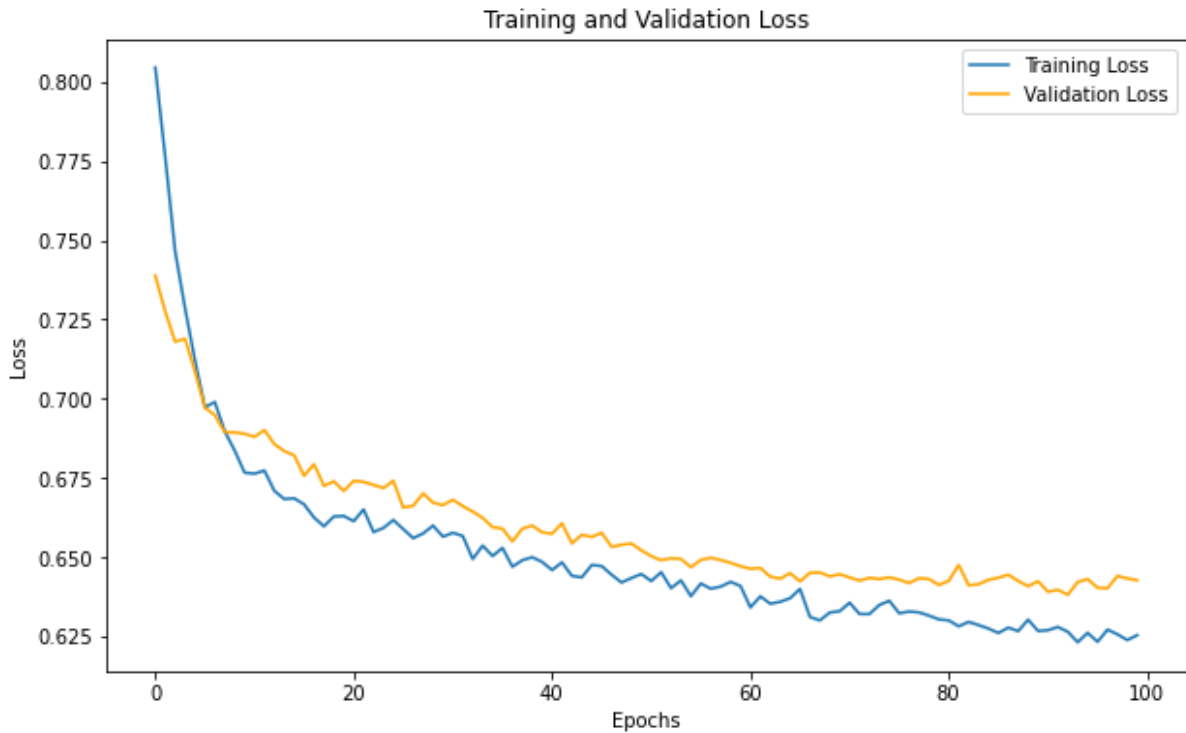
The no. of frames are 2

The hyperparameters are : model_dim is = 8 , num_heads = 4 , dim_feedforward = 8 , num_layers = 6 , dropout = 0.2 , stride = 50 , frame_size = 50 , dense_layer_neurons = 118 , epochs = 100, learning_rate = 1e-05

Epoch [1/100], Loss: 0.8045   Val loss: 0.7388   Best model at epoch: 0

Epoch [2/100], Loss: 0.7762   Val loss: 0.7275   Best model at epoch: 0

Epoch [3/100], Loss: 0.7465   Val loss: 0.7180   Best model at epoch: 0

Epoch [4/100], Loss: 0.7285   Val loss: 0.7189   Best model at epoch: 0

Epoch [5/100], Loss: 0.7120   Val loss: 0.7085   Best model at epoch: 0

Epoch [6/100], Loss: 0.6973   Val loss: 0.6972   Best model at epoch: 0

Epoch [7/100], Loss: 0.6990   Val loss: 0.6948   Best model at epoch: 0

Epoch [8/100], Loss: 0.6897   Val loss: 0.6894   Best model at epoch: 0

Epoch [9/100], Loss: 0.6836   Val loss: 0.6893   Best model at epoch: 0

Epoch [10/100], Loss: 0.6767   Val loss: 0.6889   Best model at epoch: 0

Epoch [11/100], Loss: 0.6763   Val loss: 0.6880   Best model at epoch: 0

Epoch [12/100], Loss: 0.6773   Val loss: 0.6901   Best model at epoch: 0

Epoch [13/100], Loss: 0.6709   Val loss: 0.6857   Best model at epoch: 0

Epoch [14/100], Loss: 0.6683   Val loss: 0.6834   Best model at epoch: 0

Epoch [15/100], Loss: 0.6685   Val loss: 0.6821   Best model at epoch: 0

Epoch [16/100], Loss: 0.6666   Val loss: 0.6757   Best model at epoch: 0

Epoch [17/100], Loss: 0.6625   Val loss: 0.6793   Best model at epoch: 17

Epoch [18/100], Loss: 0.6597   Val loss: 0.6725   Best model at epoch: 18

Epoch [19/100], Loss: 0.6628   Val loss: 0.6739   Best model at epoch: 18

Epoch [20/100], Loss: 0.6630   Val loss: 0.6709   Best model at epoch: 20

Epoch [21/100], Loss: 0.6613   Val loss: 0.6741   Best model at epoch: 20

Epoch [22/100], Loss: 0.6650   Val loss: 0.6737   Best model at epoch: 20

Epoch [23/100], Loss: 0.6579   Val loss: 0.6728   Best model at epoch: 20

Epoch [24/100], Loss: 0.6592   Val loss: 0.6718   Best model at epoch: 20

Epoch [25/100], Loss: 0.6617   Val loss: 0.6741   Best model at epoch: 20

Epoch [26/100], Loss: 0.6588   Val loss: 0.6657   Best model at epoch: 26

Epoch [27/100], Loss: 0.6560   Val loss: 0.6662   Best model at epoch: 26

Epoch [28/100], Loss: 0.6575   Val loss: 0.6701   Best model at epoch: 26

Epoch [29/100], Loss: 0.6599   Val loss: 0.6672   Best model at epoch: 26

Epoch [30/100], Loss: 0.6564   Val loss: 0.6664   Best model at epoch: 26

Epoch [31/100], Loss: 0.6577   Val loss: 0.6681   Best model at epoch: 26

Epoch [32/100], Loss: 0.6566   Val loss: 0.6661   Best model at epoch: 26

Epoch [33/100], Loss: 0.6494   Val loss: 0.6643   Best model at epoch: 33

Epoch [34/100], Loss: 0.6536   Val loss: 0.6624   Best model at epoch: 34

Epoch [35/100], Loss: 0.6503   Val loss: 0.6595   Best model at epoch: 35

Epoch [36/100], Loss: 0.6529   Val loss: 0.6590   Best model at epoch: 36

Epoch [37/100], Loss: 0.6469   Val loss: 0.6549   Best model at epoch: 37

Epoch [38/100], Loss: 0.6490   Val loss: 0.6589   Best model at epoch: 37

Epoch [39/100], Loss: 0.6499   Val loss: 0.6600   Best model at epoch: 37

Epoch [40/100], Loss: 0.6485   Val loss: 0.6578   Best model at epoch: 37

Epoch [41/100], Loss: 0.6459   Val loss: 0.6574   Best model at epoch: 37

Epoch [42/100], Loss: 0.6483   Val loss: 0.6607   Best model at epoch: 37

Epoch [43/100], Loss: 0.6441   Val loss: 0.6543   Best model at epoch: 43

Epoch [44/100], Loss: 0.6436   Val loss: 0.6570   Best model at epoch: 43

Epoch [45/100], Loss: 0.6475   Val loss: 0.6564   Best model at epoch: 43

Epoch [46/100], Loss: 0.6472   Val loss: 0.6577   Best model at epoch: 43

Epoch [47/100], Loss: 0.6444   Val loss: 0.6532   Best model at epoch: 47

Epoch [48/100], Loss: 0.6420   Val loss: 0.6539   Best model at epoch: 47

Epoch [49/100], Loss: 0.6434   Val loss: 0.6543   Best model at epoch: 47

Epoch [50/100], Loss: 0.6446   Val loss: 0.6522   Best model at epoch: 50

Epoch [51/100], Loss: 0.6424   Val loss: 0.6503   Best model at epoch: 51

Epoch [52/100], Loss: 0.6452   Val loss: 0.6490   Best model at epoch: 52

Epoch [53/100], Loss: 0.6402   Val loss: 0.6496   Best model at epoch: 52

Epoch [54/100], Loss: 0.6426   Val loss: 0.6494   Best model at epoch: 52

Epoch [55/100], Loss: 0.6376   Val loss: 0.6468   Best model at epoch: 55

Epoch [56/100], Loss: 0.6416   Val loss: 0.6491   Best model at epoch: 55

Epoch [57/100], Loss: 0.6400   Val loss: 0.6498   Best model at epoch: 55

Epoch [58/100], Loss: 0.6407   Val loss: 0.6491   Best model at epoch: 55

Epoch [59/100], Loss: 0.6422   Val loss: 0.6482   Best model at epoch: 55

Epoch [60/100], Loss: 0.6409   Val loss: 0.6471   Best model at epoch: 55

Epoch [61/100], Loss: 0.6341   Val loss: 0.6463   Best model at epoch: 61

Epoch [62/100], Loss: 0.6376   Val loss: 0.6465   Best model at epoch: 61

Epoch [63/100], Loss: 0.6353   Val loss: 0.6438   Best model at epoch: 63

Epoch [64/100], Loss: 0.6359   Val loss: 0.6432   Best model at epoch: 64

Epoch [65/100], Loss: 0.6370   Val loss: 0.6449   Best model at epoch: 64

Epoch [66/100], Loss: 0.6399   Val loss: 0.6423   Best model at epoch: 66

Epoch [67/100], Loss: 0.6311   Val loss: 0.6450   Best model at epoch: 66

Epoch [68/100], Loss: 0.6300   Val loss: 0.6451   Best model at epoch: 66

Epoch [69/100], Loss: 0.6325   Val loss: 0.6439   Best model at epoch: 66

Epoch [70/100], Loss: 0.6329   Val loss: 0.6446   Best model at epoch: 66

Epoch [71/100], Loss: 0.6356   Val loss: 0.6435   Best model at epoch: 66

Epoch [72/100], Loss: 0.6320   Val loss: 0.6426   Best model at epoch: 66

Epoch [73/100], Loss: 0.6320   Val loss: 0.6434   Best model at epoch: 66

Epoch [74/100], Loss: 0.6349   Val loss: 0.6431   Best model at epoch: 66

Epoch [75/100], Loss: 0.6362   Val loss: 0.6436   Best model at epoch: 66

Epoch [76/100], Loss: 0.6323   Val loss: 0.6429   Best model at epoch: 66

Epoch [77/100], Loss: 0.6328   Val loss: 0.6418   Best model at epoch: 77

Epoch [78/100], Loss: 0.6325   Val loss: 0.6433   Best model at epoch: 77

Epoch [79/100], Loss: 0.6315   Val loss: 0.6431   Best model at epoch: 77

Epoch [80/100], Loss: 0.6303   Val loss: 0.6412   Best model at epoch: 80

Epoch [81/100], Loss: 0.6300   Val loss: 0.6425   Best model at epoch: 80

Epoch [82/100], Loss: 0.6281   Val loss: 0.6475   Best model at epoch: 80

Epoch [83/100], Loss: 0.6295   Val loss: 0.6411   Best model at epoch: 83

Epoch [84/100], Loss: 0.6285   Val loss: 0.6414   Best model at epoch: 83

Epoch [85/100], Loss: 0.6274   Val loss: 0.6428   Best model at epoch: 83

Epoch [86/100], Loss: 0.6260   Val loss: 0.6435   Best model at epoch: 83

Epoch [87/100], Loss: 0.6277   Val loss: 0.6444   Best model at epoch: 83

Epoch [88/100], Loss: 0.6266   Val loss: 0.6425   Best model at epoch: 83

Epoch [89/100], Loss: 0.6302   Val loss: 0.6408   Best model at epoch: 89

Epoch [90/100], Loss: 0.6267   Val loss: 0.6424   Best model at epoch: 89

Epoch [91/100], Loss: 0.6269   Val loss: 0.6390   Best model at epoch: 91

Epoch [92/100], Loss: 0.6279   Val loss: 0.6397   Best model at epoch: 91

Epoch [93/100], Loss: 0.6264   Val loss: 0.6381   Best model at epoch: 93

Epoch [94/100], Loss: 0.6231   Val loss: 0.6421   Best model at epoch: 93

Epoch [95/100], Loss: 0.6261   Val loss: 0.6431   Best model at epoch: 93

Epoch [96/100], Loss: 0.6232   Val loss: 0.6403   Best model at epoch: 93

Epoch [97/100], Loss: 0.6271   Val loss: 0.6402   Best model at epoch: 93

Epoch [98/100], Loss: 0.6256   Val loss: 0.6440   Best model at epoch: 93

Epoch [99/100], Loss: 0.6238   Val loss: 0.6433   Best model at epoch: 93

Epoch [100/100], Loss: 0.6253   Val loss: 0.6427   Best model at epoch: 93

Training and Validation Loss

Total time in seconds : 6507.157321214676

The best model was found at epoch number 93

--- 01:48:27 seconds ---

The training loss is 0.6253363352250938

Performance with the best model is :

The test loss is 0.6343918532646936

For exercise : 3

Mean absolute deviation : 0.201067

RMS deviation:: 0.112365

The hyperparameters are : model_dim is = 8 , num_heads = 4 , dim_feedforward = 8 , num_layers = 6 , dropout = 0.2 , stride = 50 , frame_size = 50 , dense_layer_neurons = 118 , epochs = 100, learning_rate = 1e-05