

Parameter Configuration.

- `CONTEXT_LENGTH: 30`
- `D_MODEL: 32`
- `*_LAYERS: 2`
- `*_HEADS: 4`
- `DROPOUT: 0.1`
- `LEARNING_RATE: 1e-4`
- `BATCH_SIZE: 64`
- `EPOCHS: 20 and 5 (with PATIENCE=10)`

WINDOW = 15 (20 epochs)

Epoch 01/20 -> Train Loss: -1.16438342, Val Loss: -1.47413462
New best validation loss: -1.47413462. Saving model...

Epoch 02/20 -> Train Loss: -2.17037399, Val Loss: -2.11385759
New best validation loss: -2.11385759. Saving model...

Epoch 03/20 -> Train Loss: -2.49257729, Val Loss: -2.35584426
New best validation loss: -2.35584426. Saving model...

Epoch 04/20 -> Train Loss: -2.65568116, Val Loss: -2.57467212
New best validation loss: -2.57467212. Saving model...

Epoch 05/20 -> Train Loss: -2.74902164, Val Loss: -2.50433251
Validation loss did not improve. Patience: 1/10

Epoch 06/20 -> Train Loss: -2.79383782, Val Loss: -2.59853148
New best validation loss: -2.59853148. Saving model...

Epoch 07/20 -> Train Loss: -2.84117494, Val Loss: -2.46965915
Validation loss did not improve. Patience: 1/10

Epoch 08/20 -> Train Loss: -2.88555507, Val Loss: -2.54699274
Validation loss did not improve. Patience: 2/10

Epoch 09/20 -> Train Loss: -2.91136244, Val Loss: -2.65048865
New best validation loss: -2.65048865. Saving model...

Epoch 10/20 -> Train Loss: -2.94021246, Val Loss: -2.76412119
New best validation loss: -2.76412119. Saving model...

Epoch 11/20 -> Train Loss: -2.94815822, Val Loss: -2.90727711
New best validation loss: -2.90727711. Saving model...

Epoch 12/20 -> Train Loss: -2.97018445, Val Loss: -2.82119173
Validation loss did not improve. Patience: 1/10

Epoch 13/20 -> Train Loss: -2.99809281, Val Loss: -2.92727626
New best validation loss: -2.92727626. Saving model...

Epoch 14/20 -> Train Loss: -3.01547758, Val Loss: -2.96632513
New best validation loss: -2.96632513. Saving model...

Epoch 15/20 -> Train Loss: -3.02845395, Val Loss: -3.02662664
New best validation loss: -3.02662664. Saving model...

Epoch 16/20 -> Train Loss: -3.05179072, Val Loss: -3.00118726
Validation loss did not improve. Patience: 1/10

Epoch 17/20 -> Train Loss: -3.04958623, Val Loss: -2.42887016
Validation loss did not improve. Patience: 2/10

Epoch 18/20 -> Train Loss: -3.07759166, Val Loss: -2.98463999
Validation loss did not improve. Patience: 3/10

Epoch 19/20 -> Train Loss: -3.07989749, Val Loss: -2.98338955
Validation loss did not improve. Patience: 4/10

Epoch 20/20 -> Train Loss: -3.09334527, Val Loss: -2.75862823
Validation loss did not improve. Patience: 5/10

Final Transformer Model Performance			
Dataset	Metric	Value	(EURUSD)
Test	RMSE	0.000360	
Test	MAE	0.000257	
Validation	RMSE	0.000406	
Validation	MAE	0.000276	
Training	RMSE	0.000378	
Training	MAE	0.000250	

WINDOW = 30 (20 epochs)

Epoch 01/20 -> Train Loss: -1.26991204, Val Loss: -1.65727360
New best validation loss: -1.65727360. Saving model...

Epoch 02/20 -> Train Loss: -2.20737763, Val Loss: -2.21042946
New best validation loss: -2.21042946. Saving model...

Epoch 03/20 -> Train Loss: -2.50152380, Val Loss: -2.42937358
New best validation loss: -2.42937358. Saving model...

Epoch 04/20 -> Train Loss: -2.64044149, Val Loss: -2.35278372
Validation loss did not improve. Patience: 1/10

Epoch 05/20 -> Train Loss: -2.73635860, Val Loss: -2.59325069
New best validation loss: -2.59325069. Saving model...

Epoch 06/20 -> Train Loss: -2.79875934, Val Loss: -2.73347369
New best validation loss: -2.73347369. Saving model...

Epoch 07/20 -> Train Loss: -2.83933081, Val Loss: -2.61346611
Validation loss did not improve. Patience: 1/10

Epoch 08/20 -> Train Loss: -2.88090314, Val Loss: -2.80592543
New best validation loss: -2.80592543. Saving model...

Epoch 09/20 -> Train Loss: -2.90326997, Val Loss: -2.74745058
Validation loss did not improve. Patience: 1/10

Epoch 10/20 -> Train Loss: -2.93674289, Val Loss: -2.73024203
Validation loss did not improve. Patience: 2/10

Epoch 11/20 -> Train Loss: -2.95575961, Val Loss: -2.88569784
New best validation loss: -2.88569784. Saving model...

Epoch 12/20 -> Train Loss: -2.97721556, Val Loss: -2.72488405
Validation loss did not improve. Patience: 1/10

Epoch 13/20 -> Train Loss: -2.99184759, Val Loss: -2.90419203
New best validation loss: -2.90419203. Saving model...

Epoch 14/20 -> Train Loss: -3.01072159, Val Loss: -2.88882065
Validation loss did not improve. Patience: 1/10

Epoch 15/20 -> Train Loss: -3.02630497, Val Loss: -2.94505787
New best validation loss: -2.94505787. Saving model...

Epoch 16/20 -> Train Loss: -3.05087575, Val Loss: -2.88568141
Validation loss did not improve. Patience: 1/10

Epoch 17/20 -> Train Loss: -3.05573125, Val Loss: -2.92449716
Validation loss did not improve. Patience: 2/10

Epoch 18/20 -> Train Loss: -3.06843116, Val Loss: -2.97391046
New best validation loss: -2.97391046. Saving model...

Epoch 19/20 -> Train Loss: -3.07660289, Val Loss: -3.06566454
New best validation loss: -3.06566454. Saving model...

Epoch 20/20 -> Train Loss: -3.08992422, Val Loss: -2.98136848
Validation loss did not improve. Patience: 1/10

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Final Transformer Model Performance

Dataset Metric Value (EURUSD)

Test RMSE 0.000320

Test MAE 0.000207

Validation RMSE 0.000405

Validation MAE 0.000277

Training RMSE 0.000400

Training MAE 0.000268

WINDOW = 30 (5 epochs)

Epoch 01/5 -> Train Loss: -1.26991204, Val Loss: -1.65727360
New best validation loss: -1.65727360. Saving model...

Epoch 02/5 -> Train Loss: -2.20737763, Val Loss: -2.21042946
New best validation loss: -2.21042946. Saving model...

Epoch 03/5 -> Train Loss: -2.50152380, Val Loss: -2.42937358
New best validation loss: -2.42937358. Saving model...

Epoch 04/5 -> Train Loss: -2.64044149, Val Loss: -2.35278372
Validation loss did not improve. Patience: 1/10

Epoch 05/5 -> Train Loss: -2.73635860, Val Loss: -2.59325069
New best validation loss: -2.59325069. Saving model...

Predicting on Train Set: 100%

7015/7015 [23:45<00:00, 4.63it/s]

Predicting on Validation Set: 100%

2338/2338 [08:03<00:00, 5.35it/s]

Predicting on Test Set: 100%

2338/2338 [07:53<00:00, 5.18it/s]

Final Transformer Model Performance

Dataset Metric Value (EURUSD)

Test RMSE 0.000708

Test MAE 0.000604

Validation RMSE 0.000899

Validation MAE 0.000701

Training RMSE 0.000646

Training MAE 0.000480

WINDOW = 60 (5 epochs)

Epoch: 100%

5/5 [48:44<00:00, 578.23s/it]

Epoch 01/5 -> Train Loss: -1.23807862, Val Loss: -1.61919198
New best validation loss: -1.61919198. Saving model...

Epoch 02/5 -> Train Loss: -2.18713379, Val Loss: -2.14961692
New best validation loss: -2.14961692. Saving model...

Epoch 03/5 -> Train Loss: -2.48798598, Val Loss: -2.42421505
New best validation loss: -2.42421505. Saving model...

Epoch 04/5 -> Train Loss: -2.64536562, Val Loss: -2.60737879
New best validation loss: -2.60737879. Saving model...

Epoch 05/5 -> Train Loss: -2.72207357, Val Loss: -2.26540856
Validation loss did not improve. Patience: 1/10

Final Transformer Model Performance			
Dataset	Metric	Value	(EURUSD)
Test	RMSE	0.000502	
Test	MAE	0.000390	
Validation	RMSE	0.000602	
Validation	MAE	0.000438	
Training	RMSE	0.000463	
Training	MAE	0.000316	

WINDOW = 120 (5 epochs)

Epoch 01/5 -> Train Loss: -1.22088630, Val Loss: -1.52779890

New best validation loss: -1.52779890. Saving model...

Epoch 02/5 -> Train Loss: -2.09936859, Val Loss: -2.13239461

New best validation loss: -2.13239461. Saving model...

Epoch 03/5 -> Train Loss: -2.41164508, Val Loss: -2.29798759

New best validation loss: -2.29798759. Saving model...

Epoch 04/5 -> Train Loss: -2.57488338, Val Loss: -2.36873582

New best validation loss: -2.36873582. Saving model...

Epoch 05/5 -> Train Loss: -2.66108472, Val Loss: -2.62747719

New best validation loss: -2.62747719. Saving model...

Final Transformer Model Performance			
Dataset	Metric	Value	(EURUSD)
Test	RMSE	0.000419	
Test	MAE	0.000307	
Validation	RMSE	0.000499	
Validation	MAE	0.000363	
Training	RMSE	0.000506	
Training	MAE	0.000326	

WINDOW = 120 (20 epochs)

Epoch 01/20 -> Train Loss: -1.21301372, Val Loss: -1.48193361
New best validation loss: -1.48193361. Saving model...

Epoch 02/20 -> Train Loss: -2.03506294, Val Loss: -2.09519551
New best validation loss: -2.09519551. Saving model...

Epoch 03/20 -> Train Loss: -2.39737332, Val Loss: -2.30152019
New best validation loss: -2.30152019. Saving model...

Epoch 04/20 -> Train Loss: -2.56461018, Val Loss: -2.52366332
New best validation loss: -2.52366332. Saving model...

Epoch 05/20 -> Train Loss: -2.65046252, Val Loss: -2.54887466
New best validation loss: -2.54887466. Saving model...

Epoch 06/20 -> Train Loss: -2.72038042, Val Loss: -2.42178956
Validation loss did not improve. Patience: 1/10

Epoch 07/20 -> Train Loss: -2.76482901, Val Loss: -2.68510882
New best validation loss: -2.68510882. Saving model...

Epoch 08/20 -> Train Loss: -2.81294921, Val Loss: -2.65526961
Validation loss did not improve. Patience: 1/10

Epoch 09/20 -> Train Loss: -2.85052142, Val Loss: -2.72971963
New best validation loss: -2.72971963. Saving model...

Epoch 10/20 -> Train Loss: -2.87384557, Val Loss: -2.70781295
Validation loss did not improve. Patience: 1/10

Epoch 11/20 -> Train Loss: -2.90380127, Val Loss: -2.84210753
New best validation loss: -2.84210753. Saving model...

Epoch 12/20 -> Train Loss: -2.93225006, Val Loss: -2.86976637
New best validation loss: -2.86976637. Saving model...

Epoch 13/20 -> Train Loss: -2.94399546, Val Loss: -2.92111684
New best validation loss: -2.92111684. Saving model...

Epoch 14/20 -> Train Loss: -2.95667232, Val Loss: -2.75299856
Validation loss did not improve. Patience: 1/10

Epoch 15/20 -> Train Loss: -2.98318169, Val Loss: -2.97047703
New best validation loss: -2.97047703. Saving model...

Epoch 16/20 -> Train Loss: -2.99342445, Val Loss: -2.28528645
Validation loss did not improve. Patience: 1/10

Epoch 17/20 -> Train Loss: -3.00139786, Val Loss: -2.72606379
Validation loss did not improve. Patience: 2/10

Epoch 18/20 -> Train Loss: -3.01660044, Val Loss: -2.94601378
Validation loss did not improve. Patience: 3/10

Epoch 19/20 -> Train Loss: -3.02959044, Val Loss: -2.66568967
Validation loss did not improve. Patience: 4/10

Epoch 20/20 -> Train Loss: -3.03792080, Val Loss: -2.96505694
Validation loss did not improve. Patience: 5/10

Final Transformer Model Performance			
Dataset Metric Value (EURUSD)			
Test	RMSE	0.000443	
Test	MAE	0.000337	
Validation	RMSE	0.000657	
Validation	MAE	0.000466	
Training	RMSE	0.000478	
Training	MAE	0.000306	

WINDOW = 288 (5 epochs)

Epoch: 100%

5/5 [9:23:43<00:00, 6685.56s/it]

Epoch 01/5 -> Train Loss: -1.26825454, Val Loss: -1.56539786
New best validation loss: -1.56539786. Saving model...

Epoch 02/5 -> Train Loss: -1.96069810, Val Loss: -1.74562086
New best validation loss: -1.74562086. Saving model...

Epoch 03/5 -> Train Loss: -2.29444412, Val Loss: -2.24038121
New best validation loss: -2.24038121. Saving model...

Epoch 04/5 -> Train Loss: -2.47350337, Val Loss: -2.40114107
New best validation loss: -2.40114107. Saving model...

Epoch 05/5 -> Train Loss: -2.58849623, Val Loss: -2.53733319
New best validation loss: -2.53733319. Saving model...

Best model loaded for final evaluation.