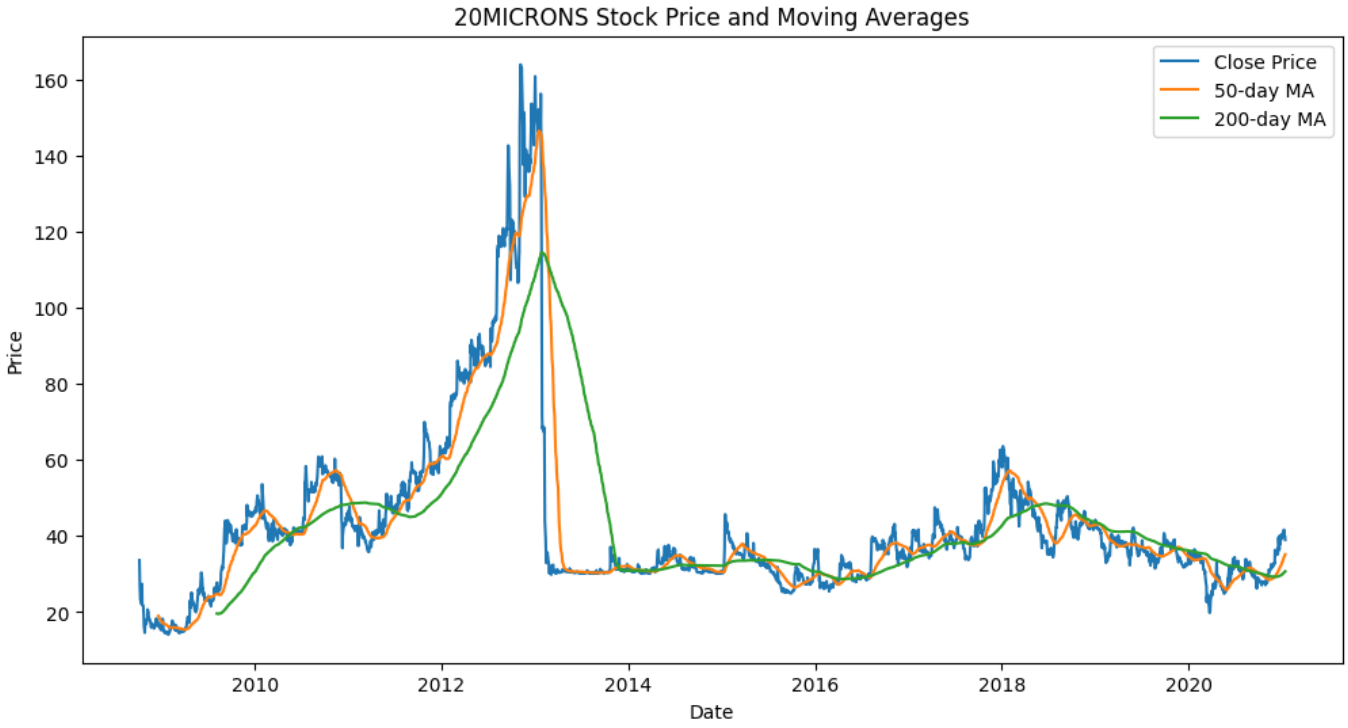
Sample data for 20MICRONS:

Date	Open	High	Low	Close	Volume	Returns	MA_50	MA_200
2008-10-06	80.0	80.0	31.60	33.65	11750865	NaN	NaN	NaN
2008-10-07	32.0	38.0	27.85	30.10	4556711	-0.105498	NaN	NaN
2008-10-08	28.0	29.2	25.10	26.50	1232192	-0.119601	NaN	NaN
2008-10-10	24.9	24.9	21.65	23.20	603964	-0.124528	NaN	NaN
2008-10-13	24.3	26.6	23.30	24.65	449346	0.062500	NaN	NaN

<Figure size 1200x600 with 1 Axes>



Processing NSE data...

Processing BSE data...

Cleaned Data for 20MICRONS (NSE):

Date	Open	High	Low	Close	Volume	Returns	Anomaly
2008-10-06	NaN	NaN	NaN	NaN	NaN	NaN	NaN

2008-10-07 NaN NaN NaN NaN NaN NaN NaN

2008-10-08 NaN NaN NaN NaN NaN NaN NaN

2008-10-10 24.9 24.9 21.65 23.20 603964.0 -0.124528 1.0

2008-10-13 24.3 26.6 23.30 24.65 449346.0 0.062500 1.0

	Open	High	Low	Close	Volume \
count	3038.000000	3038.000000	3038.000000	3038.000000	3.038000e+03
mean	43.054979	44.097737	41.844264	42.730044	9.721614e+04
std	22.742237	23.260717	22.201424	22.565174	1.490832e+05
min	14.050000	14.400000	13.200000	14.200000	5.110000e+02
25%	30.950000	31.450000	30.400000	30.712500	2.286525e+04
50%	37.000000	37.900000	35.925000	36.650000	5.185200e+04
75%	45.487500	46.600000	43.800000	44.837500	1.013515e+05
max	158.900000	159.550000	152.000000	152.800000	1.349380e+06

	Returns	Anomaly
count	3038.000000	3038.0
mean	0.000517	1.0
std	0.031261	0.0
min	-0.200000	1.0
25%	-0.013884	1.0
50%	-0.001642	1.0
75%	0.011097	1.0
max	0.202055	1.0

Open 3

High 3

Low 3

Close 3

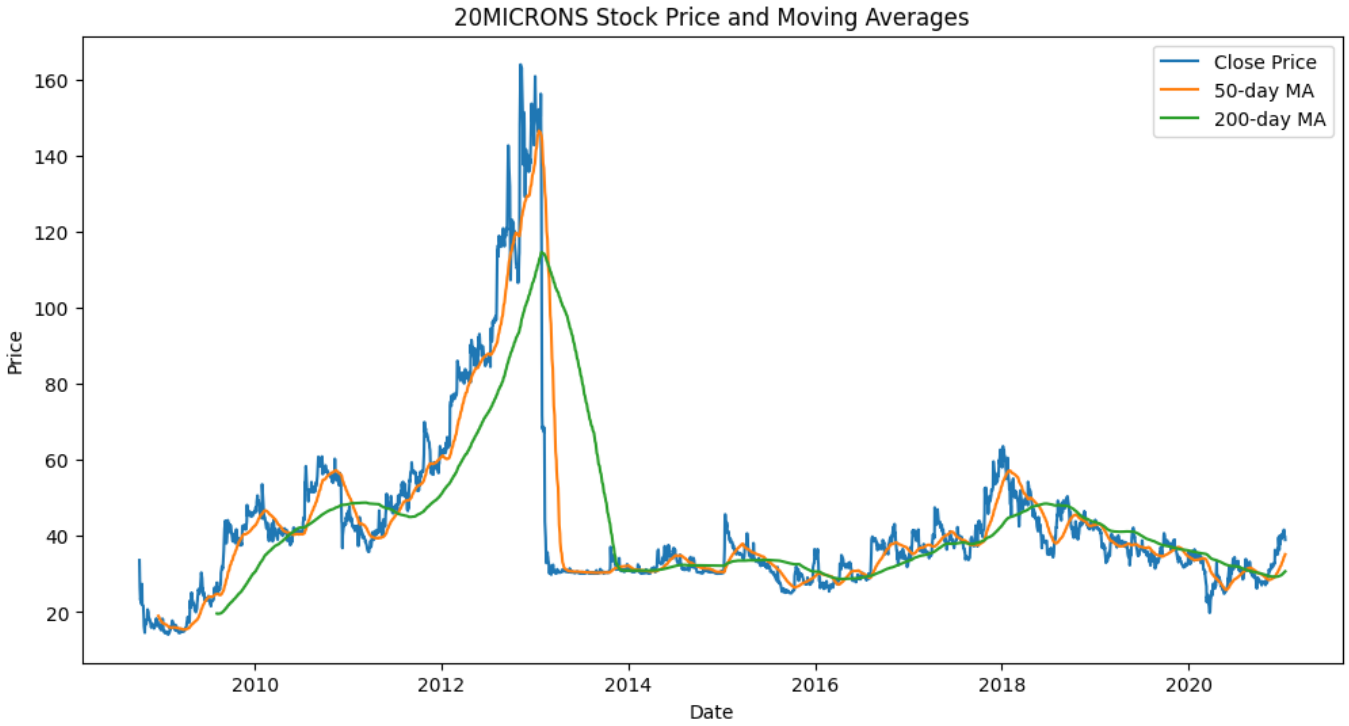
Volume 3

Returns 3

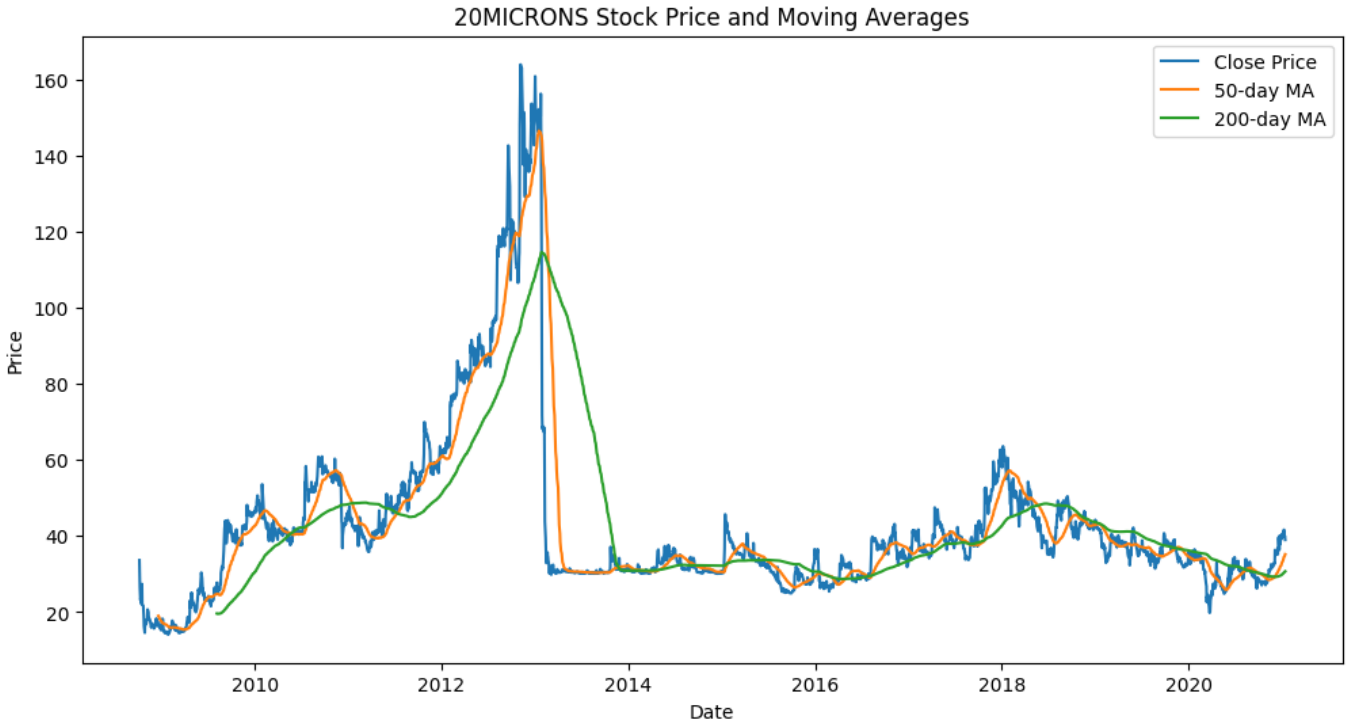
Anomaly 3

dtype: int64

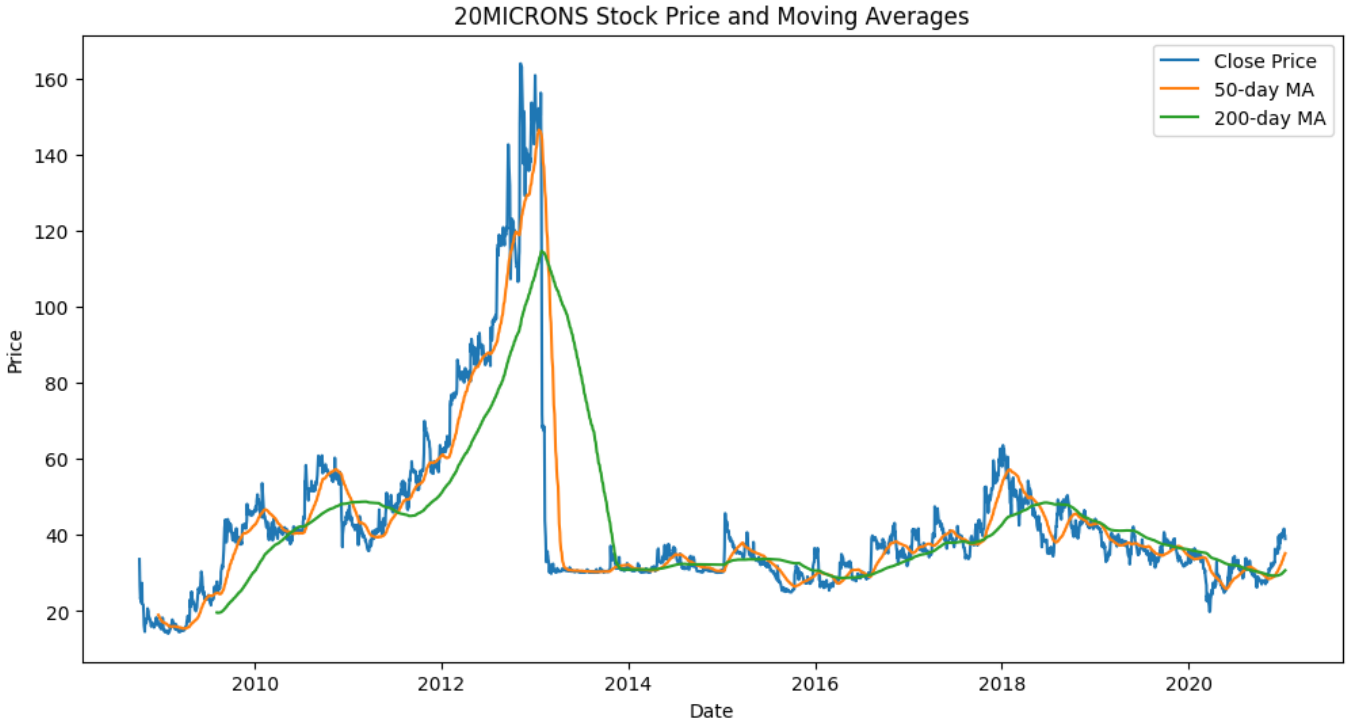
<Figure size 1200x600 with 1 Axes>



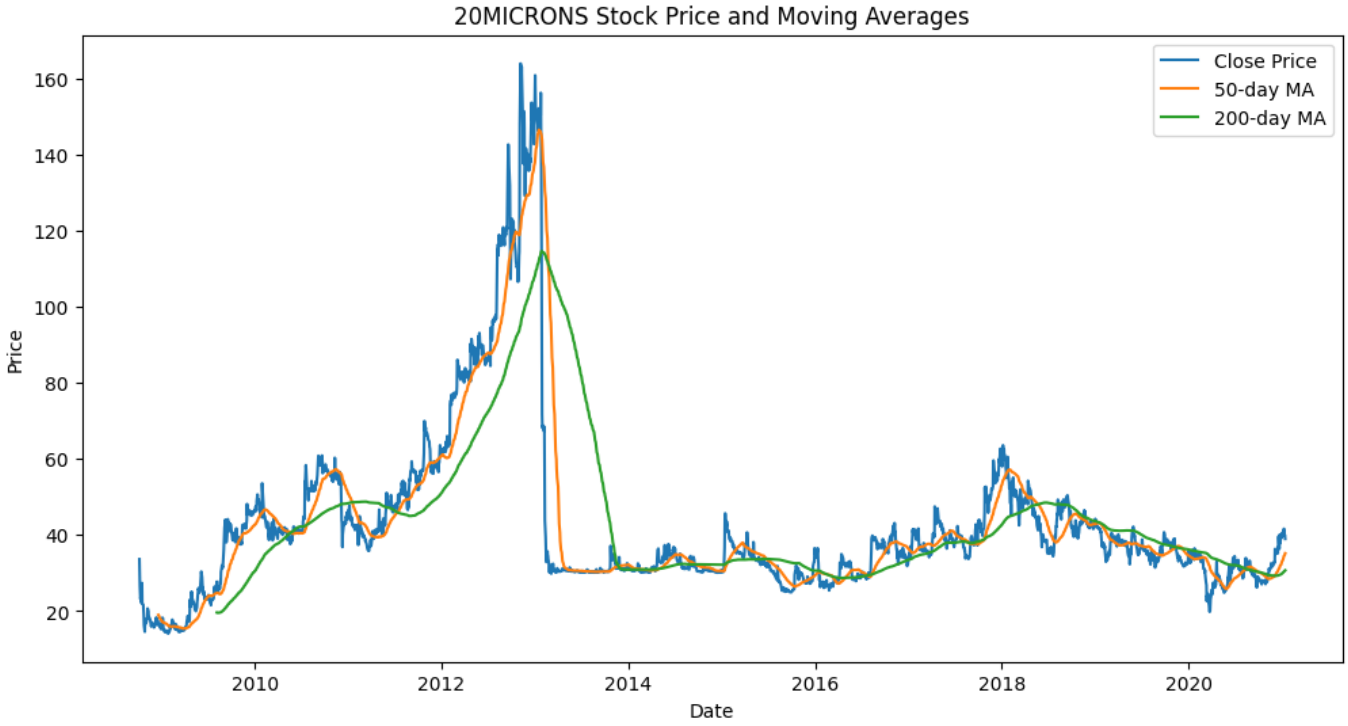
<Figure size 1200x600 with 1 Axes>



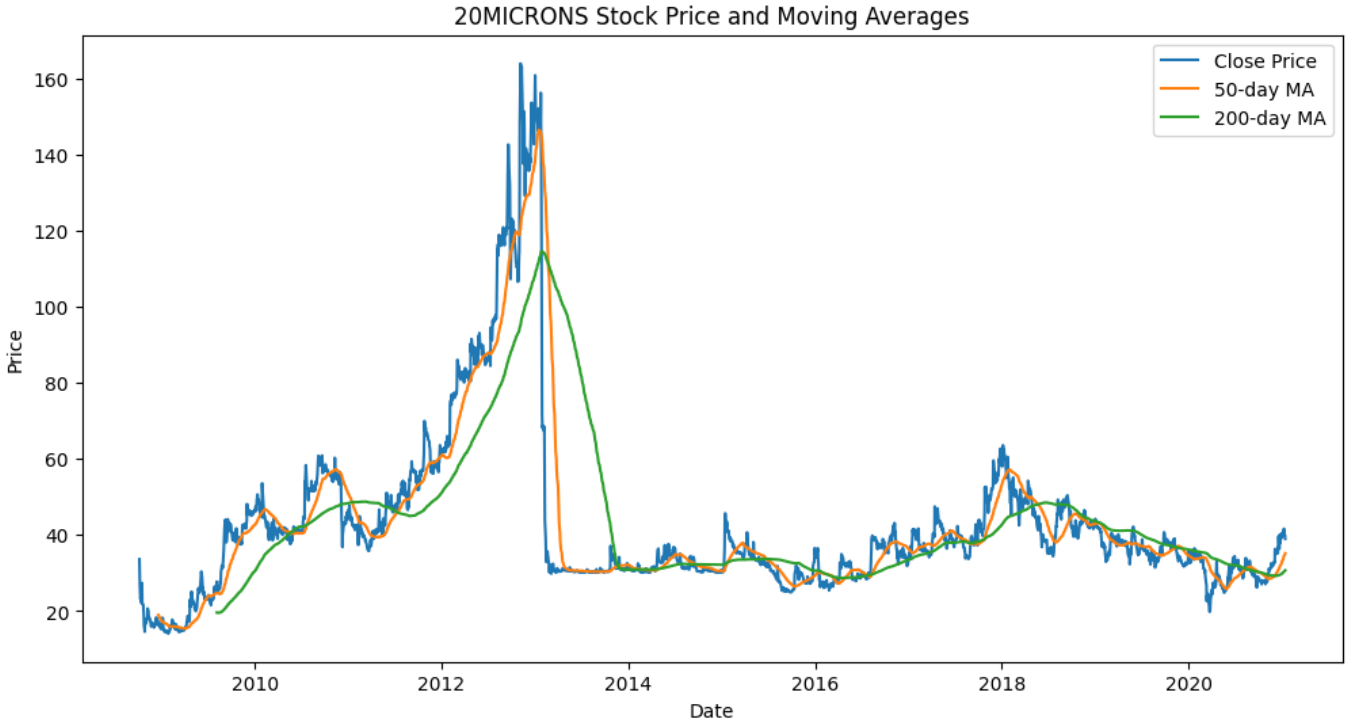
<Figure size 1000x600 with 1 Axes>



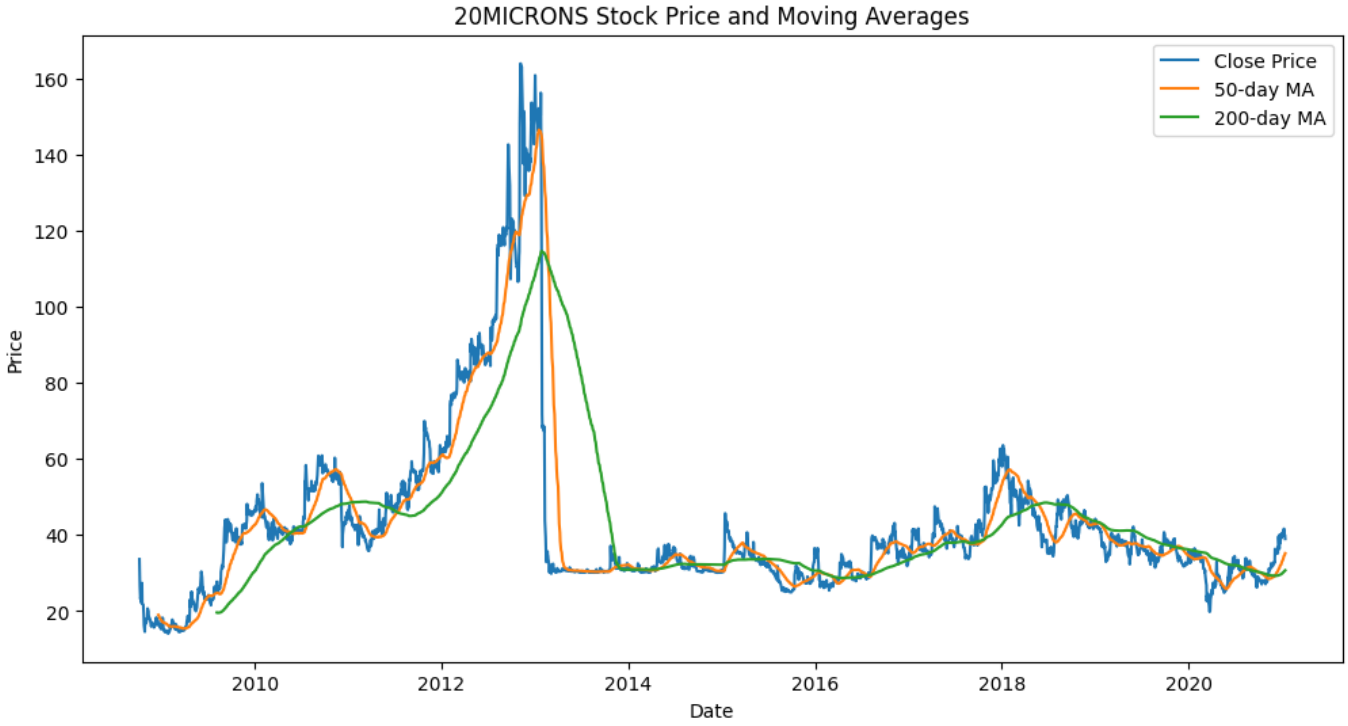
<Figure size 1200x600 with 1 Axes>



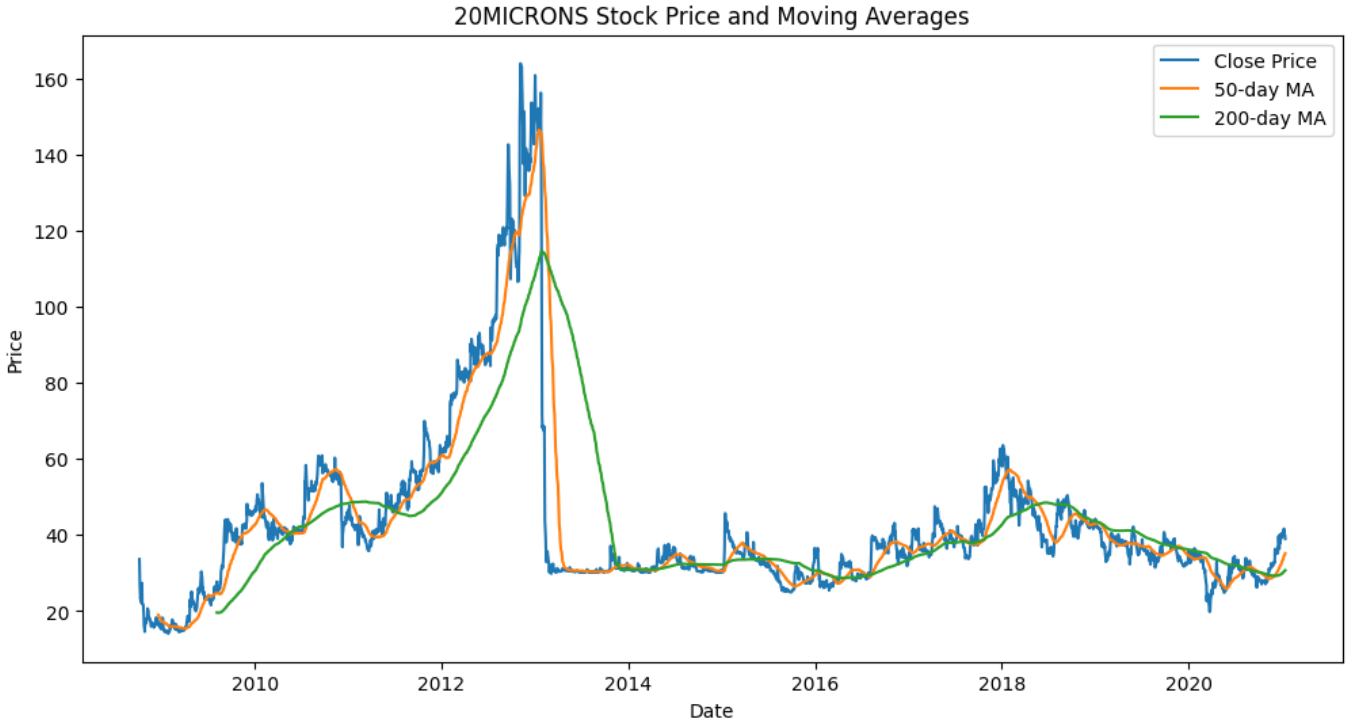
<Figure size 1200x600 with 1 Axes>



<Figure size 800x575 with 4 Axes>



<Figure size 1000x600 with 1 Axes>



Feature engineering complete.

Input shape: (7015920, 60, 8)

Output shape: (7015920, 5)

Features added: ['Open', 'High', 'Low', 'Close', 'Volume', 'Returns', 'Anomaly', 'Stock', 'SMA_20', 'SMA_50', 'EMA_12', 'EMA_26', 'MACD', 'MACD_Signal', 'MACD_Hist', 'RSI', 'Stoch_K', 'Stoch_D', 'BB_Upper', 'BB_Middle', 'BB_Lower', 'BB_Width', 'VWAP', 'Price_Change', 'Daily_Volatility', 'Daily_Range', 'Daily_Range_Pct', 'Price_Position', 'Volume_MA_20', 'Volume_MA_50', 'Volume_Ratio']

Open 0

High 0

Low 0

Close 0

Volume 0

Returns 0

Anomaly 0

Stock 0

SMA_20 0

SMA_50 0

EMA_12 0

EMA_26 0

MACD 0

MACD_Signal 0

MACD_Hist 0

RSI 0

Stoch_K 0

Stoch_D 0

BB_Upper 0

BB_Middle 0

BB_Lower 0

BB_Width 0

VWAP 0

Price_Change 0

Daily_Volatility 0

Daily_Range 0

Daily_Range_Pct 0

Price_Position 0

Volume_MA_20 0

Volume_MA_50 0

Volume_Ratio 0

dtype: int64

	Open	High	Low	Close	Volume \
count	7.015984e+06	7.015984e+06	7.015984e+06	7.015984e+06	7.015984e+06
mean	3.853361e+02	3.922965e+02	3.780670e+02	3.845996e+02	6.700380e+05

std 1.575280e+03 1.598258e+03 1.549876e+03 1.572025e+03 5.006744e+06

min 0.000000e+00 0.000000e+00 0.000000e+00 5.000000e-02 1.000000e+00

25% 3.900000e+01 4.000000e+01 3.805000e+01 3.895000e+01 4.973000e+03

50% 1.131500e+02 1.159500e+02 1.104000e+02 1.129500e+02 3.197800e+04

75% 3.189000e+02 3.250000e+02 3.119500e+02 3.180000e+02 2.145440e+05

max 8.200000e+04 8.200000e+04 7.972000e+04 8.086045e+04 8.799355e+08

	Returns	Anomaly	SMA_20	SMA_50	EMA_12	...	\
count	7.015984e+06	7015984.0	7.015984e+06	7.015984e+06	7.015984e+06	...	
mean	2.905135e-03	1.0	3.843371e+02	3.839760e+02	3.846618e+02	...	
std	1.328033e+00	0.0	1.565287e+03	1.554656e+03	1.566790e+03	...	
min	-9.988580e-01	1.0	1.675000e-01	1.860000e-01	1.606181e-01	...	
25%	-1.559454e-02	1.0	3.915250e+01	3.950200e+01	3.915487e+01	...	
50%	-6.020470e-04	1.0	1.133450e+02	1.139310e+02	1.133434e+02	...	
75%	1.449275e-02	1.0	3.187125e+02	3.195916e+02	3.187537e+02	...	
max	2.773769e+03	1.0	7.812893e+04	7.627500e+04	7.889785e+04	...	

	BB_Width	VWAP	Price_Change	Daily_Volatility	\
count	7.015984e+06	7.015984e+06	7.015984e+06	7.015984e+06	
mean	2.232695e-01	3.861461e+02	2.697664e-02	4.069919e-02	
std	2.759256e-01	1.571848e+03	7.072161e+01	1.327364e+00	
min	0.000000e+00	1.646106e-01	-8.051005e+04	0.000000e+00	
25%	1.076421e-01	3.962377e+01	-1.550000e+00	1.880824e-02	
50%	1.655015e-01	1.142884e+02	-5.000000e-02	2.619536e-02	
75%	2.596041e-01	3.204500e+02	1.450000e+00	3.668131e-02	
max	1.735404e+01	7.882325e+04	3.524630e+04	6.202322e+02	

	Daily_Range	Daily_Range_Pct	Price_Position	Volume_MA_20	\
count	7.015984e+06	7.015984e+06	7.015984e+06	7.015984e+06	
mean	1.422949e+01	4.839367e-02	4.366528e-01	6.692439e+05	
std	5.975553e+01	5.934933e-02	2.884088e-01	4.493013e+06	
min	0.000000e+00	0.000000e+00	-1.340206e+00	3.350000e+00	
25%	1.600000e+00	2.580645e-02	1.902985e-01	8.249888e+03	
50%	4.500000e+00	3.950339e-02	3.913043e-01	4.559055e+04	
75%	1.215000e+01	6.060606e-02	6.666667e-01	2.500438e+05	
max	1.037820e+04	8.233333e+01	1.000000e+00	6.859425e+08	

	Volume_MA_50	Volume_Ratio
count	7.015984e+06	7.015984e+06
mean	6.677747e+05	1.048459e+00
std	4.337275e+06	1.207304e+00
min	1.090000e+01	6.584150e-08
25%	9.568840e+03	4.060698e-01
50%	4.988666e+04	7.127364e-01
75%	2.570980e+05	1.225288e+00
max	5.256636e+08	1.992920e+01

[8 rows x 30 columns]

Corrected Input Shape: (116824, 60, 8), Output Shape: (7009440, 5)

Fixed Output Shape: (116824, 5)

c:\Users\KIIT\AppData\Local\Programs\Python\Python310\lib\site-packages\keras\src\layers\rnn\rnn.py:200: UserWarning: Do not pass an `input_shape`/`input_dim` argument to a layer. When using Sequential models, prefer using an `Input(shape)` object as the first layer in the model instead.

  super().__init__(**kwargs)

[1mModel: "sequential" [0m

[1m [0m [1mLayer (type) [0m [1m [0m [1mOutput Shape [0m [1m

[0m [1m [0m [1m Param # [0m [1m [0m

lstm ([38;5;33mLSTM [0m) ([38;5;45mNone [0m, [38;5;34m60 [0m,

[38;5;34m64 [0m) [38;5;34m18,688 [0m

dropout ([38;5;33mDropout [0m) ([38;5;45mNone [0m, [38;5;34m60 [0m,

[38;5;34m64 [0m) [38;5;34m0 [0m

lstm_1 ([38;5;33mLSTM [0m) ([38;5;45mNone [0m, [38;5;34m64 [0m)

[38;5;34m33,024 [0m

dropout_1 ([38;5;33mDropout [0m) ([38;5;45mNone [0m, [38;5;34m64 [0m)

[38;5;34m0 [0m

dense ([38;5;33mDense [0m) ([38;5;45mNone [0m, [38;5;34m32 [0m)

[38;5;34m2,080 [0m

dense_1 ([38;5;33mDense [0m) ([38;5;45mNone [0m, [38;5;34m5 [0m)

[38;5;34m165 [0m

[1m Total params: [0m [38;5;34m53,957 [0m (210.77 KB)

[1m Trainable params: [0m [38;5;34m53,957 [0m (210.77 KB)

[1m Non-trainable params: [0m [38;5;34m0 [0m (0.00 B)

Epoch 1/20

[1m3286/3286 [0m [32m [0m [37m [0m [1m128s [0m 38ms/step - loss: 1885.0165 - mae: 5.5315 - val_loss: 344.5957 - val_mae: 3.7697

Epoch 2/20

[1m3286/3286 [0m [32m [0m [37m [0m [1m138s [0m 42ms/step - loss: 2652.3022 - mae: 4.5531 - val_loss: 344.8241 - val_mae: 3.7670

Epoch 3/20

[1m3286/3286 [0m [32m [0m [37m [0m [1m143s [0m 43ms/step - loss: 1562.6530 - mae: 4.3800 - val_loss: 344.4995 - val_mae: 3.7645

Epoch 4/20

[1m3286/3286 [0m [32m [0m [37m [0m [1m145s [0m 44ms/step - loss: 1895.3948 - mae: 4.3564 - val_loss: 344.4927 - val_mae: 3.7630

Epoch 5/20

[1m3286/3286 [0m [32m [0m [37m [0m [1m139s [0m 42ms/step - loss: 2402.4675 - mae: 4.4028 - val_loss: 344.5451 - val_mae: 3.7632

Epoch 6/20

[1m3286/3286 [0m [32m [0m [37m [0m [1m142s [0m 43ms/step - loss: 3339.9661 - mae: 4.5160 - val_loss: 344.6030 - val_mae: 3.7753

Epoch 7/20

[1m3286/3286 [0m [32m [0m [37m [0m [1m140s [0m 43ms/step - loss: 1896.7517 - mae: 4.3665 - val_loss: 344.6137 - val_mae: 3.7600

Epoch 8/20

[1m3286/3286 [0m [32m [0m [37m [0m [1m142s [0m 43ms/step - loss: 2294.5547 - mae: 4.4718 - val_loss: 345.4389 - val_mae: 3.8157

Epoch 9/20

[1m3286/3286 [0m [32m [0m [37m [0m [1m137s [0m 42ms/step - loss: 2824.3408 - mae: 4.4247 - val_loss: 345.0786 - val_mae: 3.7689

Epoch 10/20

[1m3286/3286 [0m [32m [0m [37m [0m [1m139s [0m 42ms/step - loss: 933.3403 - mae: 4.2569 - val_loss: 345.4190 - val_mae: 3.7901

Epoch 11/20

[1m3286/3286 [0m [32m [0m [37m [0m [1m142s [0m 43ms/step - loss: 1944.3602 - mae: 4.2745 - val_loss: 345.3609 - val_mae: 3.8014

Epoch 12/20

[1m3286/3286 [0m [32m [0m [37m [0m [1m141s [0m 43ms/step - loss: 1623.4791 - mae: 4.3740 - val_loss: 345.0664 - val_mae: 3.8795

Epoch 13/20

[1m3286/3286 [0m [32m [0m [37m [0m [1m146s [0m 44ms/step - loss: 1094.8738 - mae: 4.2305 - val_loss: 344.6395 - val_mae: 3.8167

Epoch 14/20

[1m3286/3286 [0m [32m [0m [37m [0m [1m141s [0m 43ms/step - loss: 1404.8184 - mae: 4.2911 - val_loss: 344.7071 - val_mae: 3.7832

Epoch 15/20

[1m3286/3286 [0m [32m [0m [37m [0m [1m145s [0m 44ms/step - loss: 1796.7355 - mae: 4.3341 - val_loss: 345.8503 - val_mae: 3.7910

Epoch 16/20

[1m3286/3286 [0m [32m [0m [37m [0m [1m143s [0m 43ms/step - loss: 1505.0475 - mae: 4.2266 - val_loss: 344.6804 - val_mae: 3.7717

Epoch 17/20

[1m3286/3286 [0m [32m [0m [37m [0m [1m183s [0m 56ms/step - loss: 1468.1460 - mae: 4.2891 - val_loss: 345.0610 - val_mae: 3.7729

Epoch 18/20

[1m3286/3286 [0m [32m [0m [37m [0m [1m145s [0m 44ms/step - loss: 2360.7229 - mae: 4.3681 - val_loss: 344.7524 - val_mae: 3.8337

Epoch 19/20

[1m3286/3286 [0m [32m [0m [37m [0m [1m143s [0m 44ms/step - loss: 1609.5769 - mae: 4.2861 - val_loss: 344.7791 - val_mae: 3.7861

Epoch 20/20

[1m3286/3286 [0m [32m [0m [37m [0m [1m145s [0m 44ms/step - loss: 2022.5417 - mae: 4.3183 - val_loss: 344.8484 - val_mae: 3.8383

[1m3651/3651 [0m [32m [0m [37m [0m [1m53s [0m 15ms/step - loss: 1546.3258 - mae: 4.5696

WARNING:absl:You are saving your model as an HDF5 file via `model.save()` or `keras.saving.save_model(model)`. This file format is considered legacy. We recommend using instead the native Keras format, e.g. `model.save('my_model.keras')` or `keras.saving.save_model(model, 'my_model.keras')`.

Test Loss: 1773.2276611328125, Test MAE: 4.308382987976074

Epoch 1/20

[1m1461/1461 [0m [32m [0m [37m [0m [1m79s [0m 51ms/step - loss: 0.4620 - mae: 0.4768 - val_loss: 0.0098 - val_mae: 0.0729 - learning_rate: 1.0000e-04

Epoch 2/20

[1m1461/1461 [0m [32m [0m [37m [0m [1m79s [0m 54ms/step - loss: 0.0336 - mae: 0.1399 - val_loss: 0.0055 - val_mae: 0.0468 - learning_rate: 1.0000e-04

Epoch 3/20

[1m1461/1461 [0m [32m [0m [37m [0m [1m70s [0m 48ms/step - loss: 0.0145 - mae: 0.0895 - val_loss: 0.0046 - val_mae: 0.0372 - learning_rate: 1.0000e-04

Epoch 4/20

[1m1461/1461 [0m [32m [0m [37m [0m [1m71s [0m 49ms/step - loss: 0.0085 - mae: 0.0642 - val_loss: 0.0044 - val_mae: 0.0327 - learning_rate: 1.0000e-04

Epoch 5/20

[1m1461/1461 [0m [32m [0m [37m [0m [1m71s [0m 48ms/step - loss: 0.0061 - mae: 0.0500 - val_loss: 0.0043 - val_mae: 0.0317 - learning_rate: 1.0000e-04

Epoch 6/20

[1m1461/1461 [0m [32m [0m [37m [0m [1m71s [0m 49ms/step - loss: 0.0053 - mae: 0.0420 - val_loss: 0.0043 - val_mae: 0.0315 - learning_rate: 1.0000e-04

Epoch 7/20

[1m1461/1461 [0m [32m [0m [37m [0m [1m95s [0m 65ms/step - loss: 0.0049 - mae: 0.0371 - val_loss: 0.0043 - val_mae: 0.0314 - learning_rate: 1.0000e-04

Epoch 8/20

[1m1461/1461 [0m [32m [0m [37m [0m [1m75s [0m 51ms/step - loss: 0.0047 - mae: 0.0340 - val_loss: 0.0043 - val_mae: 0.0306 - learning_rate: 1.0000e-04

Epoch 9/20

[1m1461/1461 [0m [32m [0m [37m [0m [1m70s [0m 48ms/step - loss: 0.0046 - mae: 0.0327 - val_loss: 0.0043 - val_mae: 0.0304 - learning_rate: 1.0000e-04

Epoch 10/20

[1m1460/1461 [0m [32m [0m [37m [0m [1m0s [0m 55ms/step - loss: 0.0046 - mae: 0.0318

Epoch 10: ReduceLROnPlateau reducing learning rate to 4.999999873689376e-05.

[1m1461/1461 [0m [32m [0m [37m [0m [1m83s [0m 57ms/step - loss: 0.0046 - mae: 0.0318 - val_loss: 0.0043 - val_mae: 0.0307 - learning_rate: 1.0000e-04

Epoch 11/20

[1m1461/1461 [0m [32m [0m [37m [0m [1m79s [0m 54ms/step - loss: 0.0045 - mae: 0.0311 - val_loss: 0.0043 - val_mae: 0.0307 - learning_rate: 5.0000e-05

Epoch 12/20

[1m1461/1461 [0m [32m [0m [37m [0m [1m85s [0m 58ms/step - loss: 0.0045 - mae: 0.0309 - val_loss: 0.0043 - val_mae: 0.0303 - learning_rate: 5.0000e-05

Epoch 13/20

[1m 33/1461 [0m [37m [0m [1m1:08 [0m 48ms/step - loss: 0.0048 - mae: 0.0317

Epoch 1/20

[1m1461/1461 [0m [32m [0m [37m [0m [1m83s [0m 57ms/step - loss: 0.0046 - mae: 0.0308 - val_loss: 0.0043 - val_mae: 0.0305 - learning_rate: 5.0000e-05

Epoch 2/20

[1m1461/1461 [0m [32m [0m [37m [0m [1m73s [0m 50ms/step - loss: 0.0045 - mae: 0.0305 - val_loss: 0.0043 - val_mae: 0.0303 - learning_rate: 5.0000e-05

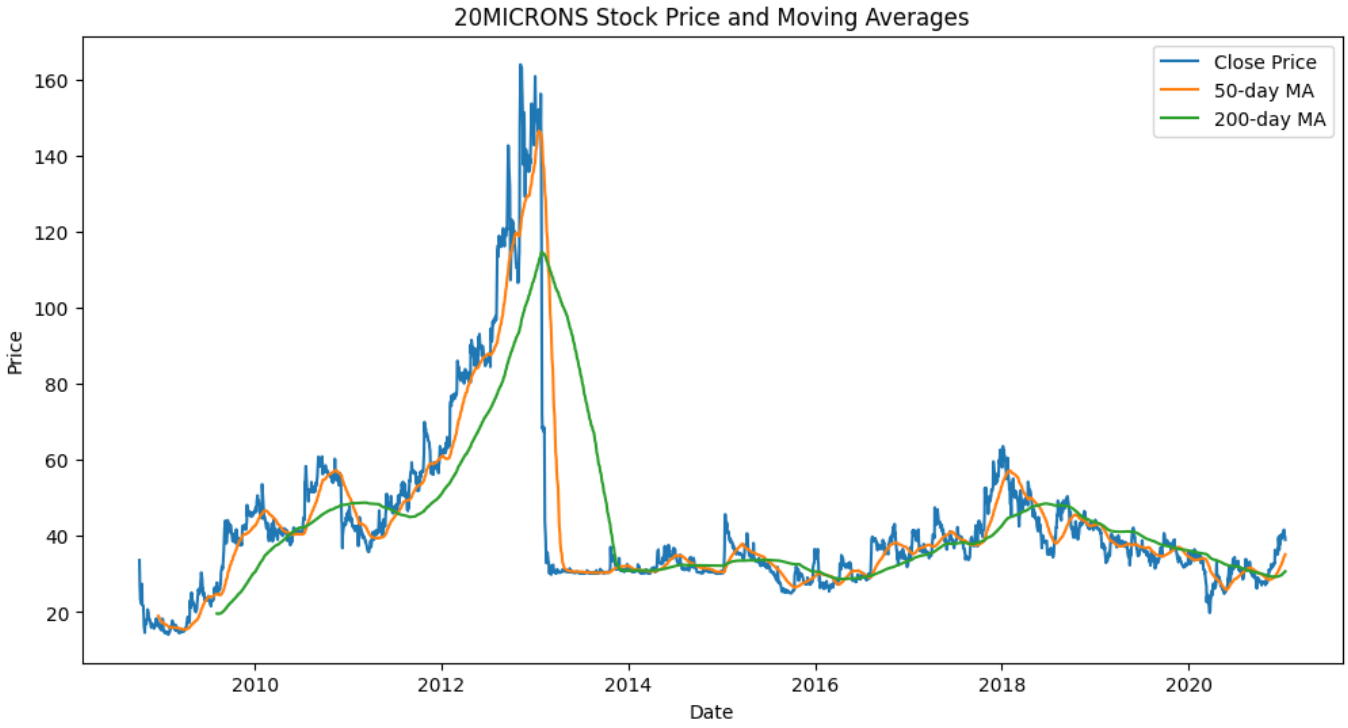
Epoch 3/20

[1m1461/1461 [0m [32m [0m [37m [0m [1m86s [0m 59ms/step - loss: 0.0045 - mae: 0.0304 - val_loss: 0.0043 - val_mae: 0.0304 - learning_rate: 5.0000e-05

Epoch 4/20

[1m 706/1461 [0m [32m [0m [37m [0m [1m50s [0m 67ms/step - loss: 0.0045 - mae: 0.0303

<Figure size 1200x500 with 2 Axes>



X_train Min: 0.0 Max: 1.0

y_train Min: 0.0 Max: 0.9959248176924091

All files saved with timestamp 20250214_001456

Epoch 1/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m47s [0m 28ms/step - loss: 0.1590 - mae: 0.3086 - val_loss: 0.0479 - val_mae: 0.1740 - learning_rate: 5.0000e-06

Epoch 2/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m39s [0m 26ms/step - loss: 0.1333 - mae: 0.2820 -

val_loss: 0.0377 - val_mae: 0.1537 - learning_rate: 5.0000e-06

Epoch 3/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m43s [0m 29ms/step - loss: 0.1118 - mae: 0.2580 - val_loss: 0.0302 - val_mae: 0.1369 - learning_rate: 5.0000e-06

Epoch 4/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m41s [0m 28ms/step - loss: 0.0958 - mae: 0.2387 - val_loss: 0.0250 - val_mae: 0.1239 - learning_rate: 5.0000e-06

Epoch 5/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m35s [0m 24ms/step - loss: 0.0820 - mae: 0.2205 - val_loss: 0.0194 - val_mae: 0.1087 - learning_rate: 5.0000e-06

Epoch 6/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m33s [0m 22ms/step - loss: 0.0714 - mae: 0.2056 - val_loss: 0.0155 - val_mae: 0.0964 - learning_rate: 5.0000e-06

Epoch 7/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m33s [0m 23ms/step - loss: 0.0618 - mae: 0.1910 - val_loss: 0.0126 - val_mae: 0.0867 - learning_rate: 5.0000e-06

Epoch 8/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m34s [0m 24ms/step - loss: 0.0542 - mae: 0.1785 - val_loss: 0.0104 - val_mae: 0.0776 - learning_rate: 5.0000e-06

Epoch 9/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m33s [0m 23ms/step - loss: 0.0481 - mae: 0.1685 - val_loss: 0.0090 - val_mae: 0.0709 - learning_rate: 5.0000e-06

Epoch 10/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m33s [0m 22ms/step - loss: 0.0427 - mae: 0.1587 - val_loss: 0.0080 - val_mae: 0.0660 - learning_rate: 5.0000e-06

Epoch 11/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m35s [0m 24ms/step - loss: 0.0385 - mae: 0.1507 -

val_loss: 0.0074 - val_mae: 0.0625 - learning_rate: 5.0000e-06

Epoch 12/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m33s [0m 23ms/step - loss: 0.0351 - mae: 0.1436 - val_loss: 0.0069 - val_mae: 0.0593 - learning_rate: 5.0000e-06

Epoch 13/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m38s [0m 26ms/step - loss: 0.0319 - mae: 0.1369 - val_loss: 0.0066 - val_mae: 0.0576 - learning_rate: 5.0000e-06

Epoch 14/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m38s [0m 26ms/step - loss: 0.0293 - mae: 0.1310 - val_loss: 0.0064 - val_mae: 0.0556 - learning_rate: 5.0000e-06

Epoch 15/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m34s [0m 23ms/step - loss: 0.0268 - mae: 0.1253 - val_loss: 0.0061 - val_mae: 0.0538 - learning_rate: 5.0000e-06

Epoch 16/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m35s [0m 24ms/step - loss: 0.0247 - mae: 0.1201 - val_loss: 0.0058 - val_mae: 0.0520 - learning_rate: 5.0000e-06

Epoch 17/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m43s [0m 29ms/step - loss: 0.0228 - mae: 0.1149 - val_loss: 0.0056 - val_mae: 0.0503 - learning_rate: 5.0000e-06

Epoch 18/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m33s [0m 23ms/step - loss: 0.0210 - mae: 0.1103 - val_loss: 0.0054 - val_mae: 0.0488 - learning_rate: 5.0000e-06

Epoch 19/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m33s [0m 23ms/step - loss: 0.0195 - mae: 0.1061 - val_loss: 0.0052 - val_mae: 0.0475 - learning_rate: 5.0000e-06

Epoch 20/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m35s [0m 24ms/step - loss: 0.0181 - mae: 0.1019 -

val_loss: 0.0051 - val_mae: 0.0457 - learning_rate: 5.0000e-06

Epoch 21/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m34s [0m 23ms/step - loss: 0.0172 - mae: 0.0988 - val_loss: 0.0050 - val_mae: 0.0450 - learning_rate: 5.0000e-06

Epoch 22/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m36s [0m 25ms/step - loss: 0.0159 - mae: 0.0947 - val_loss: 0.0048 - val_mae: 0.0439 - learning_rate: 5.0000e-06

Epoch 23/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m33s [0m 22ms/step - loss: 0.0149 - mae: 0.0912 - val_loss: 0.0047 - val_mae: 0.0425 - learning_rate: 5.0000e-06

Epoch 24/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m33s [0m 22ms/step - loss: 0.0138 - mae: 0.0877 - val_loss: 0.0047 - val_mae: 0.0420 - learning_rate: 5.0000e-06

Epoch 25/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m34s [0m 23ms/step - loss: 0.0132 - mae: 0.0852 - val_loss: 0.0046 - val_mae: 0.0409 - learning_rate: 5.0000e-06

Epoch 26/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m36s [0m 25ms/step - loss: 0.0124 - mae: 0.0823 - val_loss: 0.0045 - val_mae: 0.0401 - learning_rate: 5.0000e-06

Epoch 27/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m33s [0m 23ms/step - loss: 0.0117 - mae: 0.0795 - val_loss: 0.0045 - val_mae: 0.0393 - learning_rate: 5.0000e-06

Epoch 28/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m36s [0m 24ms/step - loss: 0.0111 - mae: 0.0771 - val_loss: 0.0044 - val_mae: 0.0386 - learning_rate: 5.0000e-06

Epoch 29/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m44s [0m 30ms/step - loss: 0.0106 - mae: 0.0747 -

val_loss: 0.0043 - val_mae: 0.0375 - learning_rate: 5.0000e-06

Epoch 30/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m33s [0m 22ms/step - loss: 0.0101 - mae: 0.0725 - val_loss: 0.0043 - val_mae: 0.0370 - learning_rate: 5.0000e-06

Epoch 31/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m33s [0m 23ms/step - loss: 0.0096 - mae: 0.0703 - val_loss: 0.0042 - val_mae: 0.0363 - learning_rate: 5.0000e-06

Epoch 32/50

[1m1460/1461 [0m [32m [0m [37m [0m [1m0s [0m 21ms/step - loss: 0.0093 - mae: 0.0687

Epoch 32: ReduceLROnPlateau reducing learning rate to 2.499999936844688e-06.

[1m1461/1461 [0m [32m [0m [37m [0m [1m33s [0m 23ms/step - loss: 0.0093 - mae: 0.0687 - val_loss: 0.0042 - val_mae: 0.0359 - learning_rate: 5.0000e-06

Epoch 33/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m34s [0m 23ms/step - loss: 0.0089 - mae: 0.0669 - val_loss: 0.0042 - val_mae: 0.0355 - learning_rate: 2.5000e-06

Epoch 34/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m32s [0m 22ms/step - loss: 0.0087 - mae: 0.0657 - val_loss: 0.0042 - val_mae: 0.0353 - learning_rate: 2.5000e-06

Epoch 35/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m33s [0m 23ms/step - loss: 0.0085 - mae: 0.0648 - val_loss: 0.0042 - val_mae: 0.0352 - learning_rate: 2.5000e-06

Epoch 36/50

[1m1459/1461 [0m [32m [0m [37m [0m [1m0s [0m 21ms/step - loss: 0.0084 - mae: 0.0642

Epoch 36: ReduceLROnPlateau reducing learning rate to 1.249999968422344e-06.

[1m1461/1461 [0m [32m [0m [37m [0m [1m33s [0m 22ms/step - loss: 0.0084 - mae: 0.0642 - val_loss: 0.0042 - val_mae: 0.0350 - learning_rate: 2.5000e-06

Epoch 37/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m64s [0m 44ms/step - loss: 0.0082 - mae: 0.0631 - val_loss: 0.0041 - val_mae: 0.0347 - learning_rate: 1.2500e-06

Epoch 38/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m65s [0m 45ms/step - loss: 0.0082 - mae: 0.0630 - val_loss: 0.0042 - val_mae: 0.0349 - learning_rate: 1.2500e-06

Epoch 39/50

[1m1460/1461 [0m [32m [0m [37m [0m [1m0s [0m 42ms/step - loss: 0.0081 - mae: 0.0626

Epoch 39: ReduceLROnPlateau reducing learning rate to 6.24999984211172e-07.

[1m1461/1461 [0m [32m [0m [37m [0m [1m67s [0m 46ms/step - loss: 0.0081 - mae: 0.0626 - val_loss: 0.0042 - val_mae: 0.0347 - learning_rate: 1.2500e-06

Epoch 40/50

[1m1461/1461 [0m [32m [0m [37m [0m [1m67s [0m 46ms/step - loss: 0.0081 - mae: 0.0624 - val_loss: 0.0042 - val_mae: 0.0348 - learning_rate: 6.2500e-07

Epoch 40: early stopping

Restoring model weights from the end of the best epoch: 37.

Final Training Loss: 0.008021049201488495

Final Validation Loss: 0.00415932247415185

Loaded previous history with 20 epochs

Saving Summary:

Timestamp: 20250214_100812

Total epochs saved: 60

New epochs added: 40

Files saved:

- Model: stock_lstm_checkpoint_20250214_100812.keras

- Session data: saved_session_20250214_100812.pkl

- Large data: large_data_20250214_100812.joblib

- Training history: training_history_20250214_100812.csv

- Training plot: training_history_plot_20250214_100812.png

Previous Final Validation Loss: 344.848388671875

New Final Validation Loss: 0.0041593224741518

Validation loss is stable or improving.

Model loaded successfully.

Session data loaded successfully.

Large dataset loaded successfully.

Training history loaded: 60 epochs

Loaded Data Summary:

- Model: stock_lstm_checkpoint_20250214_100812.keras

- Session Data: saved_session_20250214_100812.pkl

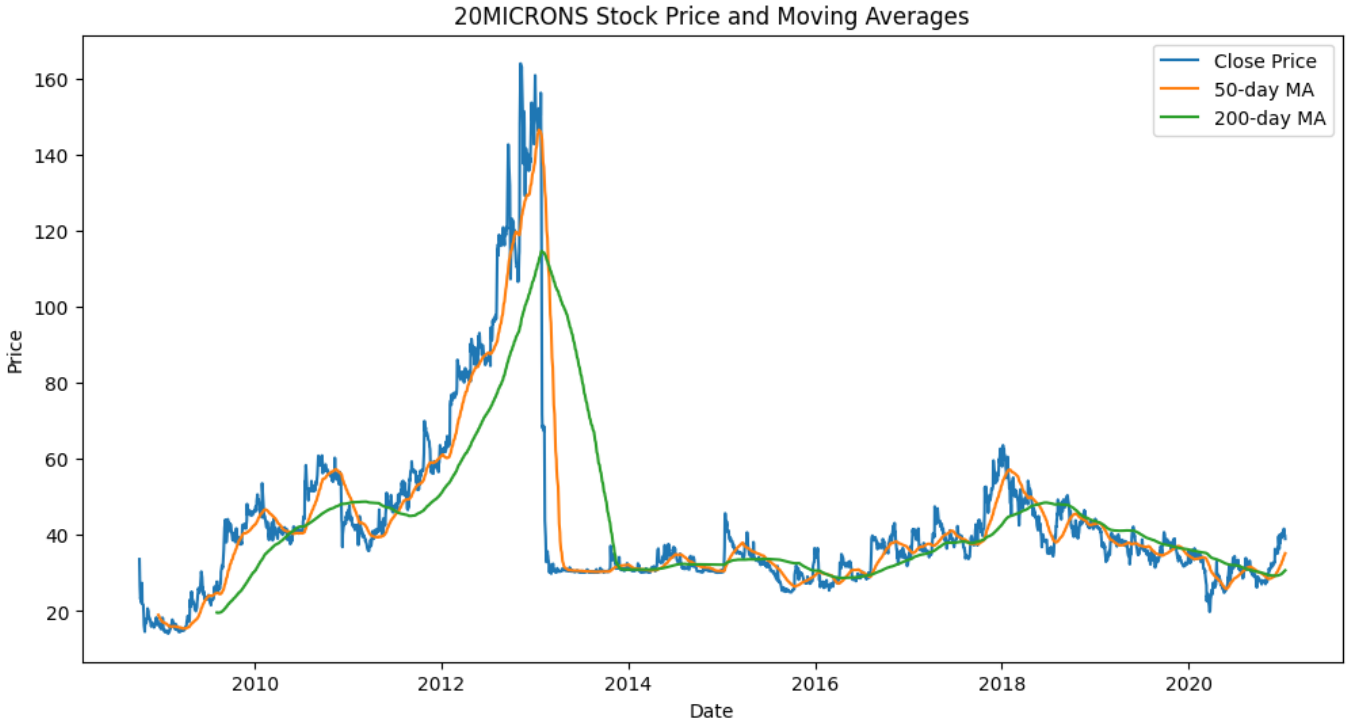
- Large Data: large_data_20250214_100812.joblib

- Training History: training_history_20250214_100812.csv

Training History Preview:

	loss	mae	val_loss	val_mae	learning_rate
0	1942.990967	4.743196	344.595703	3.769744	NaN
1	1933.893433	4.440598	344.824066	3.766990	NaN
2	1933.826782	4.409045	344.499481	3.764477	NaN
3	1933.499878	4.414865	344.492737	3.762980	NaN
4	1933.642334	4.379220	344.545105	3.763180	NaN

<Figure size 1200x500 with 2 Axes>



Epoch-wise Loss:

	loss	val_loss
0	0.151699	0.047865
1	0.127470	0.037678
2	0.107366	0.030153
3	0.091985	0.024963
4	0.079369	0.019379
5	0.068387	0.015498
6	0.059801	0.012650
7	0.052408	0.010392
8	0.046638	0.008958
9	0.041489	0.008037
10	0.037511	0.007417
11	0.034206	0.006911
12	0.031334	0.006624
13	0.028711	0.006362

14	0.026342	0.006067
15	0.024165	0.005826
16	0.022336	0.005616
17	0.020582	0.005409
18	0.019213	0.005249
19	0.017820	0.005060
20	0.016791	0.004967
21	0.015547	0.004845
22	0.014584	0.004738
23	0.013711	0.004687
24	0.012952	0.004597
25	0.012227	0.004524
26	0.011614	0.004455
27	0.010986	0.004394
28	0.010405	0.004326
29	0.009944	0.004297
30	0.009513	0.004247
31	0.009119	0.004229
32	0.008854	0.004193
33	0.008654	0.004183
34	0.008481	0.004178
35	0.008352	0.004168
36	0.008203	0.004147
37	0.008135	0.004166
38	0.008096	0.004162
39	0.008021	0.004159

Epoch-wise MAE:

	mae	val_mae
0	0.301363	0.173968
1	0.275744	0.153720
2	0.252629	0.136870
3	0.233629	0.123881
4	0.216485	0.108728
5	0.201189	0.096447
6	0.187756	0.086686
7	0.175572	0.077558
8	0.165835	0.070912
9	0.156336	0.065991
10	0.148712	0.062509
11	0.141881	0.059339
12	0.135537	0.057552
13	0.129654	0.055559
14	0.124117	0.053800
15	0.118724	0.051954
16	0.113841	0.050322
17	0.109158	0.048816
18	0.105160	0.047537
19	0.101031	0.045725
20	0.097689	0.045025
21	0.093749	0.043876
22	0.090342	0.042486
23	0.087238	0.041981
24	0.084360	0.040931

25 0.081586 0.040114

26 0.078968 0.039339

27 0.076431 0.038569

28 0.074032 0.037479

29 0.071866 0.037039

30 0.069857 0.036288

31 0.067927 0.035933

32 0.066621 0.035452

33 0.065564 0.035258

34 0.064657 0.035168

35 0.064053 0.034979

36 0.063168 0.034742

37 0.062830 0.034946

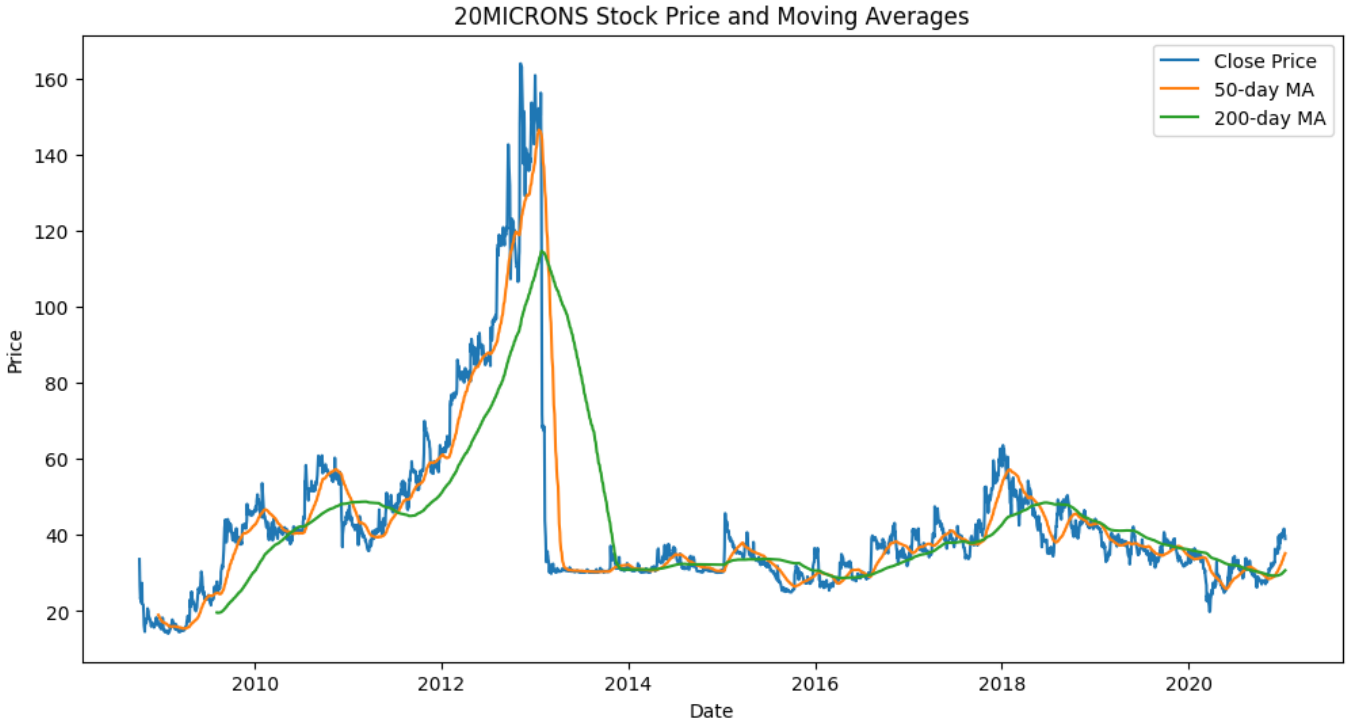
38 0.062483 0.034669

39 0.062162 0.034813

Average loss decrease per epoch: -0.003684053245263222

Average validation loss decrease per epoch: -0.0011206627823412418

<Figure size 640x480 with 1 Axes>



Recent Loss Change (last 5 epochs): -8.280668407678604e-05

Recent Val Loss Change (last 5 epochs): -2.1368032321333885e-06

Model loaded successfully.

Session data loaded successfully.

Large dataset loaded successfully.

Training history loaded: 60 epochs

Loaded Data Summary:

- Model: stock_lstm_checkpoint_20250214_100812.keras
- Session Data: saved_session_20250214_100812.pkl
- Large Data: large_data_20250214_100812.joblib
- Training History: training_history_20250214_100812.csv

Training History Preview:

	loss	mae	val_loss	val_mae	learning_rate
0	1942.990967	4.743196	344.595703	3.769744	NaN
1	1933.893433	4.440598	344.824066	3.766990	NaN

2 1933.826782 4.409045 344.499481 3.764477   NaN

3 1933.499878 4.414865 344.492737 3.762980   NaN

4 1933.642334 4.379220 344.545105 3.763180   NaN

[1m3651/3651 [0m [32m [0m [37m [0m [1m31s [0m 8ms/step

Sample Predictions:

Actual: 0.00 | Predicted: 0.01

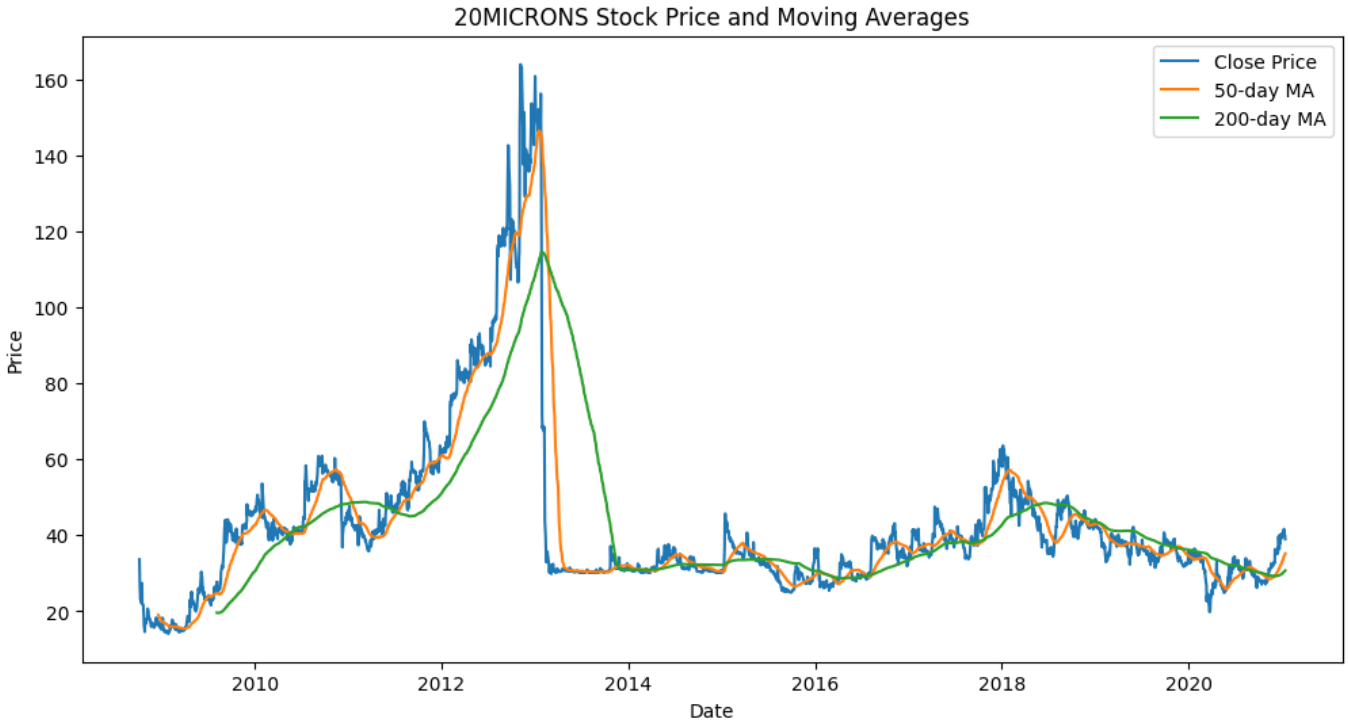
Actual: 0.00 | Predicted: 0.01

Actual: 0.00 | Predicted: 0.01

Actual: 0.00 | Predicted: 0.01

Actual: 0.00 | Predicted: 0.01

<Figure size 1200x500 with 2 Axes>



Trial 1 Complete [00h 13m 32s]

val_loss: 0.0560920313000679

Best val_loss So Far: 0.0560920313000679

Total elapsed time: 00h 13m 32s

Search: Running Trial #2

Value	Best Value So Far	Hyperparameter
1	3	num_layers
32	192	units_0
0.2	0.3	dropout
0.0005	0.0001	learning_rate
224	32	units_1
224	32	units_2
2	2	tuner/epochs
0	0	tuner/initial_epoch
3	3	tuner/bracket
0	0	tuner/round

Epoch 1/2

[1m4794/5842 [0m [32m [0m [37m [0m [1m22s [0m 21ms/step - loss: 0.0567 - mae: 0.1893

Trial 5 Complete [00h 12m 37s]

val_loss: 0.0560862198472023

Best val_loss So Far: 0.05608607828617096

Total elapsed time: 00h 49m 22s

Search: Running Trial #6

Value	Best Value So Far	Hyperparameter
1	1	num_layers

128 |192 |units_0

0.3 |0.5 |dropout

0.001 |0.0005 |learning_rate

64 |160 |units_1

192 |128 |units_2

2 |2 |tuner/epochs

0 |0 |tuner/initial_epoch

3 |3 |tuner/bracket

0 |0 |tuner/round

Epoch 1/2

[1m4596/4673 [0m [32m [0m [37m [0m [1m2s [0m 27ms/step - loss: 0.0563 - mae: 0.1897

Best Hyperparameters:

num_layers: 1

units_0: 192

dropout: 0.5

learning_rate: 0.0005

units_1: 160

units_2: 128

tuner/epochs: 2

tuner/initial_epoch: 0

tuner/bracket: 3

tuner/round: 0

TensorFlow OneDNN optimizations enabled.

Mixed Precision Enabled (float16)

Epoch 1/5

[1m4673/4673 [0m [32m [0m [37m [0m [1m241s [0m 51ms/step - loss: 0.0017 - mae: 0.0198 - val_loss: 2.7210e-04 - val_mae: 0.0039 - learning_rate: 0.0100

Epoch 2/5

[1m4673/4673 [0m [32m [0m [37m [0m [1m286s [0m 61ms/step - loss: 3.2162e-04 - mae: 0.0069 - val_loss: 2.7473e-04 - val_mae: 0.0046 - learning_rate: 0.0100

Epoch 3/5

[1m4672/4673 [0m [32m [0m [37m [0m [1m0s [0m 56ms/step - loss: 3.0564e-04 - mae: 0.0057

Epoch 3: ReduceLROnPlateau reducing learning rate to 0.004999999888241291.

[1m4673/4673 [0m [32m [0m [37m [0m [1m284s [0m 61ms/step - loss: 3.0564e-04 - mae: 0.0057 - val_loss: 2.7184e-04 - val_mae: 0.0036 - learning_rate: 0.0100

Epoch 4/5

[1m4673/4673 [0m [32m [0m [37m [0m [1m238s [0m 51ms/step - loss: 3.0172e-04 - mae: 0.0052 - val_loss: 2.7115e-04 - val_mae: 0.0037 - learning_rate: 0.0050

Epoch 5/5

[1m4672/4673 [0m [32m [0m [37m [0m [1m0s [0m 49ms/step - loss: 2.9502e-04 - mae: 0.0050

Epoch 5: ReduceLROnPlateau reducing learning rate to 0.0024999999441206455.

[1m4673/4673 [0m [32m [0m [37m [0m [1m250s [0m 54ms/step - loss: 2.9502e-04 - mae: 0.0050 - val_loss: 2.7077e-04 - val_mae: 0.0039 - learning_rate: 0.0050

Restoring model weights from the end of the best epoch: 5.

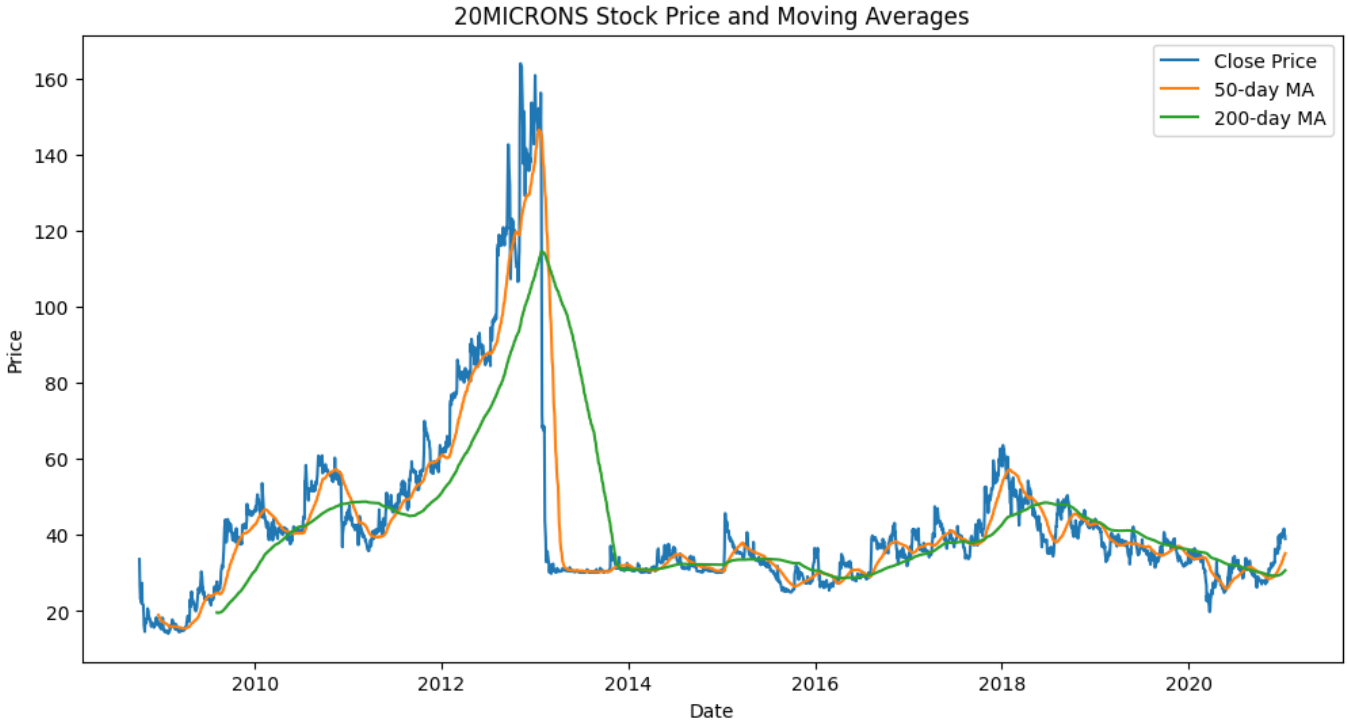
WARNING:absl:You are saving your model as an HDF5 file via `model.save()` or `keras.saving.save_model(model)`. This file format is considered legacy. We recommend using instead the native Keras format, e.g. `model.save('my_model.keras')` or `keras.saving.save_model(model, 'my_model.keras')`.

Training Completed in 1300.70 seconds

Model and Training History Saved.

```
 Best Validation Loss: 0.000270769844064489
WARNING:absl:Compiled the loaded model, but the compiled metrics have yet to be built. `model.compile_metrics` will be empty until you train or evaluate the model.
 Model Loaded Successfully
  79472/Unknown  [1m2583s [0m 32ms/step - loss: 0.0676 - mean_absolute_error: 0.1691
WARNING:absl:Compiled the loaded model, but the compiled metrics have yet to be built. `model.compile_metrics` will be empty until you train or evaluate the model.
 Model Loaded with JIT Compilation
 [1m391/391 [0m      [32m [0m [37m [0m      [1m83s [0m 210ms/step - loss: 0.0671 - mean_absolute_error: 0.1712

 Optimized Test Loss: 0.067087, Test MAE: 0.171121
 Evaluation Time: 83.28 seconds
c:\Users\KIIT\AppData\Local\Programs\Python\Python310\lib\site-packages\keras\src\trainers\epoch_iterator.py:151: UserWarning: Your input ran out of data; interrupting training. Make sure that your dataset or generator can generate at least `steps_per_epoch * epochs` batches. You may need to use the `.repeat()` function when building your dataset.
  self._interrupted_warning()
 Model Loaded and JIT Compilation Enabled
 Predicting...
 [1m32/32 [0m  [32m [0m [37m [0m  [1m1s [0m 19ms/step
C:\Users\KIIT\AppData\Roaming\Python\Python310\site-packages\IPython\core\pylabtools.py:170: UserWarning: Glyph 128202 (\N{BAR CHART}) missing from font(s) DejaVu Sans.
  fig.canvas.print_figure(bytes_io, **kw)
<Figure size 1200x600 with 1 Axes>
```



Close Price MAE: 0.122102

Close Price RMSE: 0.122144

C:\Users\KIIT\AppData\Local\Temp\ipykernel_12280\2488799249.py:43: FutureWarning: The default fill_method='pad' in Series.pct_change is deprecated and will be removed in a future version. Either fill in any non-leading NA values prior to calling pct_change or specify 'fill_method=None' to not fill NA values.

df['Returns'] = df['Close'].pct_change()

Feature engineering complete.

Input shape: (7015920, 60, 8)

Output shape: (7015920, 5)

Features added: ['Open', 'High', 'Low', 'Close', 'Volume', 'Returns', 'Anomaly', 'Stock', 'SMA_20', 'SMA_50', 'EMA_12', 'EMA_26', 'MACD', 'MACD_Signal', 'MACD_Hist', 'RSI', 'Stoch_K', 'Stoch_D', 'BB_Upper', 'BB_Middle', 'BB_Lower', 'BB_Width', 'VWAP', 'Price_Change', 'Daily_Volatility', 'Daily_Range', 'Daily_Range_Pct', 'Price_Position', 'Volume_MA_20', 'Volume_MA_50', 'Volume_Ratio']

Scaler saved successfully.

WARNING:absl:Compiled the loaded model, but the compiled metrics have yet to be built. `model.compile_metrics` will be empty until you train or evaluate the model.

[1m1/1 [0m [32m [0m [37m [0m [1m1s [0m 512ms/step

	Date	Predicted_Close
0	2021-01-14	7235.239600
1	2021-01-15	36718.883984
2	2021-01-16	-22129.956934
3	2021-01-17	11094.665430
4	2021-01-18	28230.121289

WARNING:absl:Compiled the loaded model, but the compiled metrics have yet to be built. `model.compile_metrics` will be empty until you train or evaluate the model.

Model Summary:

[1mModel: "sequential_5" [0m

[1m Layer (type) [0m	[1m Output Shape [0m	[1m Param # [0m
lstm_9 ([38;5;33mLSTM [0m)	([38;5;45mNone [0m, [38;5;34m60 [0m, [38;5;34m128 [0m)	[38;5;34m70,144 [0m
lstm_10 ([38;5;33mLSTM [0m)	([38;5;45mNone [0m, [38;5;34m64 [0m)	[38;5;34m49,408 [0m
dense_5 ([38;5;33mDense [0m)	([38;5;45mNone [0m, [38;5;34m5 [0m)	[38;5;34m325 [0m

[1m Total params: [0m [38;5;34m119,883 [0m (468.30 KB)

[1m Trainable params: [0m [38;5;34m119,877 [0m (468.27 KB)

[1m Non-trainable params: [0m [38;5;34m0 [0m (0.00 B)

[1m Optimizer params: [0m [38;5;34m6 [0m (36.00 B)

Last 10 Training Labels from y_stock_targets.npy:

[[0.00090341 0.00094855 0.00099554 0.00104501 0.00109695]

[0.00094855 0.00099554 0.00104501 0.00109695 0.00104254]

[0.00099554 0.00104501 0.00109695 0.00104254 0.00109448]

[0.00104501 0.00109695 0.00104254 0.00109448 0.00110932]

[0.00109695 0.00104254 0.00109448 0.00110932 0.00109139]

[0.00104254 0.00109448 0.00110932 0.00109139 0.0010951]

[0.00109448 0.00110932 0.00109139 0.0010951 0.0011019]

[0.00110932 0.00109139 0.0010951 0.0011019 0.00105429]

[0.00109139 0.0010951 0.0011019 0.00105429 0.00103574]

[0.0010951 0.0011019 0.00105429 0.00103574 0.001011]]

Sample y_stock_targets values:

[[0.00090341 0.00094855 0.00099554 0.00104501 0.00109695]

[0.00094855 0.00099554 0.00104501 0.00109695 0.00104254]

[0.00099554 0.00104501 0.00109695 0.00104254 0.00109448]

[0.00104501 0.00109695 0.00104254 0.00109448 0.00110932]

[0.00109695 0.00104254 0.00109448 0.00110932 0.00109139]

[0.00104254 0.00109448 0.00110932 0.00109139 0.0010951]

[0.00109448 0.00110932 0.00109139 0.0010951 0.0011019]

[0.00110932 0.00109139 0.0010951 0.0011019 0.00105429]

[0.00109139 0.0010951 0.0011019 0.00105429 0.00103574]

[0.0010951 0.0011019 0.00105429 0.00103574 0.001011]]