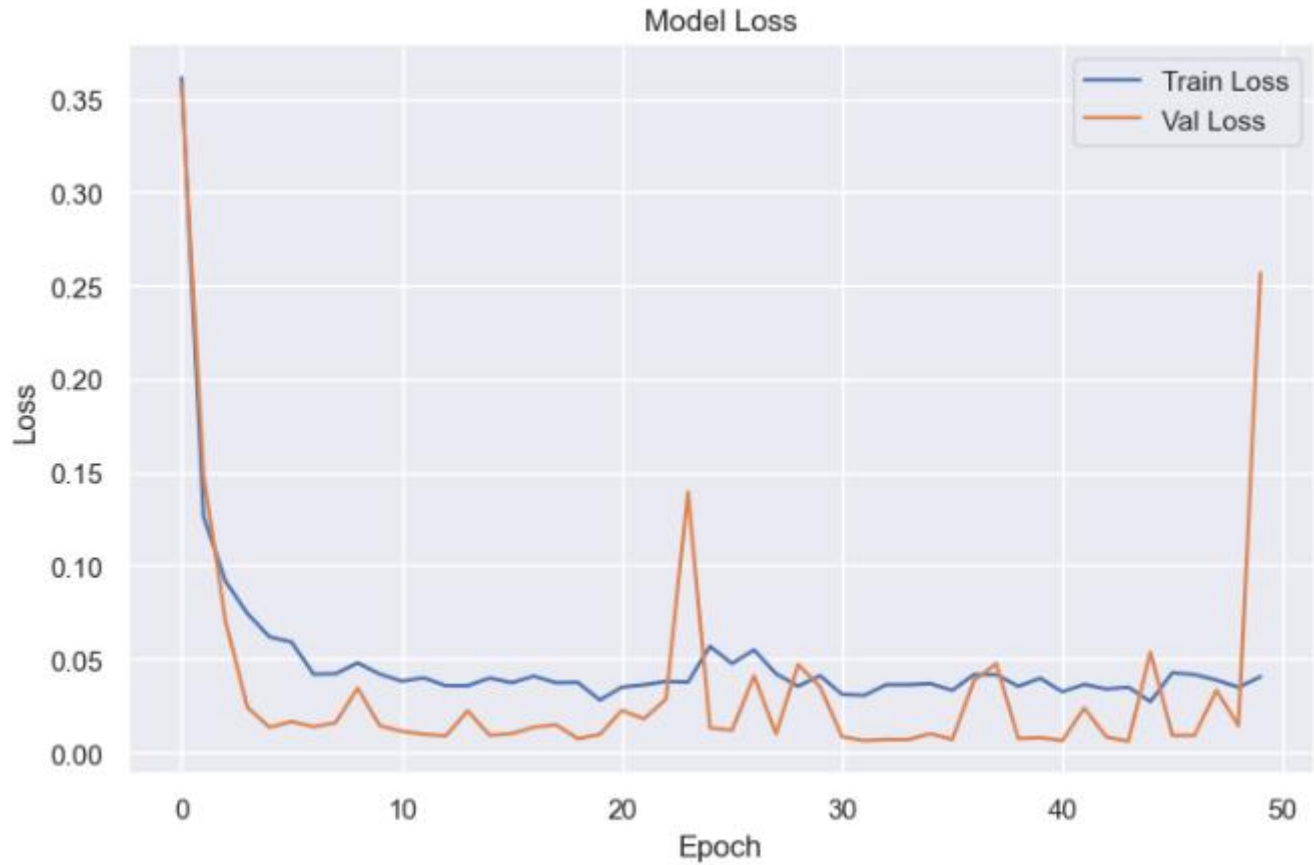
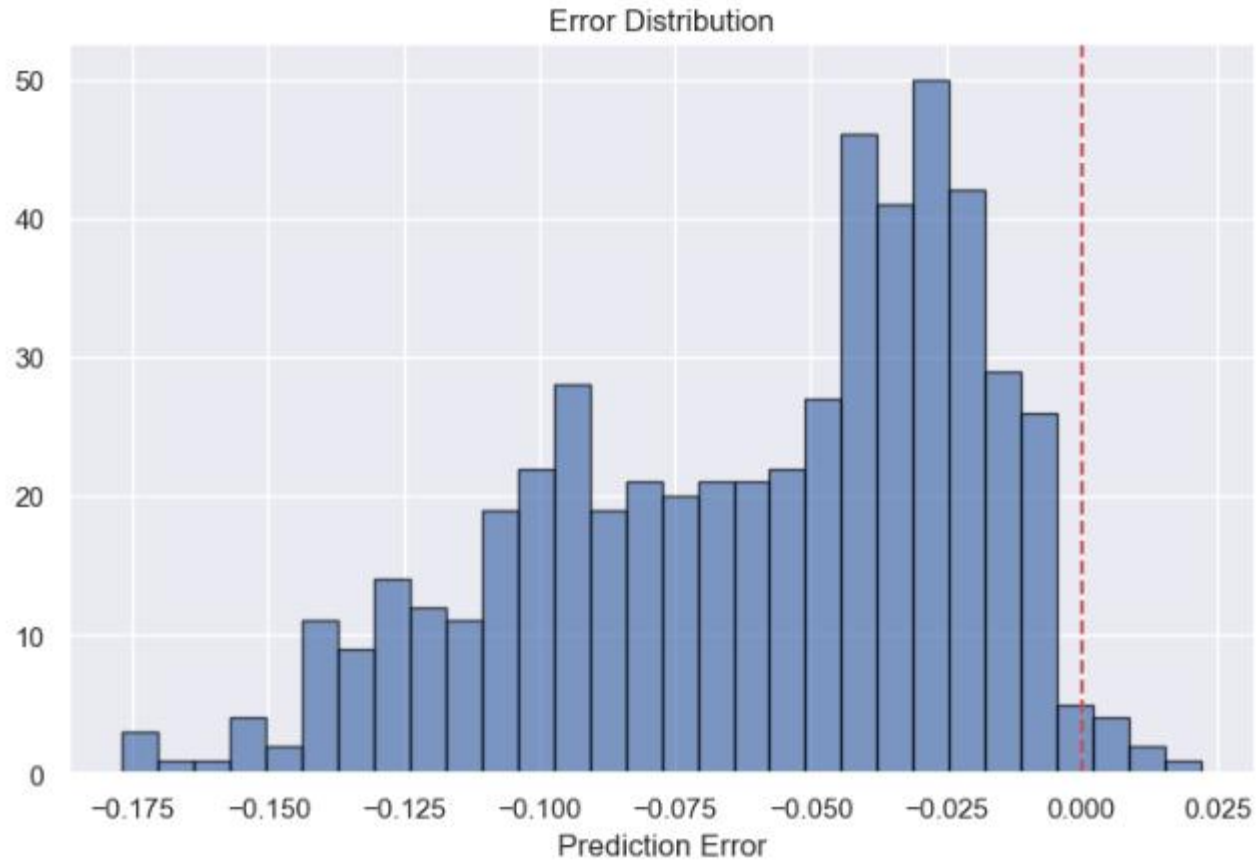
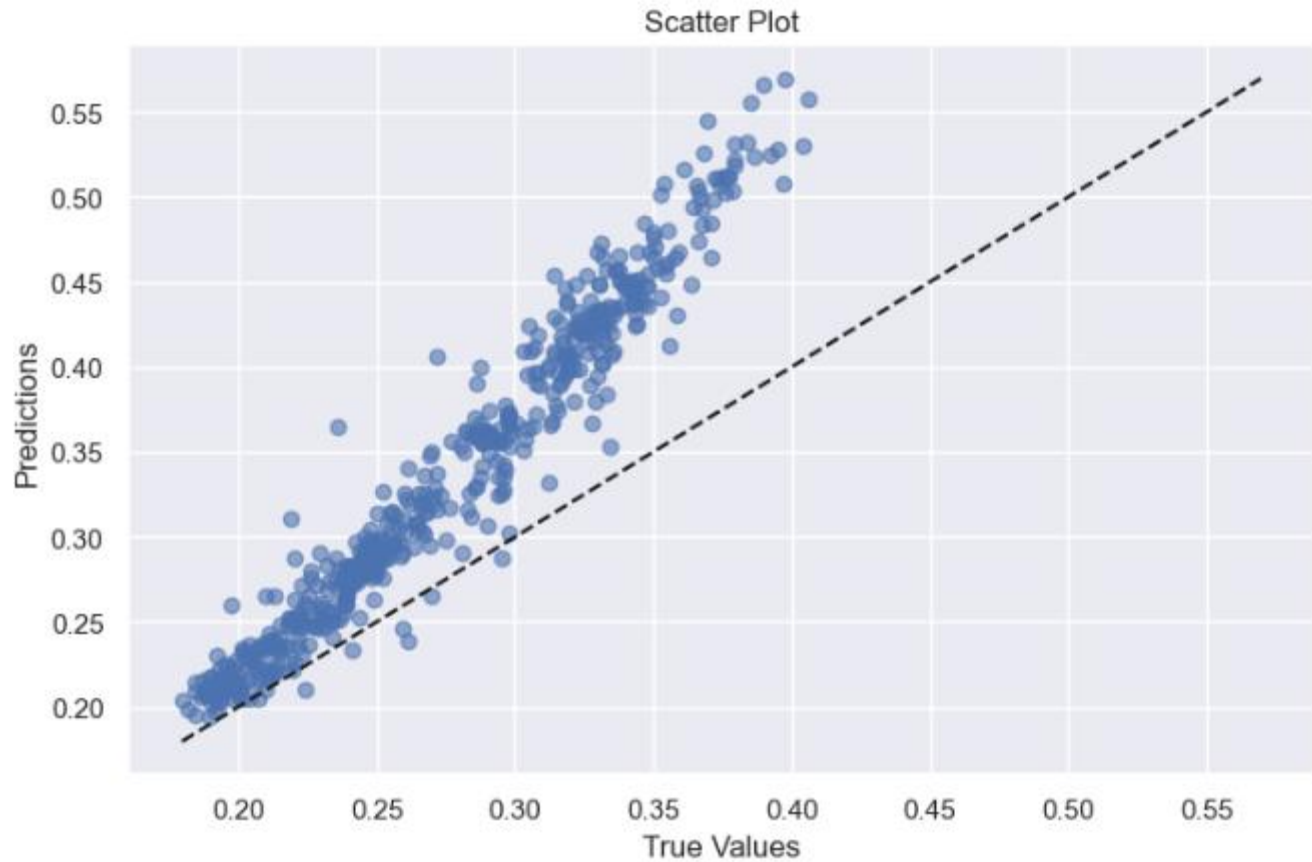
deep learning prediction and true value

```
Test RMSE: 0.07208450652540924
```


Model Loss
Train Loss
Val Loss
Loss
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0
10
20
30
40
50
Epoch


Error Distribution
50
40
30
20
10
0
−0.175
−0.150
−0.125
−0.100
−0.075
−0.050
−0.025
0.000
0.025
Prediction Error


Scatter Plot
Predictions
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.20
0.25
0.30
0.35
0.40
0.45
0.50
0.55
True Values

```
==================================================
MODEL PERFORMANCE METRICS
==================================================
RMSE: 0.072085
MAE: 0.060240
R²: -0.6594
MAPE: 20.31%
Direction Accuracy: 51.78%
Max Error: 0.176926
Mean Error: -0.059972
==================================================
```

Assumptions:

Market patterns are somewhat predictable and repeatable

The chosen features contain sufficient predictive information

The relationship between past and future prices is learnable

The training data distribution represents future market conditions

Major Risks:

Black swan events completely break the model

Structural breaks in market behavior make past patterns irrelevant

Overfitting leads to false confidence in historical patterns

Model decay occurs as market dynamics evolve

Exogenous factors (news, policies, sentiment) are not captured

```
SENSITIVITY ANALYSIS
============================

Normal Market:        R²=-0.659, RMSE=0.072085
High Volatility:      R²=-0.677, RMSE=0.072460
Bear Market:          R²=0.816, RMSE=0.024001

Performance Drop:
High Volatility: --2.6% R²
Bear Market:     -223.8% R²

Model relatively robust to volatility
WARNING: Model breaks down in bear markets
ACTION: Avoid shorting or use alternative strategies
```

If the business has a high tolerance for error, this model can be directly used to assist decision-making.
The model can serve as a basic reference but should not be relied upon entirely, especially in highly volatile or high-risk scenarios.
It is not suitable for trading or strategic decision-making, as incorrect direction predictions could lead to direct losses.
In risk-sensitive contexts, the impact of extreme errors must be carefully monitored.