# Crypto Volatility Detection — Final Report

## ■ Dataset Summary
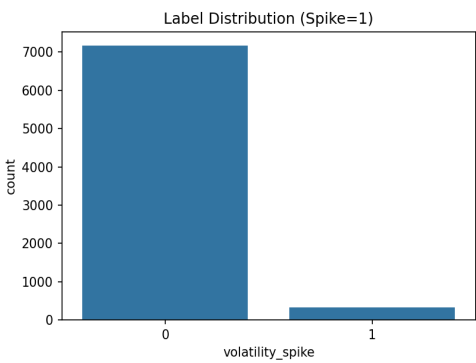
Total Rows: 7,496

Total Features: 47

Spikes (1): 325

Normal (0): 7,171
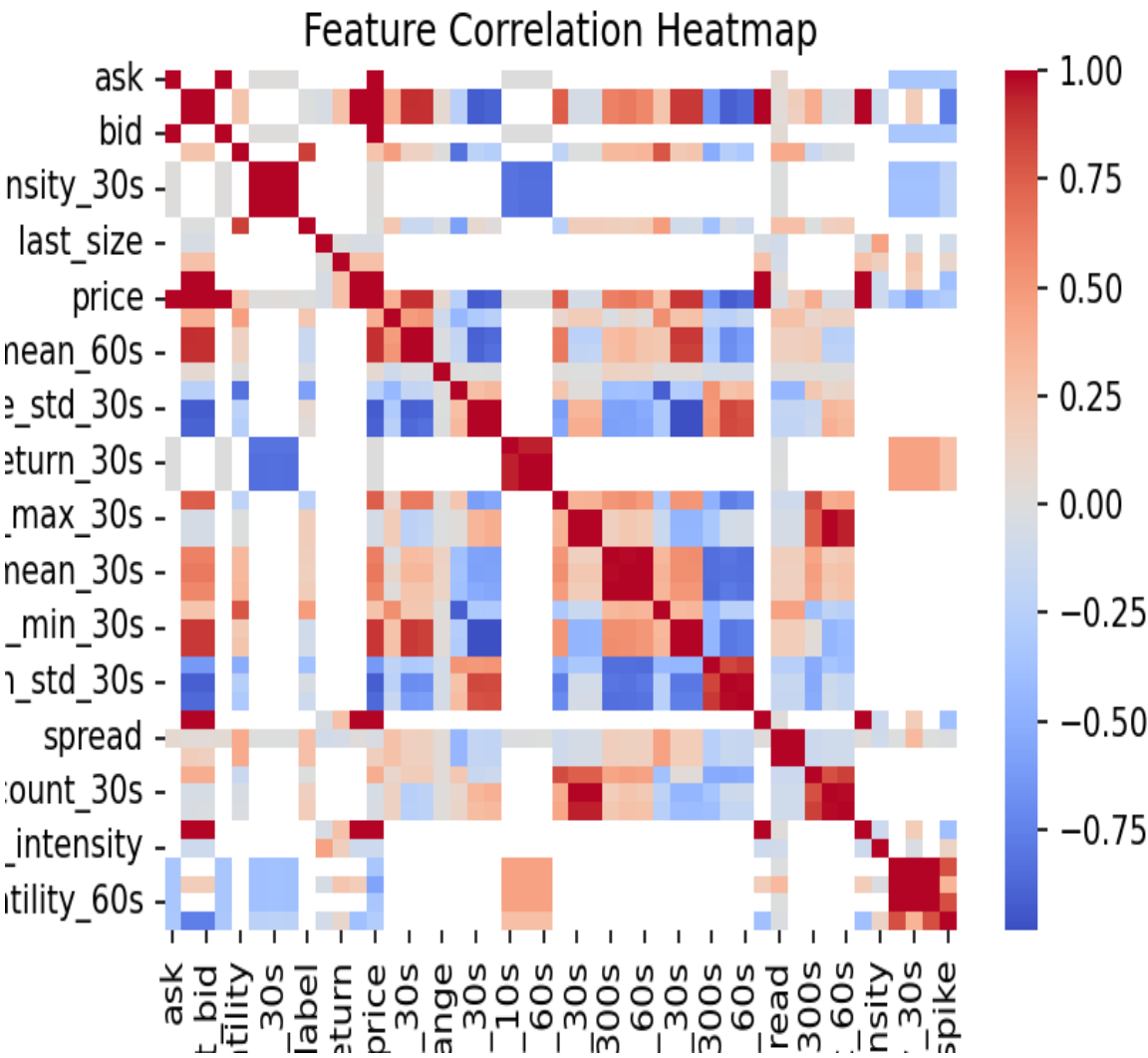
Spike Rate: 4.34%



Label Distribution (Spike=1)

# ■ Model Leaderboard

| Model | Accuracy | AUC | Precision | Recall | F1 |
|---|---|---|---|---|---|
| random_forest_20251119_111421 | 0.9996 | 1.0 | 0.9938650306748468 | 0.9969230769230768 | 0.9954 |
| random_forest_20251119_111606 | 0.9999 | 1.0 | 1.0 | 0.9969230769230768 | 0.9985 |
| xgboost_20251119_111607 | 0.9999 | 0.9999 | 1.0 | 0.9969230769230768 | 0.9985 |
| xgboost_20251119_111422 | 0.9999 | 0.9999 | 1.0 | 0.9969230769230768 | 0.9985 |
| gradient_boosting_20251119_111606 | 0.9999 | 0.9985 | 1.0 | 0.9969230769230768 | 0.9985 |
| gradient_boosting_20251119_111422 | 0.9999 | 0.9985 | 1.0 | 0.9969230769230768 | 0.9985 |
| logistic_regression_20251119_111605 | 0.9582 | 0.7788 | 0.75 | 0.0553846153846153 | 0.1032 |
| logistic_regression_20251119_111421 | 0.9582 | 0.7788 | 0.75 | 0.0553846153846153 | 0.1032 |

# ■ Feature Correlation Heatmap



Feature Correlation Heatmap

## ■ Best Model Summary

Best Model: random_forest_20251119_111421

Accuracy:   0.9996

AUC:        1.0000

Precision:  0.9939

Recall:     0.9969

F1 Score:   0.9954