

ML Stock Forecasting Report

Ticker: META

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Executive Summary

This report presents a comprehensive analysis of META stock using advanced machine learning models. The best performing model is **ML_XGB** with a raw directional accuracy of **86.8%** (vs Buy & Hold baseline of 51.4%).

Next Day Prediction: HOLD/CASH (Expected Return: 6.97%)

Model Performance Metrics

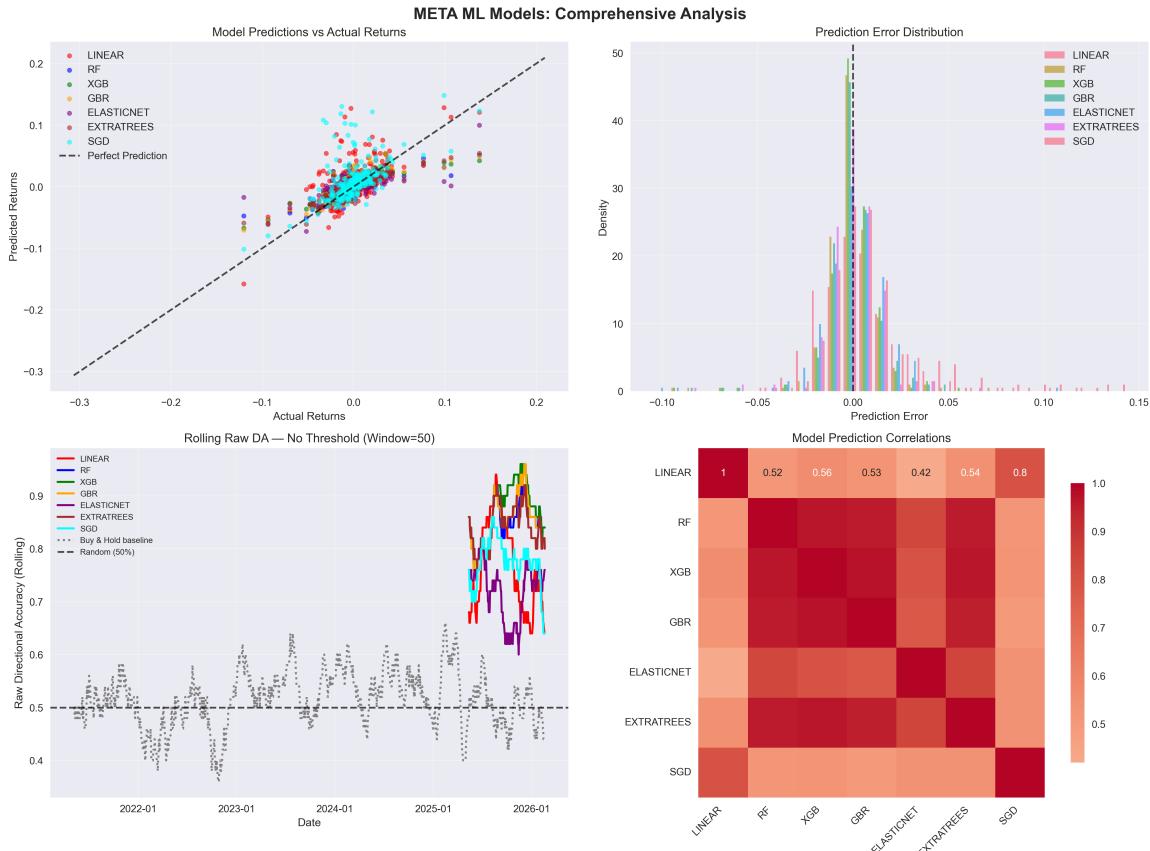
Model	RMSE	MAE	Raw DA	Confident DA	Coverage
Buy & Hold (baseline)	—	—	51.4%	—	100.0%
LINEAR	0.0271	0.0184	73.3%	73.1%	93.4%
RF	0.0149	0.0090	84.8%	88.6%	90.5%
XGB	0.0138	0.0084	86.8%	87.7%	93.4%
GBR	0.0141	0.0088	85.2%	88.3%	95.1%
ELASTICNET	0.0178	0.0119	72.4%	76.6%	79.0%
EXTRATREES	0.0142	0.0095	84.0%	86.9%	90.9%
SGD	0.0302	0.0172	75.3%	78.0%	91.8%

Next Day Trading Recommendation

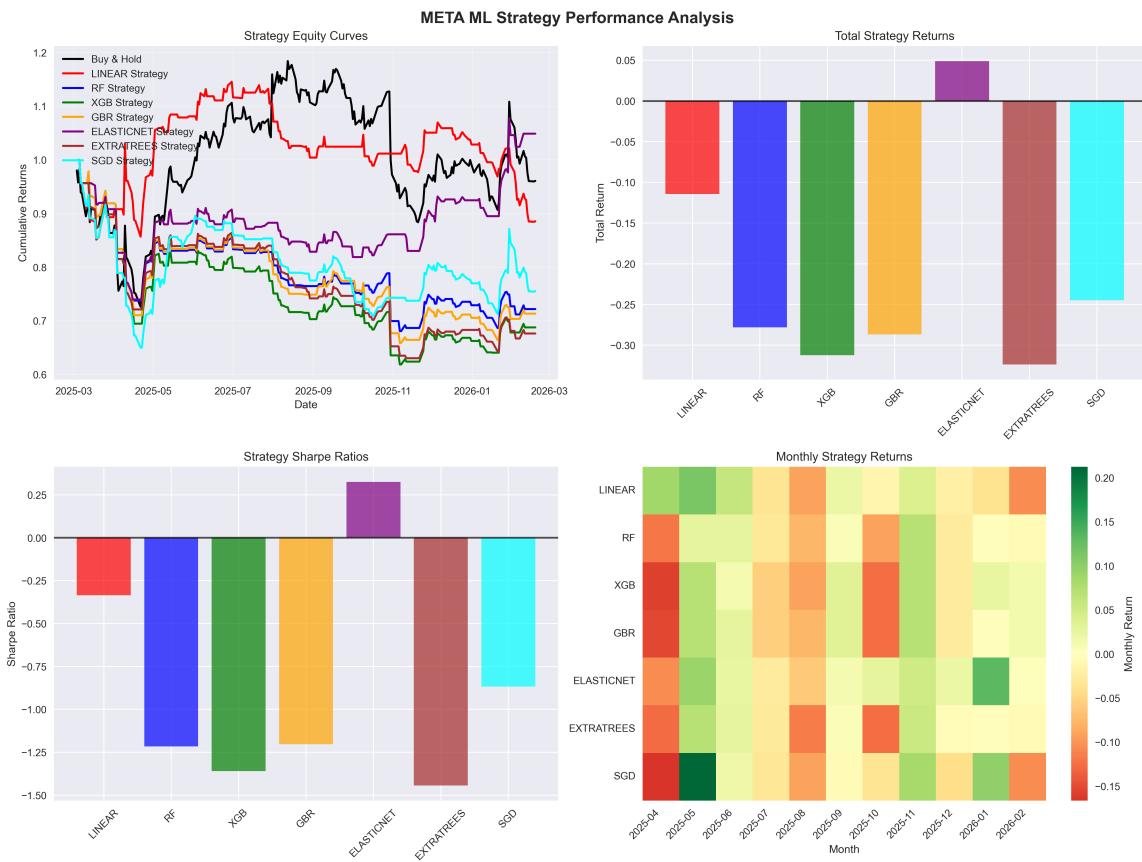
Metric	Value
Best Model	XGB
Predicted Return	0.07%
Raw DA	86.8%
Buy & Hold DA	51.4%
Recommendation	HOLD/CASH

Analysis Charts

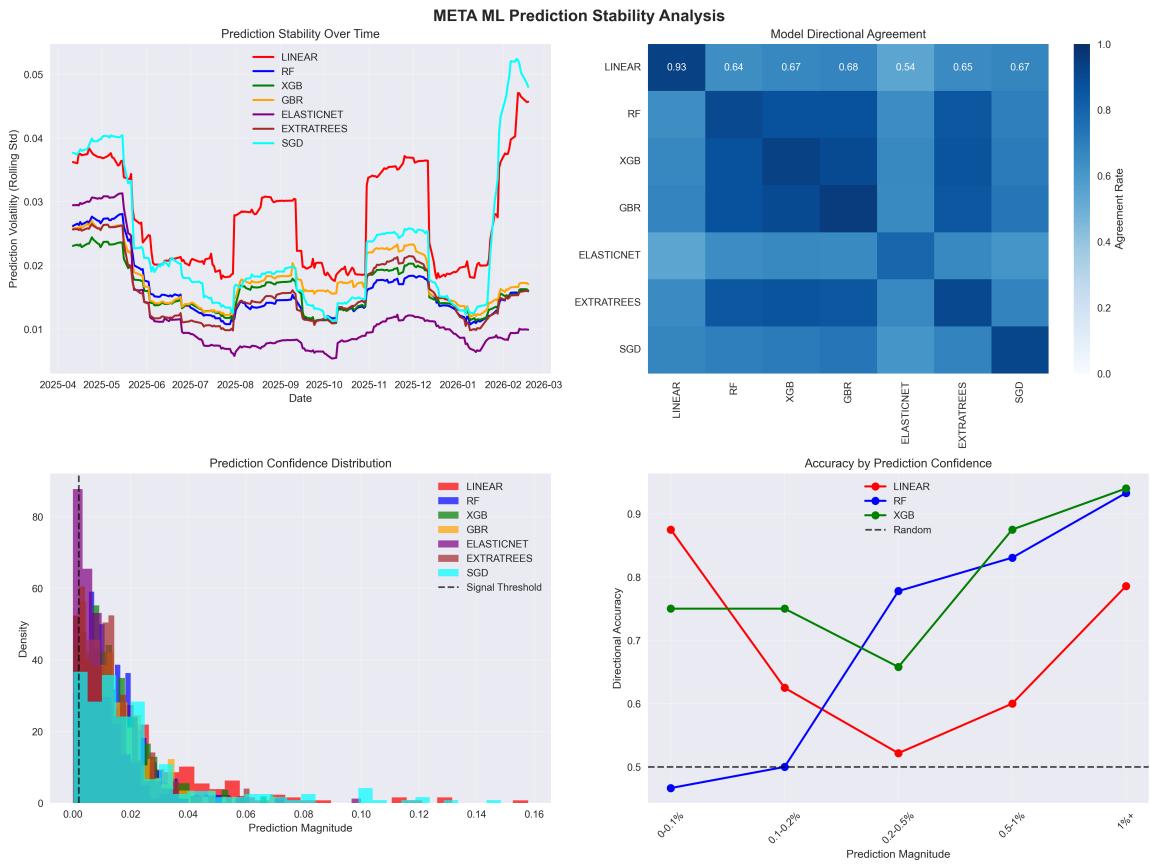
Model Predictions vs Actual Returns and Error Analysis



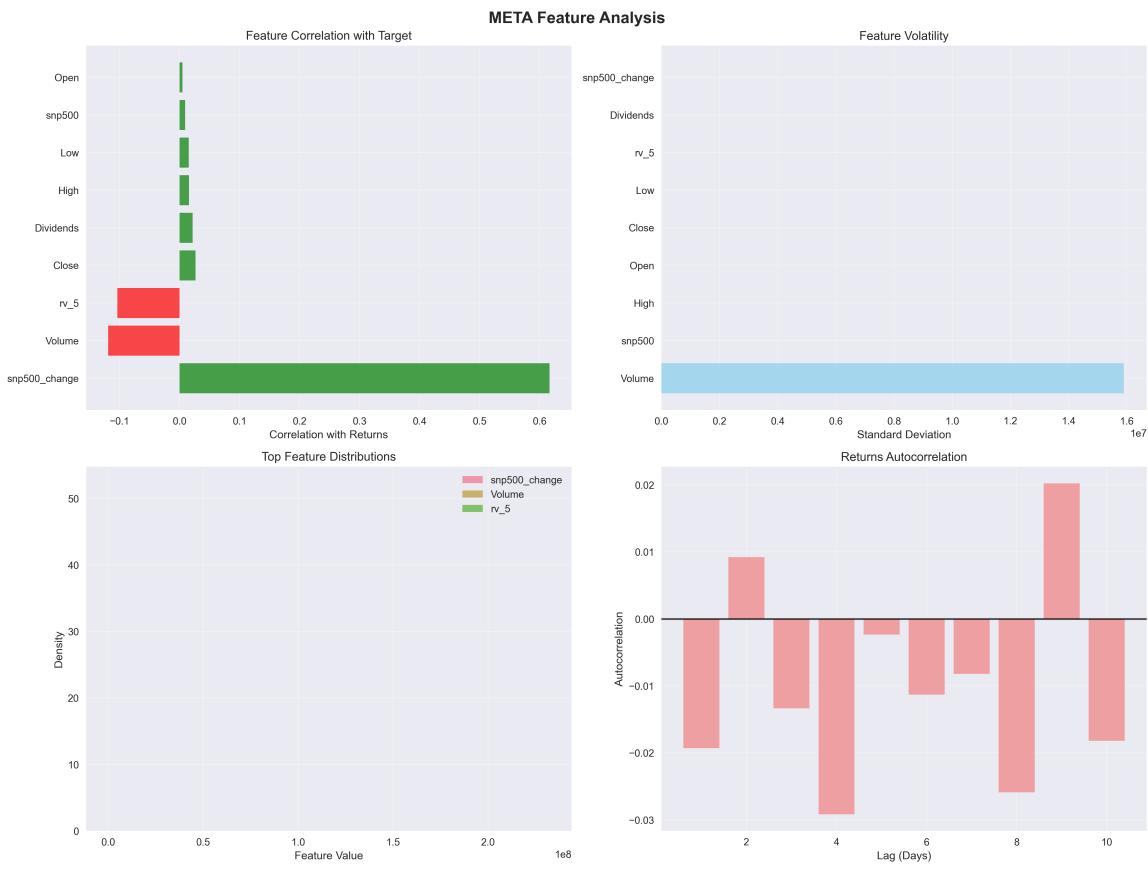
Strategy Performance Comparison and Risk Metrics



Prediction Stability and Model Agreement Analysis

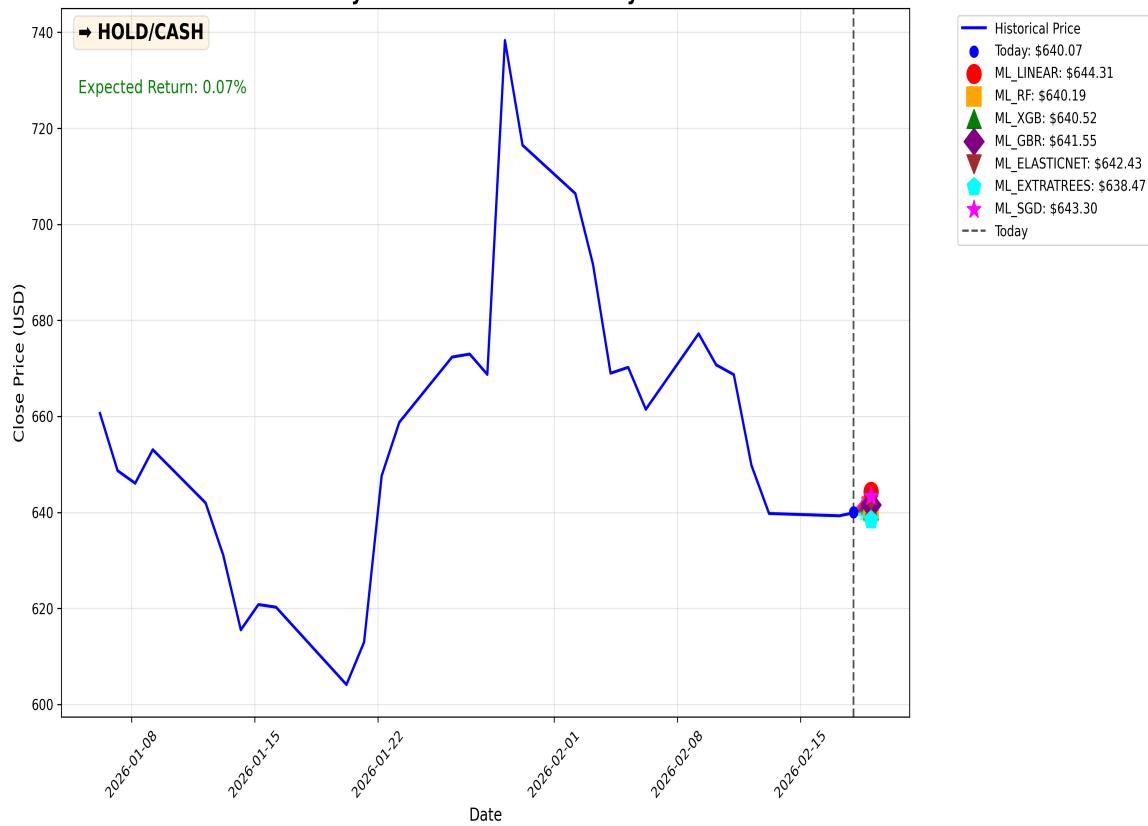


Feature Importance and Correlation Analysis



next_day_predictions

META: Monthly Price Chart with Next Day Predictions



Conclusions & Recommendations

Based on the comprehensive ML analysis of META, the following conclusions can be drawn:

- Model Performance:** The machine learning models achieve raw directional accuracies ranging from 72.4% to 86.8%, compared to the Buy & Hold baseline of 51.4%.
- Best Model:** ML_XGB provides the most reliable predictions for trading decisions.
- Risk Management:** The implemented threshold-based strategy (0.2% threshold) effectively reduces false signals and improves signal quality.
- Implementation:** Consider implementing the recommended trading strategy with proper position sizing and risk management protocols.
- Monitoring:** Regular model retraining and performance monitoring is essential for maintaining predictive accuracy.

Disclaimer: This analysis is for informational purposes only and should not be considered as financial advice.