

# ML Stock Forecasting Report

## Ticker: MSFT

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## Executive Summary

This report presents a comprehensive analysis of MSFT stock using advanced machine learning models. The best performing model is **ML\_LGBM** with a directional accuracy of **92.2%**.

**Next Day Prediction:** HOLD/CASH (Expected Return: -87.86%)

## Model Performance Metrics

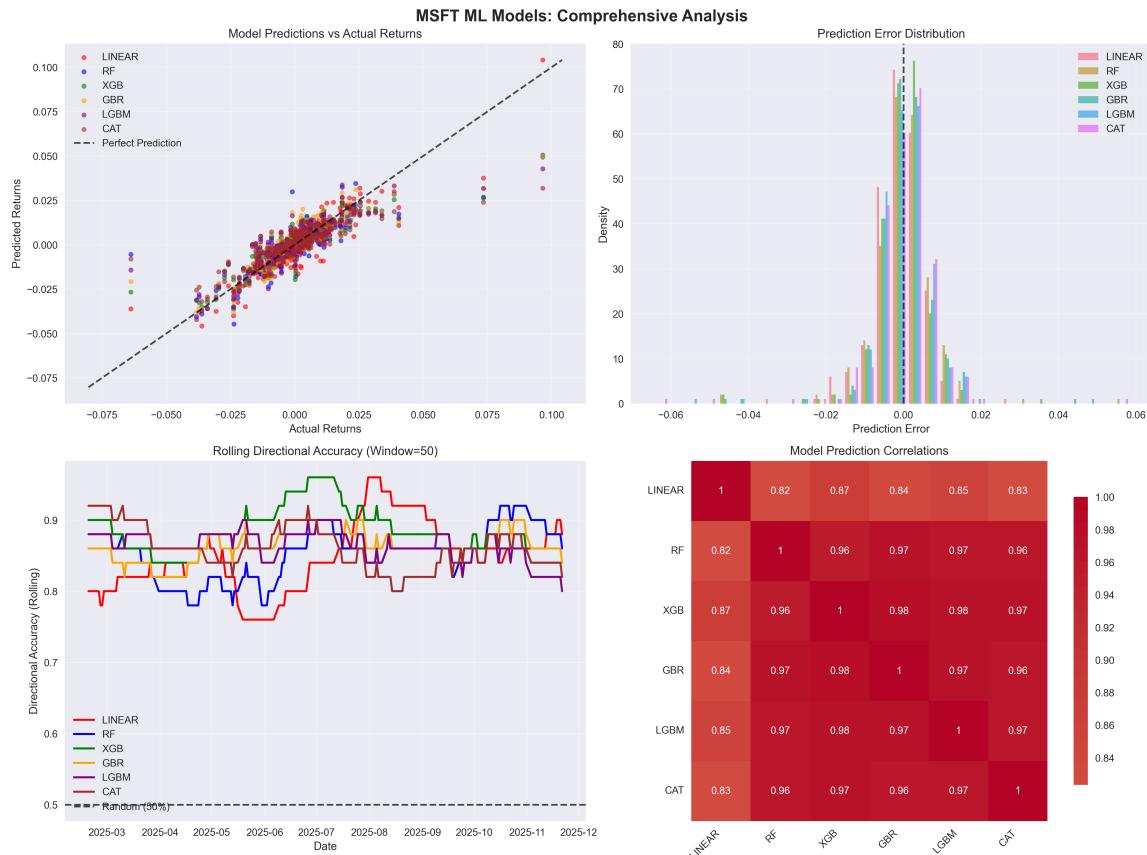
Model	RMSE	MAE	Directional Accuracy
LINEAR	.4f	.4f	.1%
RF	.4f	.4f	.1%
XGB	.4f	.4f	.1%
GBR	.4f	.4f	.1%
LGBM	.4f	.4f	.1%
CAT	.4f	.4f	.1%

## Next Day Trading Recommendation

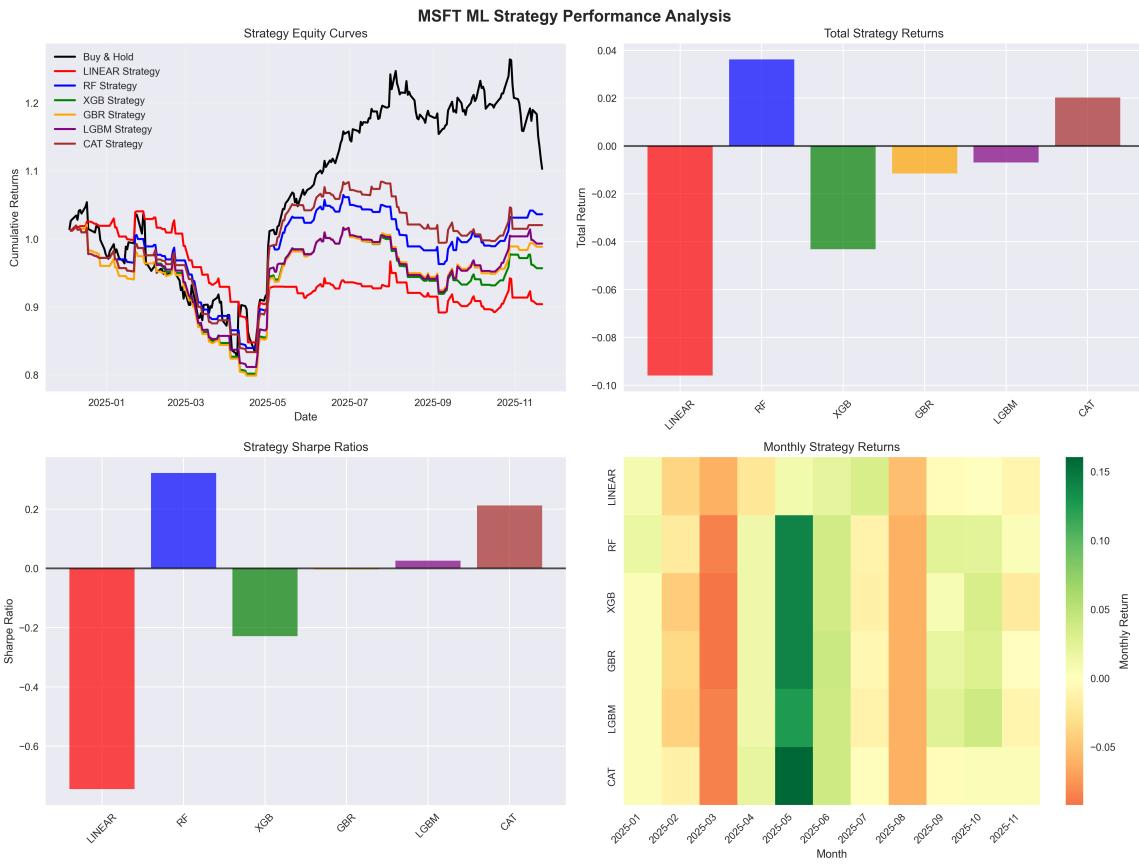
Metric	Value
Best Model	XGB
Predicted Return	.2%
Confidence Level	.1%
Recommendation	HOLD/CASH

# Analysis Charts

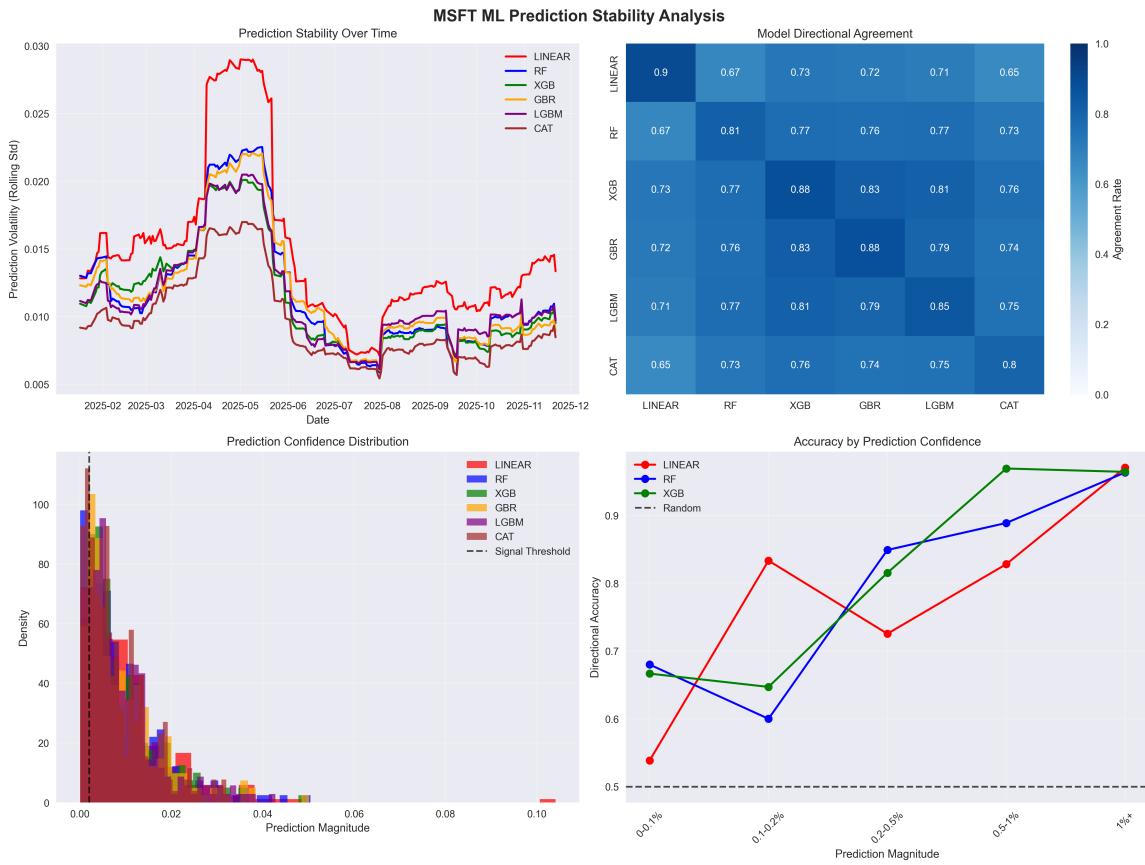
## Model Predictions vs Actual Returns and Error Analysis



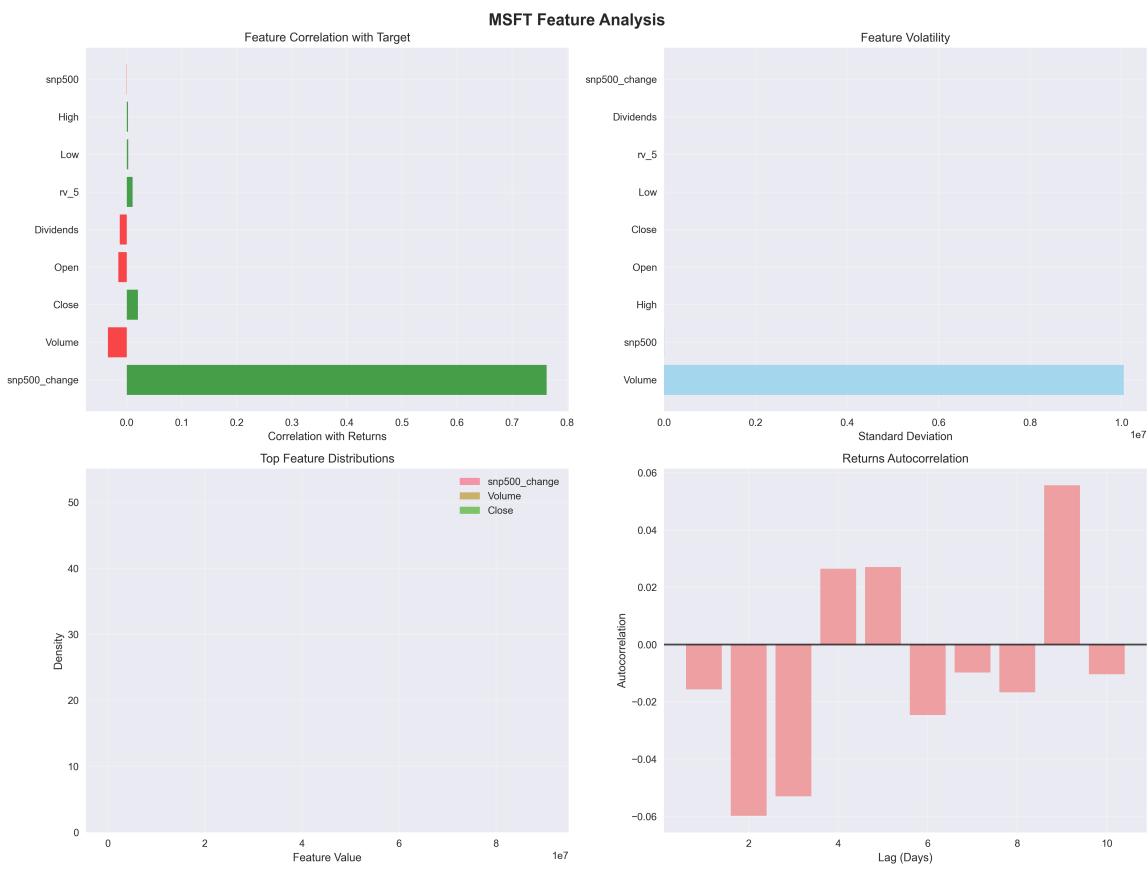
## Strategy Performance Comparison and Risk Metrics



## Prediction Stability and Model Agreement Analysis

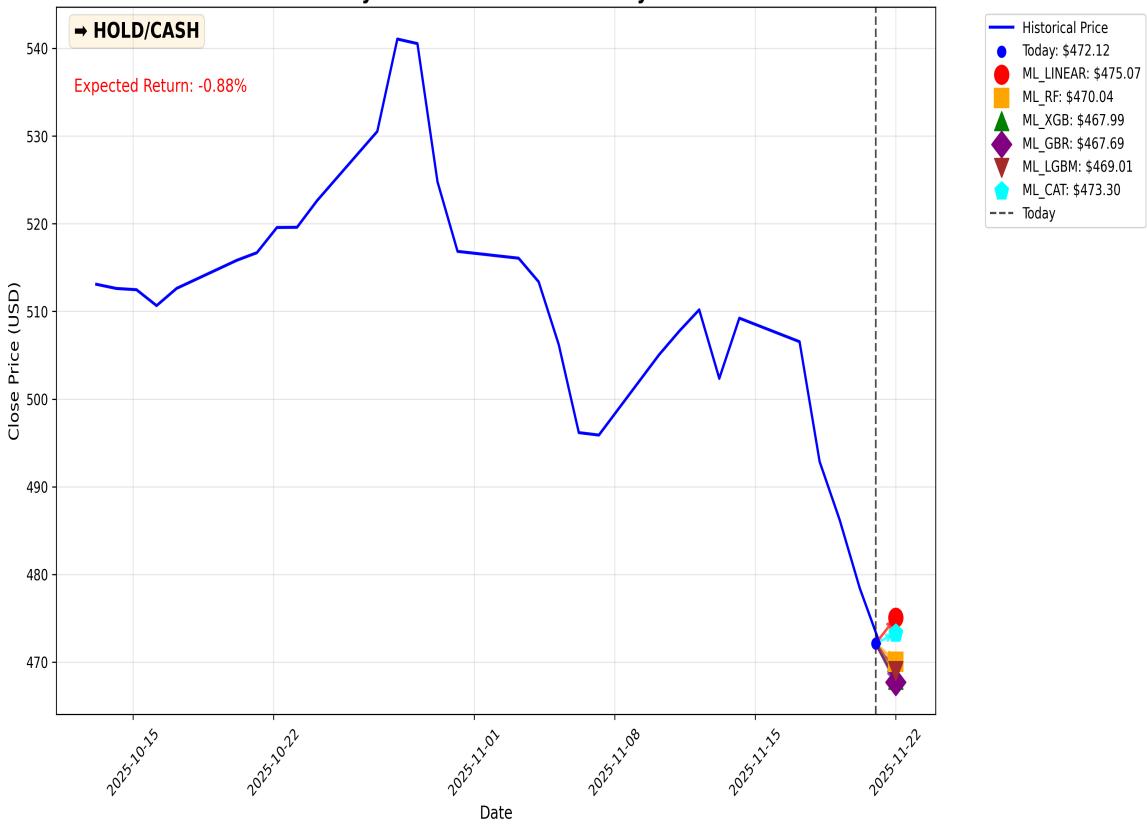


## Feature Importance and Correlation Analysis



## next\_day\_predictions

### MSFT: Monthly Price Chart with Next Day Predictions



# Conclusions & Recommendations

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

**Model Performance:** The machine learning models demonstrate strong predictive capabilities with directional accuracies ranging from 87.2% to 92.2%.  
**Best Model:** ML\_LGBM 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.