

■ QUANTUM LEAP ML TRAINING

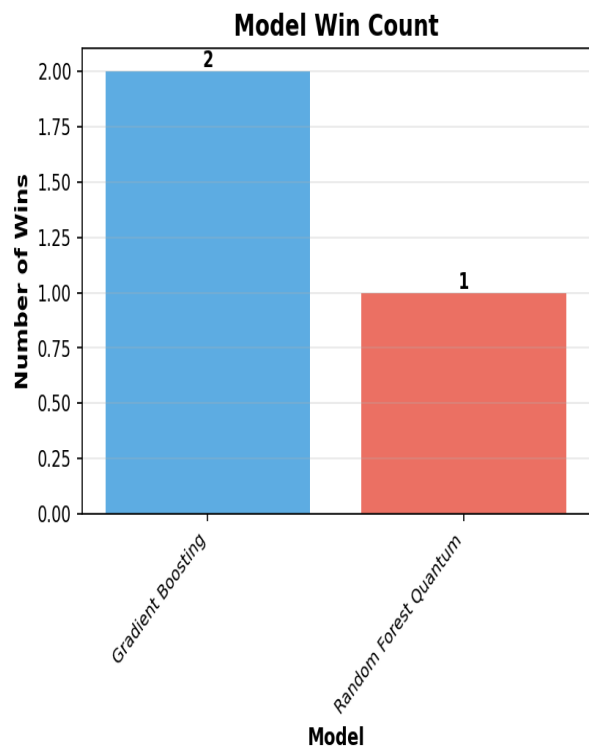
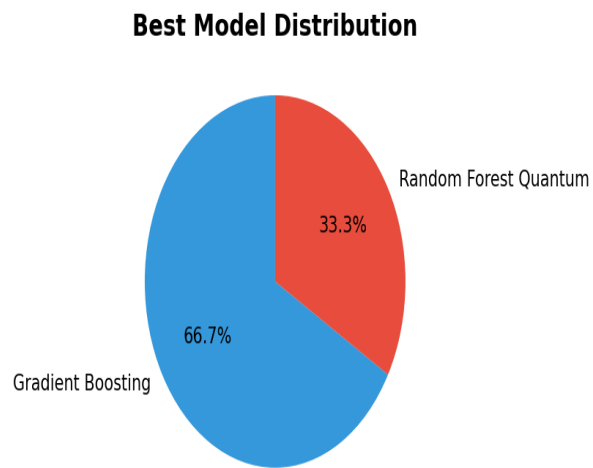
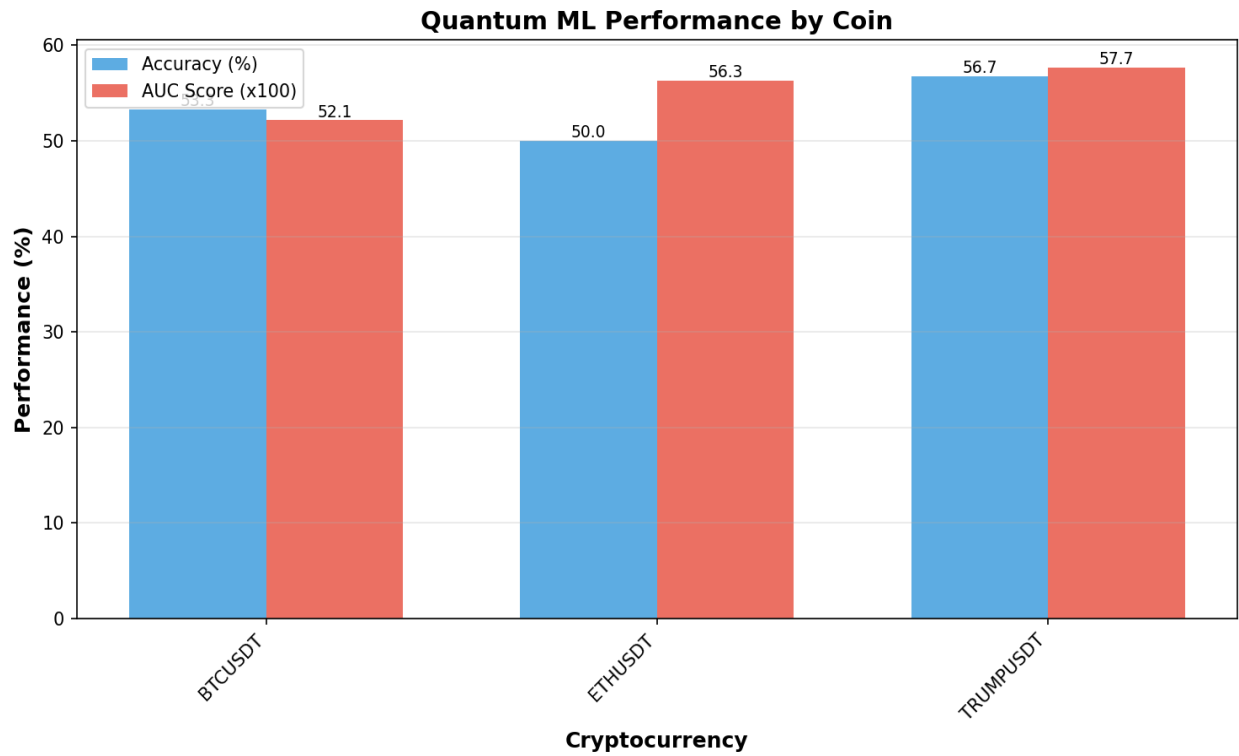
Advanced Multi-Model Analysis Report

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■ Executive Summary

Metric	Value
Total Coins Analyzed	3
Average Accuracy	53.33%
Average AUC Score	0.554
Quantum Features	23
Training Method	Multi-Timeframe Ensemble
Confidence Filtering	High-Confidence Only (>1.0σ)

■ Performance Analysis



■ Detailed Results by Coin

Coin	TRUMPUSD
Best Model	Random Forest Quantum
Best Accuracy	56.73%
Best AUC	0.577
Train/Test Samples	414/104

Top 3 Models:

- | | |
|--------------------------|-------------------------|
| 1. Random Forest Quantum | Acc: 56.7% AUC: 0.577 |
| 2. Xgboost Quantum | Acc: 53.8% AUC: 0.541 |
| 3. Lightgbm Quantum | Acc: 52.9% AUC: 0.597 |

Coin	BTCUSD
Best Model	Gradient Boosting
Best Accuracy	53.27%
Best AUC	0.521
Train/Test Samples	424/107

Top 3 Models:

- | | |
|----------------------|-------------------------|
| 1. Gradient Boosting | Acc: 53.3% AUC: 0.521 |
| 2. Meta Ensemble | Acc: 52.3% AUC: 0.548 |
| 3. Xgboost Quantum | Acc: 50.5% AUC: 0.576 |

Coin	ETHUSD
Best Model	Gradient Boosting
Best Accuracy	50.00%
Best AUC	0.563
Train/Test Samples	400/100

Top 3 Models:

- | | |
|----------------------|-------------------------|
| 1. Gradient Boosting | Acc: 50.0% AUC: 0.563 |
| 2. Lightgbm Quantum | Acc: 47.0% AUC: 0.508 |
| 3. Meta Ensemble | Acc: 46.0% AUC: 0.549 |

■ Model Algorithm Benchmark

Model	Avg Accuracy	Avg AUC	Wins
Gradient Boosting	50.8%	0.512	2/3
Meta Ensemble	50.4%	0.548	0/3
Lightgbm Quantum	49.8%	0.549	0/3
Xgboost Quantum	49.8%	0.555	0/3
Random Forest Quantum	48.5%	0.567	1/3

■ Quantum Feature Engineering

Advanced Features Implemented:

- **Market Regime Detection:** Trending, Ranging, Volatile classification
- **Volatility Regime:** Low, Normal, High percentile-based classification
- **Fibonacci Retracement:** 7 key levels (23.6%, 38.2%, 50%, 61.8%, etc.)
- **Harmonic Patterns:** Pivot detection and pattern strength scoring
- **Order Flow Metrics:** Delta volume, order imbalance analysis
- **Momentum Clusters:** Multi-period alignment detection

Smart Target Engineering:

- Multi-class targets: STRONG_BUY (+2), WEAK_BUY (+1), WEAK_SELL (-1), STRONG_SELL (-2)
- Confidence scoring: Based on normalized volatility ($0-3\sigma$)
- High-confidence filtering: Only train on samples with confidence $> 1.0\sigma$