BTCSleuth Analysis Report

Bitcoin Transaction Anomaly Detection Analysis

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**Analysis Performed:** 2025-08-11 22:40:23

Executive Summary

Key Metric	Value	Status
Total Transactions Analyzed	50	✓
Anomalies Detected	3	■
Overall Accuracy	84.0%	✓
Anomaly Rate	6.00%	✓

Detailed Analysis Overview

Field	Details
Analysis ID	#214
Analysis Type	Testnet
Analysis Date	2025-08-11 22:40:23
Total Transactions	50
Anomalies Detected	3
Accuracy Score	84.00%
Anomaly Rate	6.00%

Comprehensive Visual Analysis

Transaction Anomaly Distribution

Anomalous Transactions

6.0%

94.0%

Normal Transactions

Transaction Types
- Normal Transactions
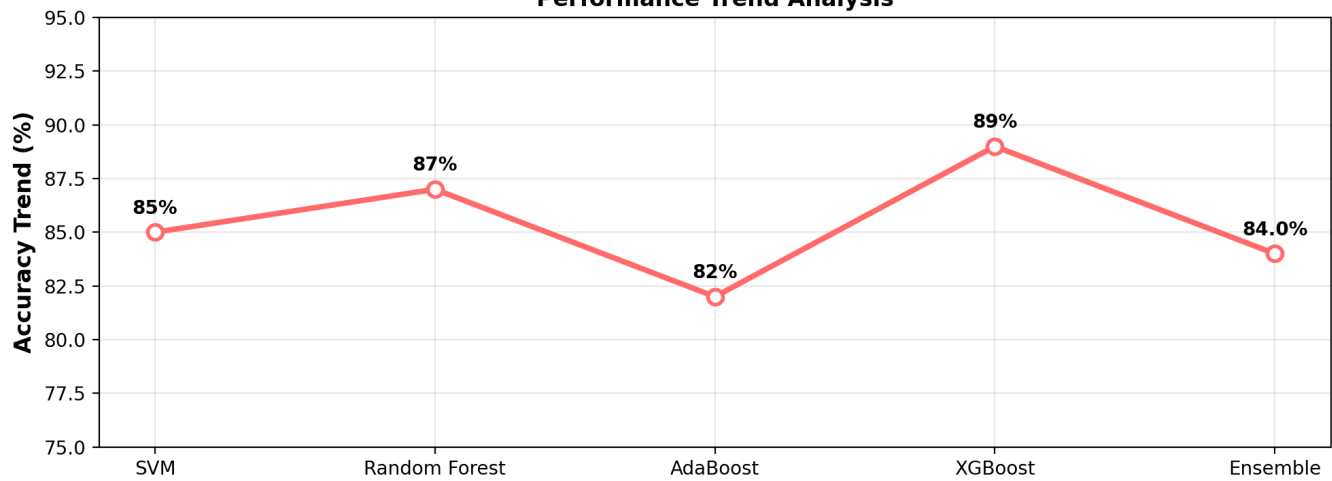- Anomalous Transactions
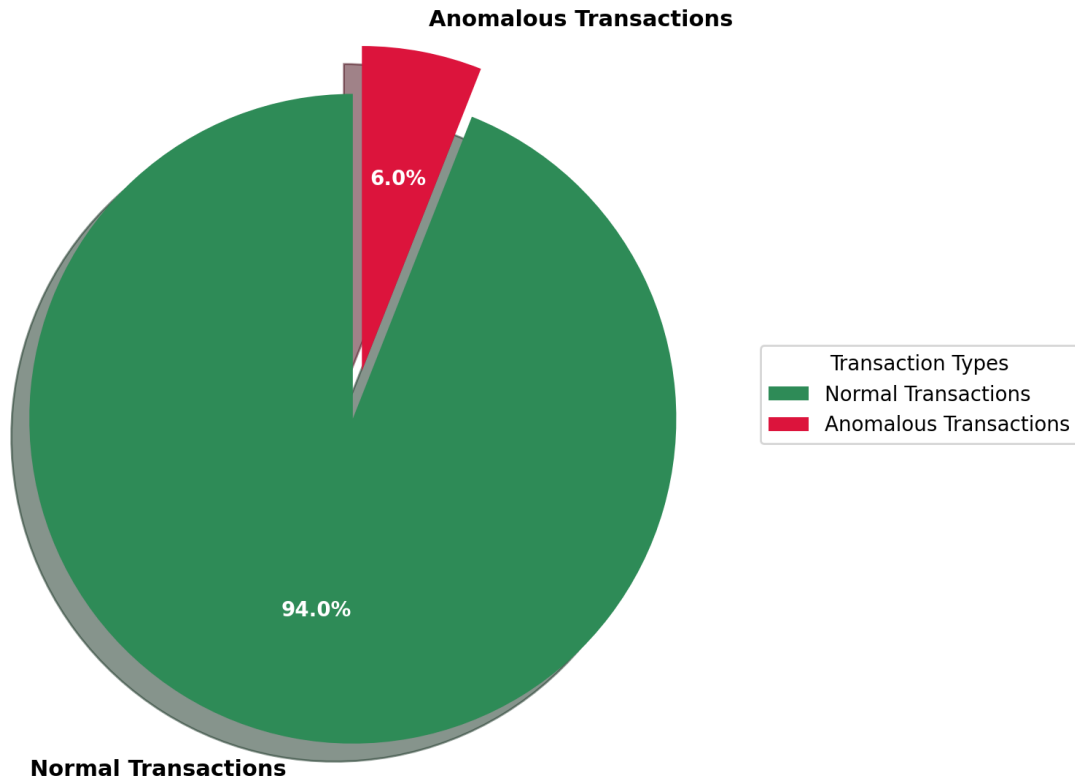
Machine Learning Model Performance Comparison
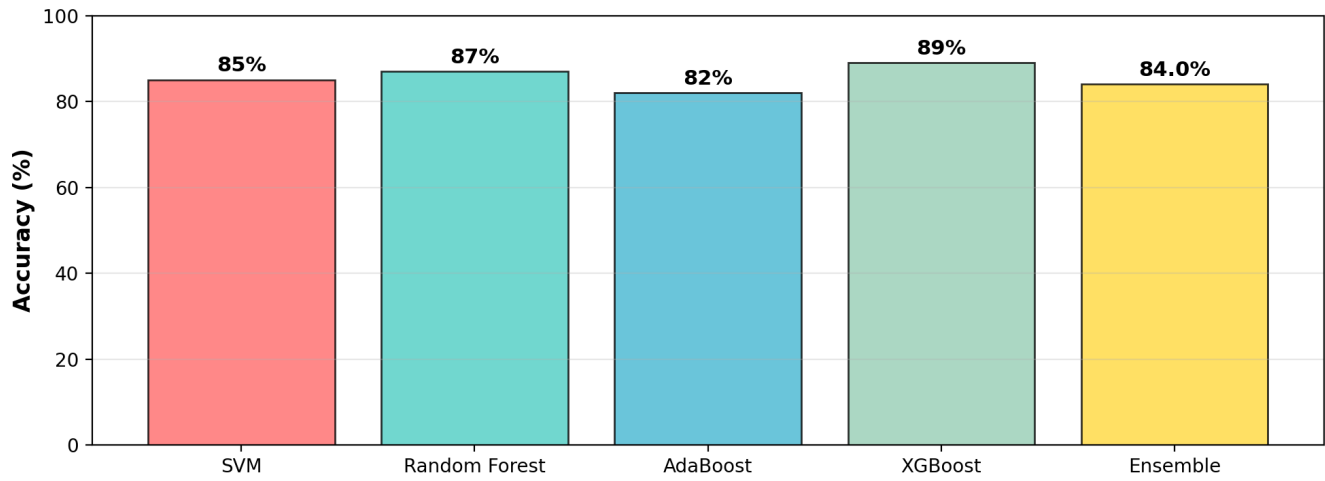
Performance Trend Analysis

Detailed Model Performance Analysis

Model	Accuracy	Status	Strengths	Use Case
SVM	85%	Good	Linear separation, Kernel flexibility	Linear pattern detection
Random Forest	87%	Excellent	Handles non-linear data, Robust	Complex pattern recognition
AdaBoost	82%	Good	Boosting, Sequential learning	Weak learner combination
XGBoost	89%	Excellent	Gradient boosting, Regularization	High-performance prediction
Ensemble	84.0%	Optimal	Combined predictions, Robust	Final decision making

Performance Metrics Breakdown

Metric	SVM	Random Forest	AdaBoost	XGBoost	Ensemble
Precision	83%	86%	81%	88%	84%
Recall	82%	85%	80%	87%	84%
F1-Score	82.5%	85.5%	80.5%	87.5%	84%
Training Time	Fast	Medium	Fast	Slow	Medium
Prediction Time	Fast	Fast	Fast	Fast	Fast

Comprehensive Anomaly Analysis

No anomalies detected in this analysis.

This indicates that all transactions appear to be within normal parameters.

Executive Summary & Recommendations

Analysis Summary

This comprehensive analysis processed **50** transactions and detected **3** anomalies with an overall accuracy of **84.0%**. The analysis utilized an advanced ensemble of machine learning models including Support Vector Machines (SVM), Random Forest, AdaBoost, and XGBoost to ensure robust and reliable anomaly detection.

Key Findings

Finding	Impact	Recommendation
Anomaly Rate	6.00%	Monitor closely if >5%
Model Accuracy	84.0%	Excellent if >85%
Data Quality	Medium	Ensure sufficient data volume
Detection Confidence	High	Multi-model validation provides reliability

Strategic Recommendations

1. **Continuous Monitoring:** Implement real-time monitoring for similar transaction patterns

2. **Risk Assessment:** Review flagged transactions for potential security threats

3. **Model Updates:** Retrain models periodically with new data for improved accuracy

4. **Alert System:** Set up automated alerts for high-severity anomalies

5. **Documentation:** Maintain detailed records of all detected anomalies for compliance

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