

FINAL REPORT

Problem Statement

Predict short-term cryptocurrency volatility using historical market data to support risk analysis and decision-making.

Approach Summary

- Cleaned and prepared time-series crypto data
 - Engineered volatility, liquidity, and trend-based features
 - Performed EDA to understand data behaviour
 - Trained an XGBoost regression model
 - Deployed the model using a Flask API
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Model Performance

- The model achieved strong performance with low prediction errors.
 - High R² score indicates good explanatory power.
 - Time-based validation ensured realistic evaluation.
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Key Insights

- Cryptocurrency volatility is clustered and persistent.
 - Liquidity plays a major role in volatility behaviour.
 - Non-linear models outperform simple linear approaches.
 - Feature engineering significantly improves prediction accuracy.
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Conclusion

This project successfully delivers an end-to-end cryptocurrency volatility prediction system, combining data analysis, machine learning, and deployment. The system demonstrates that crypto market volatility can be modelled effectively using historical price and liquidity information.