

CRYPTO VOLATILITY AND RISK ANALYZER

Flask & Streamlit Based

Project

Team -B

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INTRODUCTION

Slide 2

- Cryptocurrency markets are highly dynamic and volatile
- Prices fluctuate rapidly due to market demand and global events
- Investors require analytical tools to understand risk
- This project focuses on analyzing crypto risk using data visualization

Crypto Volatility and Risk Analyzer

Analyzing Cryptocurrency Risk Through Data Visualization

Milestone 1

Milestone 2

Milestone 3

Milestone 4



PROBLEM STATEMENT

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- Cryptocurrency investments involve high uncertainty
- Manual analysis of crypto risk is complex and time-consuming
- Lack of simple dashboards for risk and volatility analysis
- Need for an interactive and visual risk analysis system



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OBJECTIVES

Slide 4



- To collect real-time and historical cryptocurrency data
- To analyze price volatility and returns
- To visualize risk metrics using charts and dashboards
- To classify cryptocurrencies based on risk levels

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SCOPE OF THE PROJECT

Slide 5

- Analysis limited to major cryptocurrencies (BTC, ETH, etc.)
- Focus on short-term and long-term volatility
- Academic and learning-based implementation
- Can be extended for real-world investment analysis

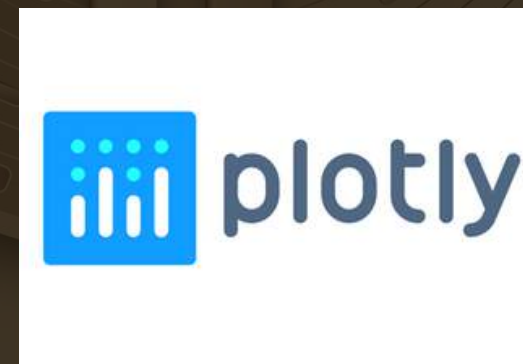
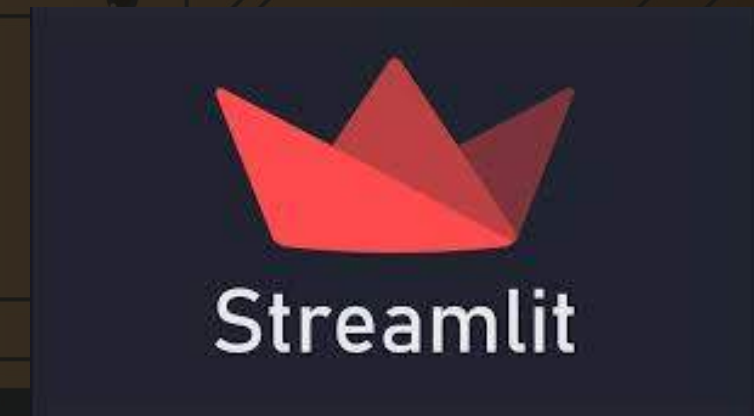


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TECHNOLOGIES USED

Slide 6

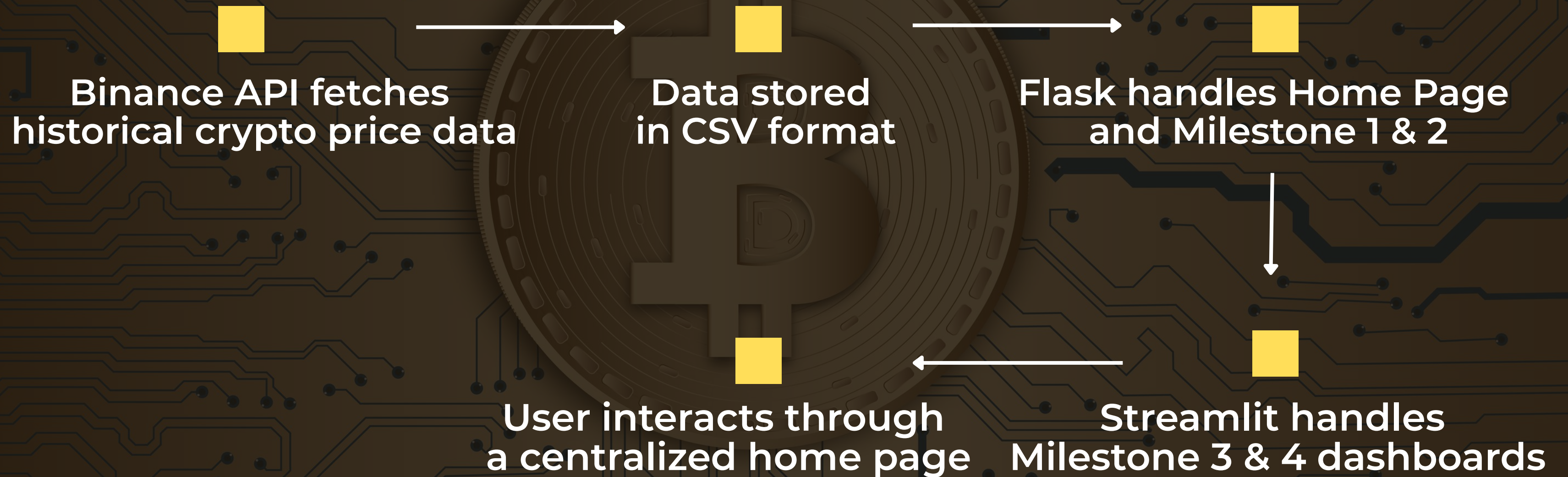


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SYSTEM ARCHITECTURE

Slide 7



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MILESTONE 1 - DATA ACQUISITION

Slide 8

- Fetches live and historical crypto prices
- Uses Binance API for reliable data
- Displays live price table
- Shows 7-day price trend using line chart



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MILESTONE 2 - DATA ANALYSIS

Slide

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- Calculates volatility of cryptocurrencies
- Computes Sharpe Ratio and Beta values
- Compares risk metrics using bar charts
- Helps understand risk level of each asset

[← Back to Milestone 1](#)

Volatility Comparison



Risk Metrics Dashboard

30D 90D 1Y

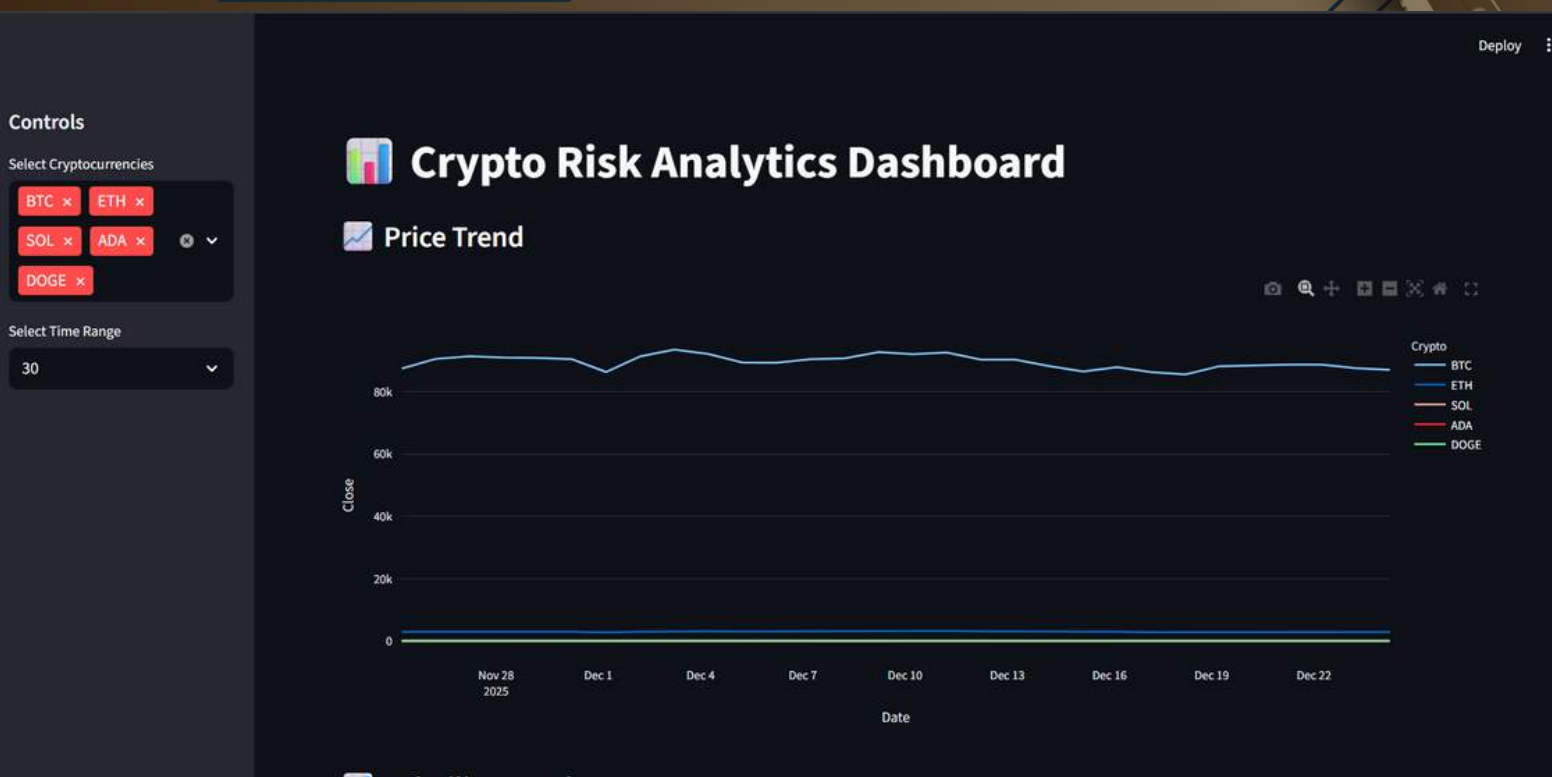
| Crypto | Volatility | Sharpe Ratio | Beta |
|--------|------------|--------------|------|
| BTC | 0.286 | -0.153 | 1.0 |
| ETH | 0.296 | -0.076 | 1.15 |
| SOL | 0.315 | 0.063 | 1.87 |
| ADA | 0.289 | 0.033 | 1.42 |
| DOGE | 0.325 | -0.044 | 2.13 |

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Milestone 3- Interactive Dashboard

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- Built using Streamlit
- Displays price trends and volatility trends
- Risk-return scatter plot visualization
- User can filter cryptocurrencies and time range



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Milestone 4 - Risk Classification

- Classifies cryptocurrencies into:
Low Risk
Medium Risk
High Risk
- Classification based on volatility thresholds
- Displays risk distribution using pie chart

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Milestone 4: Risk Classification & Reporting

High Risk

Medium Risk

Low Risk

ADA — 5.88%

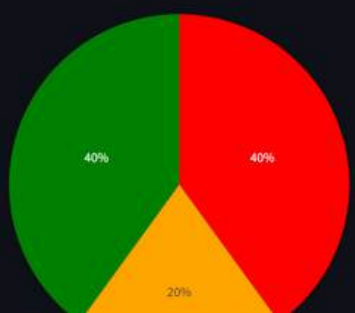
SOL — 4.54%

BTC — 2.20%

DOGE — 4.89%

ETH — 3.94%

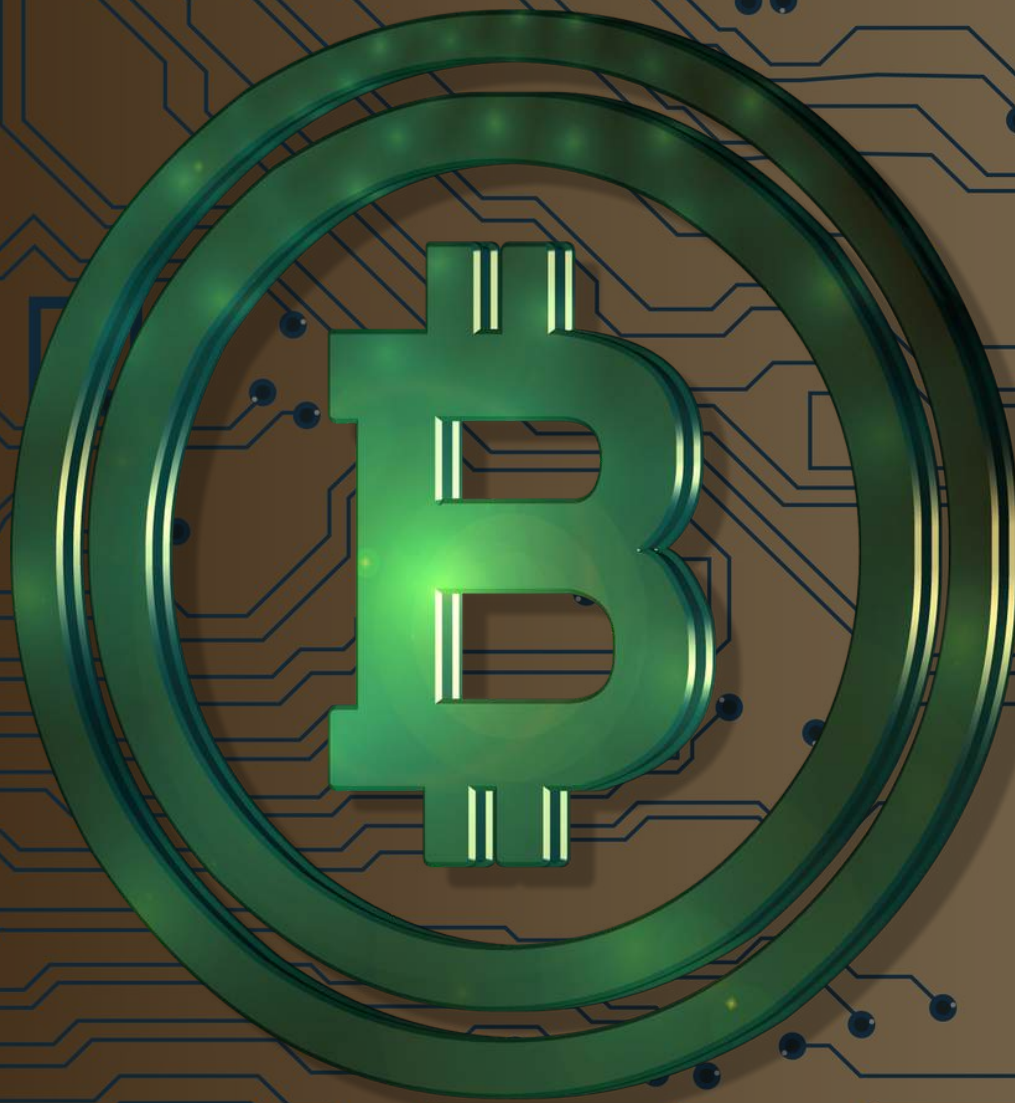
Risk Distribution



Reports & Outputs

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- Generates downloadable CSV risk report
- Displays summary of average volatility and returns
- Provides visual and numerical insights
- Helps in quick decision-making



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Future Scope

- Add more cryptocurrencies
- Implement machine learning for price prediction
- Enable real-time auto-refresh dashboards
- Add user login and authentication
- Deploy project on cloud platform



Conclusion

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- Developed a complete crypto risk analysis system
- Provides interactive dashboards and reports
- Simplifies understanding of crypto volatility
- Useful for academic learning and practical analysis

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THANK YOU!