On-Chain analysis and Cryptocurrency Price Forecasting using On-Chain Metrics

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Project Objectives:

- Investigate effectiveness of on-chain metrics on cryptocurrency price forecasting
- To test the performance of time series forecasting, machine learning and deep learning models
- To evaluate forecasting accuracy for short to long term forecasting accuracy

Project Scope:

- Conduct analysis for 4 cryptocurrencies namely: Bitcoin, Ethereum, Dash and Dogecoin
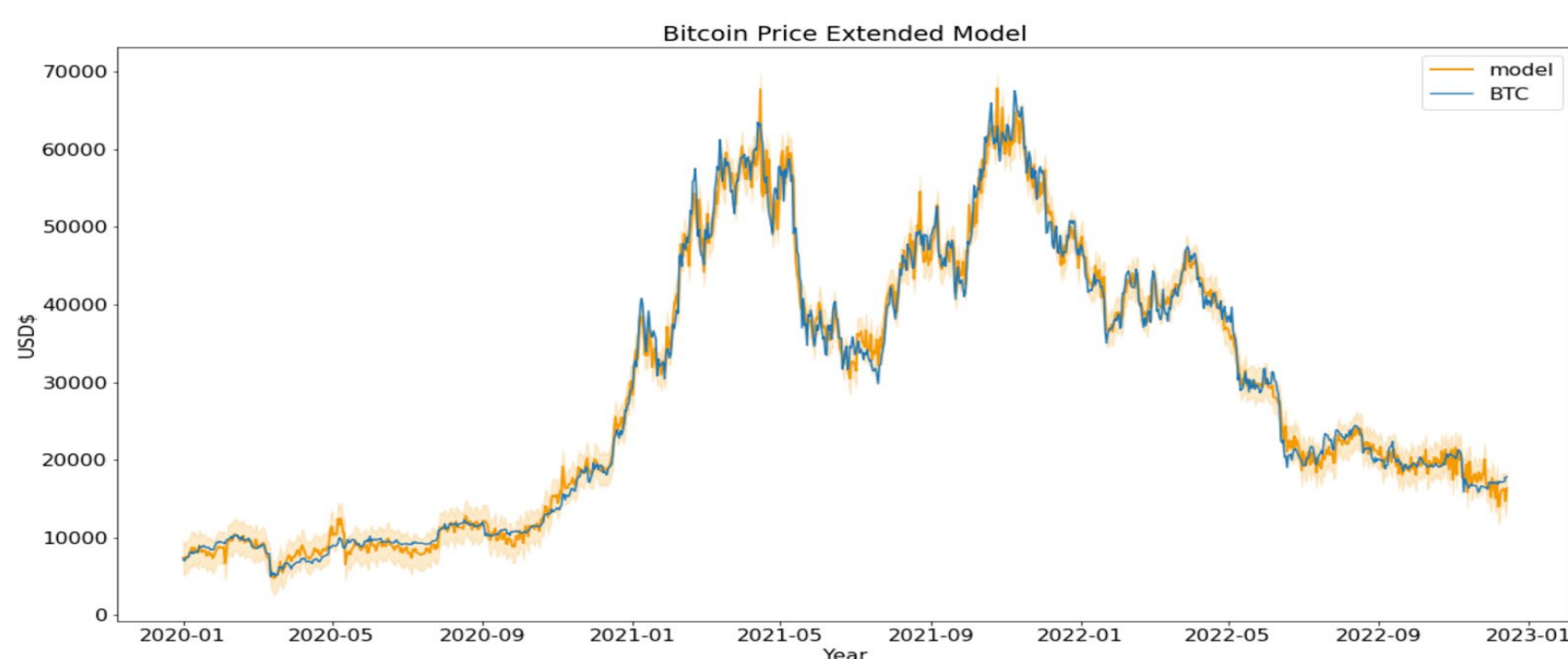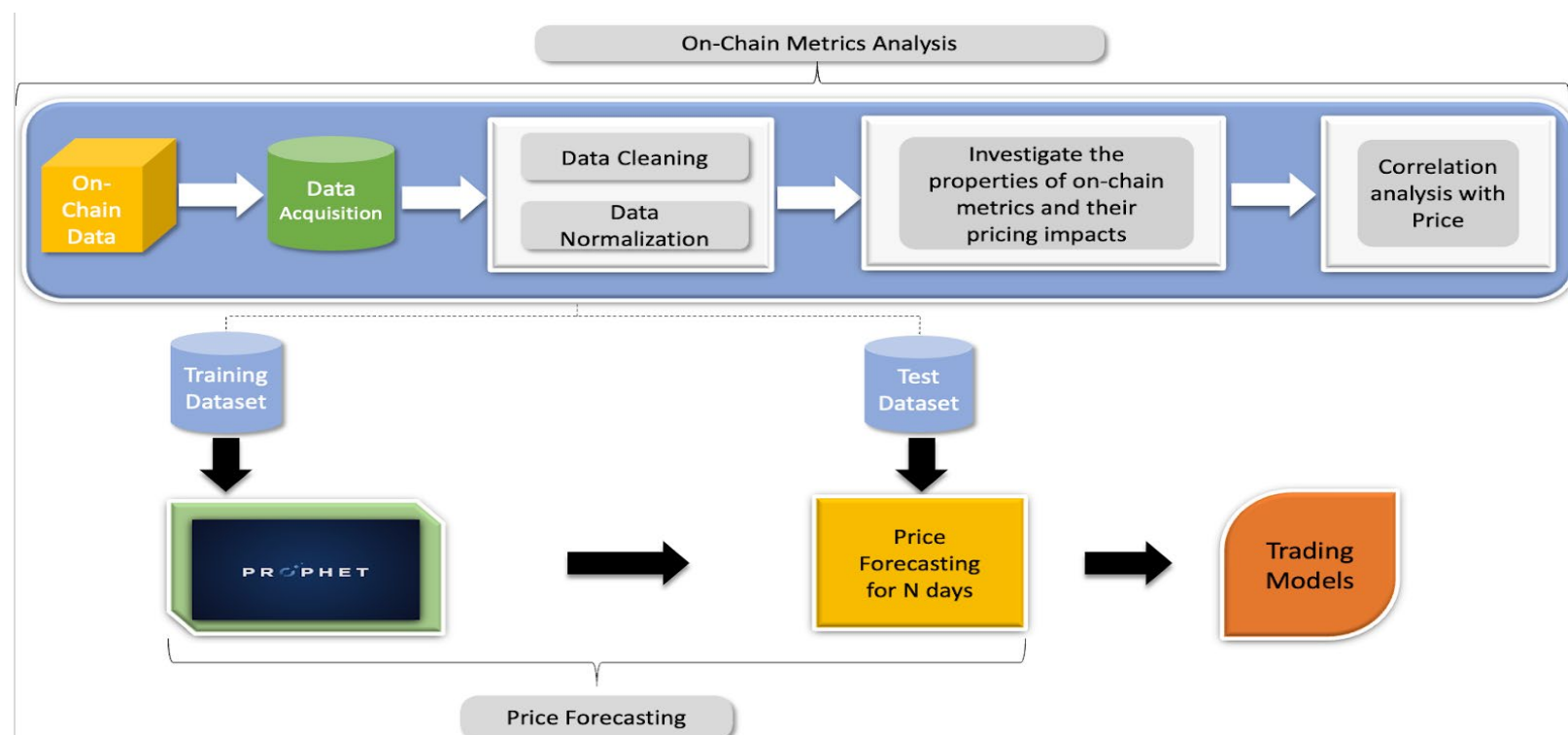
Proposed System implementation

Table: Results for 1 week forecasting periods (over all test sets)

Metric → Cryptocurrency ↓	Average RMSPE (%)	Average Mean Accuracy (%)	Average Confidence (%)
Bitcoin	7.26	93.81	86.52
Ethereum	15.5	85.74	70.23
Dash	23.52	79.7	56.94
Dogecoin	29.37	72.76	43.40

Table: Results for 4 weeks forecasting periods (over all test sets)

Metric → Cryptocurrency ↓	Average RMSPE (%)	Average Mean Accuracy (%)	Average Confidence (%)
Bitcoin	10.38	91.02	80.65
Ethereum	26.66	76.20	49.54
Dash	29.85	73.52	43.6
Dogecoin	57.17	49.75	16.42

Table: RMSE scores for Forecasting models

Model → Cryptocurrency ↓	Prophet Model	Bidirectional LSTM	GARCH + SARIMAX
Bitcoin	2363.01	3859.25	3992.24
Ethereum	74.35	194.23	102.26
Dash	9.30	13.64	19.63
Dogecoin	0.0108	0.048	0.184

Conclusion

- On-chain metrics can be a useful tool in predicting cryptocurrency prices, especially for short term forecasting.
- Predicting long-term price trends accurately remains a challenge due to highly volatile nature of cryptocurrencies.
- Price prediction and well-planned trading strategies do not guarantee profits in cryptocurrency market.
- Bitcoin and Ethereum are relatively better options to invest in compared to other cryptocurrencies