

In this analysis, I developed and evaluated a multi-factor risk model to predict cryptocurrency price movements. The model incorporates a wide range of features sourced from diverse datasets, including a 100-token dataset from Numerai. The analysis focuses on exploring the impact of various financial and macroeconomic factors on cryptocurrency prices.

Data Collection:

The data used in this study was meticulously curated from several sources, including public APIs and specialized financial datasets. A notable addition is the Numerai 100-token dataset, which was retrieved as a Parquet file for efficient processing. This dataset played a crucial role in the development of the model, providing valuable insights into the factors that influence cryptocurrency prices.

Model Development:

The model development process involved the use of advanced machine learning techniques, including Random Forest and XGBoost, to build a robust predictive model. The feature importance was analyzed using methods like Partial Dependence Plots (PDPs) and a comparison between Linear Regression coefficients and Random Forest feature importances.

Results:

The final model was evaluated based on its Mean Absolute Error (MAE), Root Mean Squared Error (RMSE), and R^2 score. The Random Forest model outperformed other models, demonstrating high accuracy in predicting cryptocurrency prices. The impact of key features such as ATR and `close_rolling_std_7` was explored in detail, providing insights into the factors driving price changes in the cryptocurrency market.

Conclusion:

This study contributes to the broader understanding of cryptocurrency price movements by identifying significant factors that influence prices. The model's high accuracy and usability suggest it could be a valuable tool for both researchers and practitioners in the field of cryptocurrency trading and risk management.

I welcome any feedback from the community and am open to discussions on further improvements or collaborative projects.

[Multi-Factor Risk Modeling for Cryptocurrency Price Prediction Report](#)