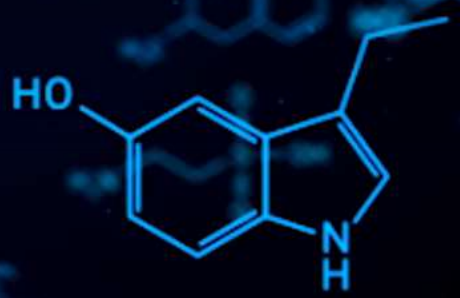
Cryptocurrency Price Prediction Using Neural Networks and Deep Learning

Presented by :

Sravani Mannuru

700766162



Motivation

- The rise in the value of cryptocurrencies has contributed to the decentralization of authority, lowering control among countries.
- The high volatility of digital currencies necessitates reliable methods for price prediction.
- The wide price range of digital currencies highlights the need for reliable preparation for predicting the currency’s price.
- Accurate forecasting can benefit investors, traders, and policymakers by providing insights into market trends.

Problem Statement

- Due to the uncertainty and instability of the cryptocurrency market, investing in digital currency is not a profitable activity.
- The unpredictable nature of cryptocurrency prices poses significant challenges for investors.
- Traditional forecasting models are not suitable for predicting the highly volatile prices of cryptocurrencies.
- There is a need for advanced models that can handle the unique characteristics of cryptocurrency data, such as rapid fluctuations and market sentiment.

Objectives

1. Develop a model to forecast cryptocurrency prices by considering various factors such as market capitalization, volume, distribution, and high-end delivery.

2.Evaluate the performance of the proposed model using benchmark datasets.

3.Compare the accuracy of the proposed model with existing models.

Contributions

- Provided a detailed overview of available cryptocurrency services.
- Conducted an in-depth analysis of the LSTM process and the GRU to predict cryptocurrency valuations reliably.
- Proposed a hybrid model combining LSTM and GRU for improved accuracy in cryptocurrency price prediction.
- Validated the model with real-world data to demonstrate its practical applicability.

Results

•The proposed hybrid LSTM-GRU model shows superior performance in predicting cryptocurrency prices compared to traditional models.

•The model effectively captures the complex patterns and trends in cryptocurrency data.

•Comparative analysis indicates that the hybrid model reduces prediction errors and increases accuracy.

Critical Analysis

- The high volatility of cryptocurrency prices presents significant challenges in accurate forecasting.
- The proposed model addresses these challenges by incorporating advanced neural network techniques.
- Further research is needed to enhance its robustness and adaptability to market changes.

References

- Bouteska, A., Abedin, M. Z., Hajek, P., & Yuan, K. (2024). Cryptocurrency price forecasting – A comparative analysis of ensemble learning and deep learning methods. International Review of Financial Analysis (Online)/International Review of Financial Analysis, 92, 103055. https://doi.org/10.1016/j.irfa.2023.103055
- GeeksforGeeks. (2024, January 3). What is a neural network? GeeksforGeeks. https://www.geeksforgeeks.org/neural-networks-a-beginners-guide/
- V, A., MVS, N., I, P., M, S. R., & G, A. K. (2023). A Cryptocurrency Price Prediction Model using Deep Learning. E3S Web of Conferences, 391, 01112. https://doi.org/10.1051/e3sconf/202339101112
- Wu, J., Zhang, X., Huang, F., Zhou, H., & Chandra, R. (2024, May 19). Review of deep learning models for crypto price prediction: implementation and evaluation. arXiv.org. https://arxiv.org/abs/2405.11431