Application of Artificial Intelligence in Crypto Portfolio Management

Selected AI Model: LSTM (Long Short-Term Memory)

Introduction to the Model

In this project, LSTM (Long Short-Term Memory) is selected as the proposed AI model. LSTM is commonly used for time-series forecasting because it can learn patterns from past data points and use them to predict future values.

Since cryptocurrency prices change over time and are influenced by previous price movements, a model that can understand sequential data is required. LSTM is suitable for this purpose because it can analyze historical trends and identify patterns that may affect future price behavior.

Advantages of LSTM in Crypto Portfolio Management

One major advantage of LSTM is that it works well with time-based data. Since cryptocurrency prices change over time, it is important to use a model that can understand past price movements.

Another advantage is that LSTM can learn patterns from previous data and use that information to make predictions. This is useful because crypto markets often follow trends influenced by earlier price behavior.

Overall, LSTM can support portfolio decision-making by providing trend-based predictions, which may help in adjusting asset allocation.

Limitations of LSTM

Even though LSTM is powerful, it is not perfect. One limitation is that it requires a large amount of historical data to perform well. If the data is limited or noisy, the predictions may not be reliable.

Another issue is that LSTM models can be computationally expensive, especially when dealing with large datasets. This makes training more time-consuming compared to simpler models.

Example Application

For example, an LSTM model can be trained using historical Bitcoin price data to predict short-term future price movements. Based on the predicted trend, a portfolio manager may increase or reduce allocation in Bitcoin to optimize returns while controlling risk.

Conclusion

Artificial Intelligence has the potential to improve crypto portfolio management by supporting data-driven decision-making. In highly volatile markets like cryptocurrency, relying only on manual analysis can be risky. AI models such as LSTM can assist in identifying patterns and forecasting possible trends based on historical data.

However, AI models do not eliminate uncertainty. Cryptocurrency markets are influenced by many unpredictable factors, and no model can guarantee accurate predictions. Therefore, AI should be considered as a decision-support tool rather than a replacement for strategic judgment and proper risk management.

References

[1] M. J. Hamayel and A. Y. Owda, “A novel cryptocurrency price prediction model using GRU, LSTM and bi-LSTM machine learning algorithms,” *AI*, vol. 2, no. 4, pp. 477–496, 2021, https://www.mdpi.com/2673-2688/2/4/30