

Peer Review

Review of: "CryptoPulse: Short-Term Cryptocurrency Forecasting with Dual-Prediction and Cross-Correlated Market Indicators"

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The paper introduces CryptoPulse, a new framework for predicting short-term cryptocurrency prices. It combines macroeconomic indicators, technical features, and market sentiment to make predictions. The idea is promising, and the results are impressive across multiple benchmarks.

What's Missing?

However, the paper lacks important details about how the model is built and how complex it is. For example:

- There's no clear explanation of the model's structure—how many layers it has, how many parameters, or what activation functions are used.
- Key practical details like training time, inference speed, and scalability to larger datasets are missing. Without this, it's hard to tell if the model is actually usable in real-world scenarios.
- The paper doesn't break down how much each part of the model (like the macro module, price dynamics module, and sentiment fusion) contributes to the final results. This makes it unclear which components are most important.

Another concern is overfitting. The model uses a short historical window (just 7 days), which might not be enough to capture long-term trends in the volatile cryptocurrency market. The authors don't discuss how they handle this risk, which is crucial for ensuring the model works well beyond the test data.

Finally, the paper doesn't address how the model performs when dealing with imperfect data, like noisy or missing sentiment information, which is common in live trading environments.

Recommendation

Weak Reject : The idea behind CryptoPulse is promising, and the results look good, but the lack of detail about the model's architecture, complexity, and robustness makes it hard to fully evaluate. I'd encourage the authors to revise the paper by adding more depth and clarity to these areas.

Suggestions for Improvement

Explain the Model Architecture :

- Provide a clear breakdown of the model's design: How many layers does it have? How many hidden units? What activation functions are used? Include a detailed description of each major component (macro module, price dynamics module, sentiment fusion).

Add Complexity and Scalability Details :

- Share key metrics like the total number of parameters, how long it takes to train the model, how fast it makes predictions, and what hardware was used.
- Discuss whether the model can handle larger datasets and how it might scale in real-world applications.

Include Ablation Studies :

- Run experiments to test how much each part of the model contributes to the final results. For example, how much does the macroeconomic data help compared to the price dynamics or sentiment analysis? This will help readers understand what's driving the performance.

Address Overfitting Risks :

- Explain how the model avoids overfitting, especially since it uses a short historical window. Consider discussing techniques like regularization or cross-validation that could improve generalization.

Test Robustness to Noisy Data :

- Evaluate how well the model performs when the input data is messy, incomplete, or conflicting. This is important because real-world trading data is rarely perfect. Share strategies for making the model more resilient to these challenges.

Final Thoughts

Overall, CryptoPulse is an exciting concept with strong results, but the paper needs more detail to convince readers that it's practical and reliable. Adding the missing pieces—like a clear explanation of the model's design, ablation studies, and robustness tests—would make this a much stronger contribution.

Final Recommendation: Weak Reject

Declarations

Potential competing interests: No potential competing interests to declare.