

Group Project Research Proposal

Reinforcement learning on trading strategy of bitcoins

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Proposed Methodology

The proposed methodology for applying reinforcement learning (RL) to Bitcoin trading[4] involves an RL framework where an agent interacts with the market environment. The agent observes the market state, takes actions like buying or selling Bitcoin, and receives rewards based on profitability, refining strategies through trial and error. Various RL algorithms are employed, including Q-learning (using a Q-table for state-action values), Deep Q-learning [3] (incorporating neural networks for high-dimensional states), and the Actor-Critic [1] framework (combining policy and value-based approaches). The methodology emphasizes balancing exploration (trying new strategies) and exploitation (optimizing known successful actions) to develop an optimal strategy that adapts to market conditions while leveraging past experiences.

Expected Outcomes

Reinforcement learning (RL)[2] offers promising outcomes for Bitcoin trading by adapting to the market's volatility, improving risk management, and optimizing portfolios through real-time data analysis. By incorporating external data like MACD and RVI indicators [5], RL enhances decision-making and boosts investment returns. Its ability to continuously learn and refine strategies allows RL to outperform traditional methods, which often struggle with the complexity of cryptocurrency markets.

References

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