Stock Portfolio Forecasting and Optimization

Ethical and Legal Implications

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Introduction

AI is a powerful tool for analyzing and predicting stock market trends. The S&P 500 dataset, which tracks the performance of 500 top U.S. companies, offers valuable historical and real-time data. While example machine learning models could improve forecasting and investment strategies, it also brings ethical, legal, and regulatory challenges that must be addressed.

Ethical Implications

How the models are trained depends on historical data, which may include biases. For instance, if certain stocks have been favored in the past, the model might amplify these biases, leading to unfair advantages or even market manipulation. This can harm the integrity of financial markets.

Another important ethical implication is the transparency of the decision-making process. A problem that can occur is when the models operate as a black box, meaning that it is not always easy to understand how the model makes its decisions. These decisions could affect many people, and if something goes wrong, it may be hard to recover for those impacted.

Legal Implications

Legal issues and rules go hand in hand when it comes to using machine learning in the stock market. One big legal question is, who owns the machine learning model? If a team works together to create it, there might be arguments about who has the rights to it. Another issue is, who is responsible if the machine learning system makes a bad decision that causes exemple financial losses or breaks the law? It's not always clear whether the blame lies with the person who made the model, the company using it, or someone else.

That's where frameworks for regulation issues come in to help. For example General Data Protection Regulation (GDPR) makes sure data is collected and used properly, avoiding legal trouble. Regulation National Market System (RegNMS) has rules to ensure fair trading, so machine learning systems don't create unfair advantages. In the future, we could have regular algorithm checks from the governments and regulators to review the models. This ensures they are fair, transparent, and follow ethical and legal standards. Another option is the development of tools that can help monitor illegal or unethical activities by machine learning systems, catching issues before they cause harm, such as real-time monitoring.