Project title: Machine Learning Interpretability of a Supervised Learning-based Bitcoin Trading Strategy

lead faculty mentor: Prof. Zoro  
  
Names of student member: Sisheng Liang, Sam Mandelbraut, Nga Vu

Ideal location: On campus

Equipment: Computer

Goal:

The goal is to resolve the black box issue in Machine Learning by using AI tools. This project is going to discover the interpretability of supervised learning that based on bitcoin trading strategy model. Interpretability in supervised learning refers to the ability to understand and explain how a model makes its predictions. It is essential to ensure that the decisions made by the model align with human intuition and can be trusted.

How will you pursue the goal?

We will employ a machine learning approach using historical bitcoin data to train a model that can predict future bitcoin prices. We will use a supervised learning algorithm such as regression or decision trees to train our model. Then we test several different interpretability tools to explain the black box model.

Topic/Question:

How can we make the supervised learning-based bitcoin trading strategy that is interpretable? What else interpretability tools can be applied and what are those effect? What information that can be transferred to the readers or clients?

Potential Impact:

It can help traders to make more informed decisions based on the reasons behind the predictions of the machine learning model. By understanding which features are driving the predictions, traders can gain insights into the market dynamics that they might not have otherwise considered. This, in turn, can improve the effectiveness of the trading strategy, potentially resulting in higher profits.

Project Scope:

We are inspired by the vast amounts of historical data available on bitcoin prices, which provides a rich source of information for training machine learning models. We will build on existing supervised learning algorithms used in bitcoin strategy to develop the interpretability. We stand on the shoulders of giants in the field of machine learning and finance, leveraging their research and insights to develop our approach.

New Intellectual/Creative Pathway:

Our new intellectual/creative pathway is to combine the use of supervised learning algorithms with historical bitcoin price data to dig out the information from the machine learning models. We are taking several different approaches to interpret machine learning algorithms that have been proven to be effective in bitcoin.

Game-Changer:

Our approach to developing a supervised learning-based bitcoin trading strategy is a game-changer as the interpretability can help to identify any biases or errors in the model's predictions. It can help to prevent traders from making decisions based on faulty or incorrect predictions, reducing the risk of financial loss.

Communities of Practice:

Our work will contribute to the communities of finance, cryptocurrency, and machine learning. By contributing to these communities, we hope to improve the accuracy and interpretability of trading strategies and ultimately increase profitability for traders.