Team 1: Initial Project Description

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Project Name

Lawrence Trading Co.

Project Synopsis

An algorithmic cryptocurrency trading platform utilizing Tensorflow machine learning and deep market data to produce successful short-term trading strategies.

Project Description

The field of algorithmic trading is already strongly established within the realm of traditional stock exchanges. Typical strategies rely on extremely quick algorithms and low latency connections to an exchange in order to make short-term trades. Often, algorithms are implemented on a field-programmable gate array (FPGA) due to their speed, and the need to trade as quickly as your competitors to maintain a viable trading strategy. These factors combine to create a high barrier of entry into algorithmic trading on traditional exchanges.

In contrast, algorithmic trading of cryptocurrency is relatively undeveloped, and therefore presents a strong opportunity to enter while competition is thin. Cryptocurrency exchanges are hosted on the internet, which inherently creates a more even playing field than traditional exchanges. Where trades can be made in a matter of nanoseconds on traditional exchanges with direct connections, internet latency will be much higher for all parties. This also means we will need to make strong changes to established techniques in algorithmic trading, as we cannot assume low latency access to the exchange, and we cannot assume quicker access than our competitors.

The end result will be a program which trades cryptocurrencies through an internet exchange based on a machine learning algorithm, trained on market history data we have collected.

Project Milestones

First Semester
1. Collection of raw cryptocurrency market trading data
2. Manual modelling and analyzing / determining market indicators
3. Tensorflow, and general machine learning integration beginnings

1. Production and validation of generated algorithms from collected data
2. Cryptocurrency market integration
3. Production and validation of generated algorithms from real-time cryptocurrency market
4. Putting money on the line and verifying results

Project Budget

This project will primarily utilize Google's open source machine learning framework: Tensorflow. Open source programming languages coupled alongside the machine learning framework such as Python and C++ mean very little implementation costs. That being said, there may be costs associated with hosting certain components of the project on Amazon Web Services, as well possible costs involving automated trading at high frequencies on the open cryptocurrency markets. (There is also a stage in which we put our own money in the algorithmic trading platform, we will not include this in the budget.)

Work Plan

As of this point, clear roles have yet to be determined due to the nature of the project's exploratory intent. This project was undertook in attempts to become more familiar with interesting growing fields in computer science not taught in our undergraduate careers. That said, strengths of each team member will be a guide to who will take on what component of the project. Mason has had experience with machine learning algorithms, and Jacob has had experience with exchange markets. The entire team has had extensive experience in many facets of computer science, and the team will build on these strengths to determine the most optimal work allocation.