Bitcoin profiteers

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**Abstract**

In the past decade, cryptocurrencies have captured the interest of investors and the public. They have created another avenue to invest or create another stream of income, either short term or long term. However, understanding how to trade and becoming profitable takes practice. The goal of this project is to provide a platform for users to paper trade cryptocurrencies, track loss and gains, get a sense of how the markets are doing, and perform price predictions for users to assist decision making.

The minimal viable product will consist of features such as user accounts, paper trading functionality, trade history, dashboard visuals, live price charts with purchase and sold mark tickers, bitcoin price predictions (with the possibility of extending it to other cryptocurrencies). Together, these features will accomplish the goals of empowering new crypto traders and users. Extended features may include: favorite coins, watch lists, alerts, twitter feed with sentiment analysis, drawable price charts for technical analysis and other visual features to assist users.

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**Introduction and Motivation**

The contributors, Gerardo Castro, and Colton Bonell have tracked and traded cryptocurrencies from 2018-now. However, the approaches and techniques used usually had no strategy involved as they were essentially random. During Spring 2022, we decided it would be interesting to create a paper trading cryptocurrency platform that performed price predictions to assist users like ourselves make more informed trades and decisions to minimize loss and maximize profits. <state importance toward software engineering applications>

**Objectives**

The main objective of the project is to gain experience with shipping a software product and not necessarily the content of the software shipped, though it is a plus. This will allow us to gain experience and prepare for industry while working on a topic we are interested about. The following concepts will be present in this project and leveraged as a learning opportunity: machine learning, web-dev, software testing, API development, full stack development, CI/CD, databases, and MVC / microservices.

**Literature Survey**

<list machine learning relevant papers and resources>

**Proposed Work**

To achieve a minimal viable product for our vision, we will be looking to create a paper trading cryptocurrency platform with bitcoin price predictions for our users. Additionally, we hope to support a list of extended features that will supplement the vision of our project but will not be necessary about the minimal viable product. We have also developed a list of possible features that we will work on as time permits once the main features have been completed.

Minimal Viable Product Features

* Paper-trading functionality
  + User accounts, profile, and details
  + Asset tracking & management
    - + Resetting progress
  + Live price & volume charts
    - + Display user purchase and sold tick marks
  + Coin selection
  + Historical trade logs
* Bitcoin price predictions
  + ML neural network model with relevant features
  + Shipped as an API service
  + Price prediction logs

Extended Features

* Favorites coin functionality
* Dashboard for market / coin trends
* Twitter feed with sentiment analysis
* Watch lists and alerts
* UI customization by user (I.e., dark, and light modes)

Possible Features

* Extend price predictions to coins other than Bitcoin
* Different trade type options and recommendations (long term, short term, margin etc.)
* Portfolio recommendations
* Insights analysis on what is influencing the prediction the most
* Specific trade suggestions (coin + time + volume)
* Payment system (in the event the product ships to actual users – no free price predictions)

**Project Plan and Dates**

Initial Sprint 0 (8/24/2022 – 9/6/2022) – Focus: Setup for the project

* Create GitHub Repo
* Create required databases
* Containerized Hosting
* Host a blank site
* Identify and gather potential predictive crypto features
* Exploratory data analysis
* Basic ML model (performance is not desired at this point)

Sprint 1 (9/7/2022 – 9/20/2022) – Focus: Minimal Viable Product

* Start work on deployment, API development & testing of the ML model

Sprint 2 (9/21/2022 – 10/4/2022) – Focus: Minimal Viable Product

* Continue work on deployment, API development & testing of the ML model

Prepare and plan presentation #2 (10/5/2022 – 10/7/2022)

Sprint 3 (10/8/2022 – 10/25/2022) – Focus: Extended Features

* Improve existing ML model prediction performance
* Address any ML model scalability / extensibility obstacles for adding new coins

Prepare & plan presentation #3 (10/26/2022 – 11/4/2022)

Sprint 4 (11/5/2022 – 11/25/2022) – Focus: Extended Features / Possible Features

* ML twitter sentiment analysis

Prepare & plan final presentation, documentation, and poster (11/26/2022 – 12/2/2022)