Digital Currency Trading System

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Abstract— **This electronic document is a "live" template. The various components of your paper [title, text, heads, etc.] are already defined on the style sheet, as illustrated by the portions given in this document.**

I. INTRODUCTION

II. PROCEDURE FOR PAPER SUBMISSION

A. objective

Decisions in the stock trading process often depend on different perspectives. On the one hand, from the perspective of time, stock trading can often be divided into large cycle trading and small cycle trading. Large cycle trading are often low-frequency and small cycle trading are often high-frequency trading. On the other hand, stock trading analysis often involves new analysis, fundamental analysis and technical analysis. The news way tends to trade stock relying on good or bad news from newspapers or other medias and the fundamental analysis focus on business philosophy and financial status of a listed company related to a certain stock However, the technical way is more inclined to analyze stock and to help choosing trading strategies by using technical indicators of stocks.

In this project, our experimental object is digital currency, which is an investment product similar to stocks and also has prevailed in recent years. We will try to build a trading system based on technical analysis by using machine learning or deep learning models.

B. Motivation

Digital currency is a young and emerging market. Immature trading market means that in most cases, the effects of news analysis and fundamental analysis will be weakened and technical analysis will dominate in trading.

With the development of machine learning, deep learning, and reinforcement learning in quantitative trading, there are already many stock trend predictions based on LSTM models, and many reinforcement learning models do high-frequency trading.

Therefore, we believe that under pure technical indicator analysis, effective trading strategies and operational references can be proposed by models that we can train by enough datasets.

C. Dataset

The data of this project will be selected from two major digital currency exchanges in China.

Ahove all, the data comes from github and this link is: https://github.com/speculatecat/BitcoinPriceHistoryInChina. In addition to the available data, the link also provides two python files used to link the exchange's API to obtain data.

Secondly, the data contains the five-year historical price and trend of the five major currencies from 2013 to 2017 at Huobi and Okcoin exchanges. However, here it should be mentioned that not all the data of the five digital currencies are complete.

daily_price_bcc_cny.csv
daily_price_btc_cny.csv
daily_price_etc_cny.csv
daily_price_eth_cny.csv
daily_price_ltc_cny.csv
hour_price_btc_cny.csv
hour_price_ltc_cny.csv

This is dataset of the digital currency from the okcoin exchange. It includes btc, eth, ltc, etc, bcc five types of digital currencies. All have daily price data but only btc and ltc have hour price data. All data are saved in the form of .csv

daily_price_btc_cny.csv
daily_price_ltc_cny.csv

This is dataset of the digital currency from the Huobi exchange. It only includes btc, ltc, two types of digital currencies. All have daily price data but don't have hour price data. All data are saved in the form of .csv

Third, among the five digital currencies, not all digital currencies have five-year transaction data due to the difference in the time of issuance.

In the data of bcc and etc or the hour price of btc and ltc, there are only 1year price history of 2017 but in the data of btc, ltc and eth, there are complete five-year price history from 2013-2017.

Finally, each data in the csv file has six features. They are opening price, high price, low price, closing price and volume.

	date	open	high	low	close	volume
0	2013-09-11 16:00:00	15.0	16.0	12.0	12.0	0.35
1	2013-09-12 16:00:00	16.0	16.1	15.9	15.9	10.411
2	2013-09-13 16:00:00	15.9	16.0	15.6	16.0	361.099
3	2013-09-14 16:00:00	16.3	16.3	14.5	14.5	17.434
4	2013-09-16 16:00:00	16.0	16.0	14.9	14.9	0.134

In original dataset, the type of date is string and the type of other features are float. For each feature of float type, the range of its value is from zero to positive infinity.

Overall, in the initial version of the data, we have 9 .csv files. Each one of the files of the daily price of btc , eth, ltc is a matrix with 1467 rows and 6 columns. For the files of hours price of them, there are 1682 rows and 6 columns in each file. However, in the daily price dataset of bcc and etc, there are only 64 rows and 6 columns.

D. Group members and responsibilities

Bohan Li: Writing the first draft of the paper, putting forward the core ideas, and training the model.
Zekai Dong: Fixing coding errors and other data-related problems, reorganizing data so can be easily read by machine.
Hyeseong Choi: Cooperating on general coding and analyzation of data with team members and providing possible feedbacks.

E. timeline of milestones

09/24/2020: Proposal
10/24/2020: Collect and Preprocess data
11/24/2020: Coding and Training model
12/01/2020: Evaluation and Results Analysis

F. expected outcome

The basic goal of the experiment will be that we can make a right trend judgment in a large cycle. The better expected out is that we can achieve good profits in short-term high-frequency trading.