BRNO UNIVERSITY OF TECHNOLOGY
VYSOKÉ UČENÍ TECHNICKÉ V BRNĚ

FACULTY OF INFORMATION TECHNOLOGY
FAKULTA INFORMAČNÍCH TECHNOLOGIÍ

DEPARTMENT OF INTELLIGENT SYSTEMS
ÚSTAV INTELIGENTNÍCH SYSTÉMŮ

ADAPTIVE TRADING STRATEGIES FOR CRYPTOCURRENCIES

ADAPTÍVNÍ OBCHODNÍ STRATEGIE PRO KRYPTOMĚNY

BACHELOR'S THESIS
BAKALÁŘSKÁ PRÁCE

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VEDOUCÍ PRÁCE

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Bachelor's Thesis Specification

Student: **Filip Marek**
Programme: Information Technology
Title: **Adaptive Trading Strategies for Cryptocurrencies**
Category: Modelling and Simulation

Assignment:

1. Study existing trading strategies for cryptocurrencies and other instruments, including rebalance and HODL. Analyze achieved results of the studied strategies and their assumptions.
2. Study existing simulation tools suitable for testing trading strategies.
3. Analyze the backlog of cryptocurrency trading data provided by the supervisor and summarize observed events.
4. Propose several (adaptive) trading strategies assuming the backlog.
5. Implement and evaluate proposed strategies vs. traditional approaches such as HODL and rebalance.
6. Discuss further improvements and limitations of the practical deployment.

Recommended literature:

- Bankless: "How to make money trading stablecoins", https://newsletter.banklesshq.com/p/how-to-make-money-trading-stablecoins
- HodlBlog: "When Does Portfolio Rebalancing Improve Returns?", https://www.hodlbot.io/blog/when-does-portfolio-rebalancing-improve-returns
- The Shrimpy Team: "What is Portfolio Rebalancing?", https://blog.shrimpy.io/blog/portfolio-rebalancing-for-cryptocurrency
- Holderlab.io: "Rebalancing Strategy For Your Crypto Portfolio", https://medium.com/coinmonks/rebalancing-strategy-for-your-crypto-portfolio-590397f2282b
- The Shrimpy Team: "Crypto Users who Diversify Perform Better", https://hackernoon.com/crypto-users-who-diversify-perform-better-new-research-ebf775d348dd
- The Shrimpy Team: "Portfolio Diversity: A Technical Analysis" https://hackernoon.com/portfolio-diversity-a-technical-analysis-c2c49f4d3a77

Requirements for the first semester:

- Items 1 to 3.

Detailed formal requirements can be found at https://www.fit.vut.cz/study/theses/

Supervisor: **Homoliak Ivan, Ing., Ph.D.**
Head of Department: Hanáček Petr, doc. Dr. Ing.
Beginning of work: November 1, 2021
Submission deadline: May 11, 2022
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Abstract

This bachelor's thesis explroes the idea of trading cryptocurrencies with strategies that adapt to the rising and falling crypto markets.

Abstrakt

Tato baklářská práce se zabývá možností obchodovat s kryptoměny adaptivní strategií, která se přizpůsobuje na klesající a stoupající trh.

Keywords

cryptocurrency, trading, investing, trading strategies, simulation

Klíčová slova

kryptoměny, obchodování, investování, obchodní strategie, simulace

Reference

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Adaptive Trading Strategies for Cryptocurrencies

Declaration

I hereby declare that this Bachelor's thesis was prepared as an original work by the author under the supervision of Ing. Ivan Homoliak Phd. The supplementary information was provided by Mr. Y (TODO) I have listed all the literary sources, publications and other sources, which were used during the preparation of this thesis.

.....
Marek Filip
December 29, 2021

Acknowledgements

Here it is possible to express thanks to the supervisor and to the people which provided professional help (external submitter, consultant, etc.).

Contents

Chapter 1

Introduction

When we look at cryptocurrency, there is a very lucrative market. That's why people have always found new ways to make money from trading cryptocurrencies. There are many trading strategies for cryptocurrencies available, but no such strategy survives both rising (bull) and falling (bear) market. That's why there is a need for adaptive strategies.

I'll explore the idea of the adaptive trading strategies for cryptocurrencies in this thesis. Firstly we need to find a way how to predict if the market will go up or down. Then we need to apply sufficient trading strategies regarding the percentual probability of market going up or down.

Chapter 2

What had to be studied (including assessment of the current state, 40%)

2.1 Study existing trading strategies for cryptocurrencies and other instruments, including rebalance and HODL. Analyze achieved results of the studied strategies and their assumptions.

2.2 Study existing simulation tools suitable for testing trading strategies.

2.3 Analyze the backlog of cryptocurrency trading data provided by the supervisor and summarize observed events.

Chapter 3

Trading Strategies for Cryptocurrencies

There are various trading strategies available regarding cryptocurrencies. In this chapter I'll go through those that are considered the most well-known and consider their ups and downs.

ASSIGNMENT: Study existing trading strategies for cryptocurrencies and other instruments, including rebalance and HODL. Analyze achieved results of the studied strategies and their assumptions.

3.1 HODL

This is the strategy that is one of the most prominent in the cryptocurrency market. It is jokingly derived from mispelling of the word „hodl“ [1].

What is HODLING?

3.2 Rebalance

3.3 Dollar Cost Averaging

3.4 Stablecoins

Chapter 4

Existing Simulation Tools for Testing Trading Strategies

Chapter 5

Trading Data Analyzation

Chapter 6

New ideas that this thesis explores (30%)

6.1 Propose several (adaptive) trading strategies assuming the backlog.

Chapter 7

Adaptive Trading Strategy Proposals

Chapter 8

Implementation and evaluation (30%)

8.1 Implement and evaluate proposed strategies vs. traditional approaches such as HODL and rebalance.

8.2 Discuss further improvements and limitations of the practical deployment.

Chapter 9

Adaptive Strategy Implementation

Chapter 10

Limitations and Further Improvements of Practical Deployment

Chapter 11

Conclusion

Bibliography

[1] Frankenfield, J. *HODL* [online], 18. december 2021. revised 18. 12. 2021. Available at: https://www.investopedia.com/terms/h/hodl.asp.