

Autonomous Bitcoin Trading

Documentation

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Abstract

Trading is the act of buying and selling an asset like Stocks or Cryptocurrencies with a goal to make a profit. It has become pretty popular through social media with a lot of hype and described as an easy way to get rich.

While trading is one of the most difficult jobs in the world for several reasons. Learning to overcome basic human instincts and emotions is just one of the many challenges. Shortly said humans aren't made to trade so why not let the computer do the work for us. In my Matura thesis I will try to develop a trading strategy that can run autonomously buy and sell Bitcoin with a profit while showing why trading isn't a free money machine and that you should probably stick with something else if you want to make money and not lose your mind while doing so.

Contents

1	Foreword	1
2	Introduction	2
3	Bitcoin	3
3.1	Related Work	4
4	Methodology	5

1 Foreword

Everything started somewhere in early 2022 where I read "The Bitcoin Standard" by Saifedean Ammous. A book explaining why Bitcoin even exists and what problem it is trying to solve. I probably only understood 30% of the book. These 30% however were enough for me to start researching Bitcoin and the underlying technology. I watched regular Crypto Market update videos. Then in Novber 2022 FTX experienced a bank run. FTX was the second largest Crypto exchange. (A place to sell and buy various Crypto currencies). The problem was FTX didn't have the exchange funds to cover the withdrawals. This was a big problem because FTX was the second largest exchange. Bitcoin already was down bad from previous highs but this was the final nail in the coffin. Bitcoin was down 80% from its all time high and went down to a price of 15'000 dollars per Bitcoin. That was the first time I wanted to buy Bitcoin after watching it for about half a year. Luckily in 2022 buying Bitcoin even when you are below 18 was possible. One thing led to another and I spend more and more time watching charts and losing my mind. I started to try to trade profitable so basically trying to make money buy buying low and selling higher. This sounds very simple but it seemed impossible. Since I also started coding in 2022 I, and trying to code some autonomous trading bots I caught fire and kinda fell in love with it. So now I'm here.

I had no idea what I was getting myself into and if I knew before I would probably have never started. I spend more time than I wanted and complety lost myself in the work. I totaly fogrot about the writting part and spend a lot of time just coding. This whole thing got way bigger than I initially thought but I'm proud to present what I got since it is a lot.

2 Introduction

My goal for my Matura thesis is to see if I'm able to develop a trading strategy that can run autonomously buy and sell Bitcoin with a profit. I document the journey of my research and development. I will try to explain my thought process and the decisions I made. From where my ideas came and what kind of challenges I faced during the process.

Coming down to the basics I want to take decisions based on historical data. So we need to train a model on historical data and then use it to make decisions.

My work can be split into 3 parts:

- Research
- Development/Testing
- Live execution

The three main skills I need are statistics, programming and understanding how the market operates. I need to apply statistical rules to prove if my idea is worthless or has something to it which might allow me to make a profit. Programming is just needed to make the process of testing or applying my ideas and in the end to automate the whole process.

But I knew that in the end I wanted to have a few different things:

- Trading strategy
- Backtests results
- Live execution results
- Research documentation
- Trading algorithm
- Live Dashboard

So before I start going into the details of the research and development I will have to explain some things.

3 Bitcoin

3.1 Related Work

Discussion of related work.

4 Methodology

Your methodology description.