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Preface

This book is being written entirely for free on the open web, "live", do what you will with it.

This is a work in progress and might contain mistakes, broken links, poorly written english or even empty chapters, please feel free to feedback and contribute.

This is my first time writing, so please don't expect a masterpiece, I'll learn along the way and hopefully I'll be improving it day by day...

***

When you find the content useful, please send tips my way ;")

- BTC: *1767DuD8teMeeTV2DtPviqMYE1G13169x3*

Who's is this book for?

This book is for any person who wants to learn about automated trading, the basics of trading cryptocurrency markets and programming.

People whom will most benefit form this book:

- don't know much about programming
- don't know much about trading (crypto)markets
- don't know much about both of this topics
- is insterest in learning in "poor man words" how all of this can work together

If you already have knowledge in one of these fields feel free to jump right in your interest area.

What makes this book unique?

The simple way it will connect most of the moving pieces you need to know in order to put together you own system.

You will get introduced to the following topics (not exclusively):

- The very basic of how markets work
- How to read market's data
- Indicators and how you can use them to understand market data
- Basics of programming
- How to write code to read, analyze and take decisions in your behalf

What you will get from this book

I believe learning by yourself is key so instead of giving you my own limited understanding of some subjects I'll point you to *reliable sources where you can learn*.

I'll explain subjects which i believe aren't covered on the internet in a simple way and give *"modern" code examples developed by myself*.

People not interested in programming automated systems will learn key concepts and how to take better informed decisions and make their own systems.

I hope you learn something and enjoy.

Why I'm writing this book

Have you ever thought?

- if you have a winning strategy why do you even bother to write a book? Why aren't you living your dream somewhere, doing something you love to do in life while the robots take all the weight from your shoulders?

This was the first question i had in my head when i started looking into algorithm trading.

After a few months deep into research and learning, here I am, being the person in the other side of the question, the person who wants to share some of the knowledge and pitfalls that were met during all this time.

Without further do, let's get into it:

One of the first clicks happened after i earned some money from trading and than gave it all away to the market. I got really disappointed with myself, basically because i was already believing "that was my profit", but in reality i never spent that money, so after giving away all that sense of "profiting" became simply imaginary, replaced by a void.

This void really put my down, so down i got really puzzled about "how to avoid this" and how to actually "don't give my profits back" or even "how to earn consistently", this is a bloody hard challenge.

My mind couldn't stop thinking about it, constantly.

I spent many hours and nights awake reading and learning as much as i could and once i had some basic understanding i actually turned it into learning and programming and by programming i mean programming trading strategies. I was coding and testing whatever strategy i could put my hands on.

I did that *day and night* for *countless months*, way more than sex, believe me.

It took me ages until i had the "EUREKA", when i felt I connected all the floating parts.

Many backtests and live experiments later, i realised how much of this material is actually "hidden" from the web and really just accessible for people that already have a background in finance and programming, but not really and introduction for people who only have one of these skills.

Disclaimer!

None...

... of the sites linked in this book or even this book will make you rich in no time

By reading this book you have no guarantee that you will become a milionary and buy an island.

First you need to work out how the market works and how to have a profitable strategy.

Secondly the profits are proportional to your account size and You surely shouldn't be risking much if you still don't know how to trade, so don't expect huge profits while you don't master your trading style, it will take some time.

Some...

... of the links on this book contains my referral id (also know as affiliate link).

If you use those links and one day decide to have a paid account the service will share a small piece of their profits with me, which means you would be indirectly supporting this book at no cost.

If you really...

... learn how to trade the markets you will never have to look for a job again.

This is terrifying but for some people this is a dream.

Being profitable is a state of mind...

...

I know this sounds silly, but i must let you know upfront, it's all about being in a good state of mind. Having a plan helps not loosing your hair and also guarantee you won't be under pressure when taking decisions.

It sounds easier than it is, but there are simple things you can do that will completely change how you feel. For instance if you only use 1% of your account size, will you be as nervous as you would be if you traded 100% of it at once?

What you need to know about trading before we start

I'm by miles not the most qualified person to tell you what you need or don't need to know before trading the markets...

One thing i certainly know tough, is that when i knew nothing it would have been much better if someone had pointed Me out to a few key topics.

That's all I'll try to achieve in this chapter.

I'll try to keep it as easy as possible, the idea here is to have an introduction basics and carry on. Not to get stuck on just this topic just now!

Learning about markets is the most important thing You will be doing, so You will end up digging this much deeper later on anyway.

Please feel send me feedback / suggestions.

- undefined

- Markets

To be honest I'm by miles not the most qualified person to tell you what you need or don't need to know before trading the markets, but certainly I would have appreciated if someone pointed me out to a few key links and subjects, and that's all I'll try to achieve in this chapter.

There are many kind of markets markets and they can be totally different, for instance:

- Trading Stocks
- Trading Forex
- Trading Options
- Trading Commodities
- Spread Betting
- ...
- ***Trading Cryptocurrencies***

All of this markets have their own ins and outs, their own reason and chaos so by no means I'll try to explain all of them.

Please do your homework when you see it fit ;)

- The market

It's important to say you don't need to be a market expert to read this book - surely that would help - but don't worry if you just starting.

Ideally you know basic rules, for instance you want to buy a Stock or Currency when it's price is low and sell it when it's high, therefore increasing your balance.

The opposite is also true, sometimes you want to sell it high and buy it low (the opposite of buying low and selling high), that is also possible and it's called "***shorting***".

At first the market sound very complicated, but if you pretend you are a child about to learn the rules of a new game, it can actually be quite enjoyable to learn.

Candle sticks

We won't go much go deeper than this on this part of the book, but for now would be cool if you knew how to read candle sticks, there are a dozen of patterns and theories about them which you don't really need to think right now.

> **Watch this video! https://www.youtube.com/watch?v=OGFxp3Pixg8**

There are also written articles about candle sticks and patterns, you might find useful:

- Introduction to candle sticks @stockcharts

TODO

- Figure out how to use youtubex plugin
- Find better and more linkslinks on theses subject
- Maybe "import" just relevant chunks from articles**

Order book

The order book works like a two queues in different sides, one side wants to sell a stock and the other side wants to buy a stock.

Naturally people on the buy want to buy it cheaper and people wanting to sell want to sell it at a higher price.

If you want to buy something cheaper than someone, you go to the end of the buying queue reversely if you want to sell it more expensive you go to the end of the selling queue.

When people meet and agree on a price, that's the new price of the stock.

Position Sizing

I can't emphasize enough how position sizing is the most importing ingredient when managing risk.

In plain words, if you want to be sure you won't blow your account, you must understanding position sizing and risk management.

Are you feeling extremely nervous everytime you buy or sell ?

That is a common symptom caused by big position sizes, would you be nervous if you were risking less than 1% of your captal?

Without further do, please check out this video.

The first time i learnt this concept was like a million doors opening in front of my eyes.

Enjoy.

> **Watch this video! https://www.youtube.com/watch?v=3LMlNd2gMVw**

Risk Reward Ratio

I still need to write this chapter, in the meanwhile:

Check: "Risk/Reward Ratio" @ investopedia

Stop Loss (Limit) Order

Introduction

A Stop Limit order is one of the most effective ways of limiting your risks and guaranteeing your profits.

Imagine the following situation:

It's Sunday afternoon, You are sitting on a park a guy using a suit comes and puts 100 USD in your hands and say:

-- For each degree Celsius the temperature go up I'll give you 20 USD extra and for each that goes down you have to give me 20 USD. You also have the option of walking away now with 100 USD.

You suddenly realize you have absolutely no control or way of predicting the temperature and have to decide if you will go home with 100 USD.

What would you do?

Let's say you wait and the temperature goes down by 1 degree, remember if it goes down by 6 degrees you will have to pay him 20!

How long more can you stay? Hypothetically let's say it goes down even 1 more degree and you left with 60 USD and decide to go home. That's would be a **Stop Loss** of 2 degrees !

What if temperature goes up by 1 degree, how long more will you stay before you decide to go home?

If it go up by 3 degrees and you decide to go home with 160 USD we could say you **Took Profit** at 3 degrees!

I hope the possibility of sitting there waiting the temperature to go down until you own some money didn't even appeared in your mind.

Remember, it's all about the mindset.

You **don't want** to lose more money than **you willing to risk**, so be it! Do what you have to do to stick to your plan.

End of the story.

How it works

It's like an alarm, it will go off once the price hits a certain value.

When you alarm go off an order will be automatically placed for you at the rate (price) you specified.

Imagine the following situation, you buy 2 BTC worth of ETH and pay 0.0188 on each ETH because you believe the price will go up about 10% and hit the 0.0206 mark.

Great plan right !? Yeah, very good.

But what if things don't go the way we planed, when will we jump ship? When do you know it's time to give up on that idea?

Once you decide the amount you willing to risk, it's time to set the alarm, so if things go against us an Order will be open and hopefully our position will be closed.

If we are sleeping, eating, traveling, the order will be sent.

In this example I decided I'll give up on the trade if the price hits 0.0184, which is about -2.2% loss.

I log into Poloniex and set my Alarm (*Stop*) to 0.184, once the alarm goes off I'll create an order.

The value of the order will be defined by *Limit*, which I'm setting to 0.0184, meaning that's the price I'll be willing to pay at that moment.

(Note: If you really want to get you order filled, you can set limit to be lower than the alarm)

The *Amount* will be set to the same amount i have bought previously, effectively closing my position and giving up the trade, "*automatically*"

STOP-LIMIT

What's this?

Tradable balance: 6.47388493 BTC
Tradable balance: 447.36254900 ETH

⚠ Stop Limit margin orders are not guaranteed to trigger at the amount specified. Why not?

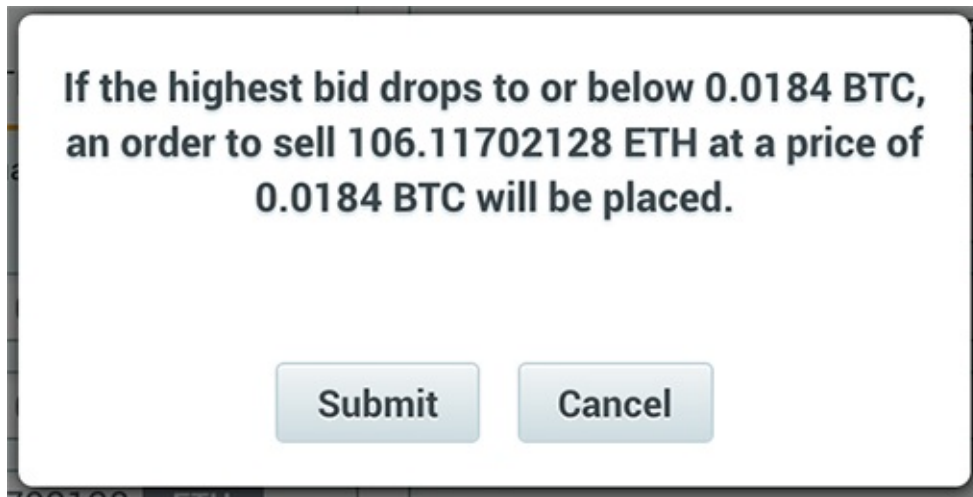|		
Stop:	0.0184	BTC
Limit:	0.0184	BTC
Amount:	106.11702128	ETH
Total:	1.95255319	BTC

Buy   Sell

Once i set:

- **Stop** : The price the alarmw will go off
- **Limit** : The price you willing to pay at that moment
- **Amount**: The size your order will be

The **Total** will be automatically calculated!

We just have to press "**Sell**" !

If the highest bid drops to or below 0.0184 BTC, an order to sell 106.11702128 ETH at a price of 0.0184 BTC will be placed.

Submit   Cancel

Once you press Submit, it's all done.

Now *theoretically* you can loose just up to that 2.2% you have calculated, and unlimited gain possibility. Isn't that great ?

Now imagine the market goes in your favor and it hits the 0.0192 mark, you could now:

- Cancel your previous **Stop Order**.
- Add a new **Stop Order** around break even: 0.0189

In theory now, you are safe and can't loose any money on this trade.

MY OPEN ORDERS

Type	Price (BTC)	Amount (ETH)	Total (BTC)	Rate/Stop	Date	Action
Sell (Stop-limit)	0.01840000	106.11702128	1.95255319	0.01840000	2016-xxxxxxx:15	Cancel

In practice, you have to be very cautious.

If You set a really tight stop, the market could go against you, trigger your stop order then move in your favor.

For complete documentation on Stop Orders on Poloniex, please check the Poloniex's documentation on Stop Limit Orders!

What is Margin Trading?

Imagine the market generally moves from -5% to +5% a day, that mean the total variation is about 10% a day.

Imagine now there is people around willing to lend you the same amount of money you have for a small fee.

Margin trading is the connection of this two "endpoints", one have a stash resting, the other needs to amplify his moves.

So one part borrows the money and buy double amount of shares, now his initial stash will be affected 2x, if the stock goes up 5% his stash will grow 10% and vice-versa. That's called "leveraging".

The other part lends part of his stash and receives a "lending fee" together with his money. That's called "lending".

For a more detailed introduction, please check out "Margin Trading: Introduction" @ investopedia

Fees and Taxes

TBD

Trading on a demo account

Demo accounts are great for beginners and some time for more experienced traders too.

Imagine you already know a certain market (for instance BTC/ETH) and you looking into diversifying your investment by investing on Forex, Precious Metal, Commodities or even Equity

Wouldn't it be great if you could start playing around with other markets on a Demo account?

Registering on an exchange

What if you could login into an exchange right now only using your facebook or google acount and start playing straight away?

That's what is possible in the other side of this link !

Once you're logged in you will have access to different markets, don't worry if you still feel like you don't understand anything. You will get there.

In the meanwhile you can learn more clicking on the "Intro and Education" button on the bottom left of the page.

Buying and selling on your demo account

If you have experience buying and selling crypto or buying and selling stocks, you will notice something slightly different on simplefx.com's interface, you don't buy and sell "units", you buy and sell "Lots". Make sure you read "Standard Lot Definition" on investopedia.

Their "Trade Calculator" might help you understand a little better:

Watch this video! https://www.youtube.com/watch?v=F12y9M-Khj8

Opening an order:

Watch this video! https://www.youtube.com/watch?v=85Y8iMk86vU

Closing an order:

Watch this video! https://www.youtube.com/watch?v=ovRExc6Ykyc

For more information about how to use SimpleFX, you can have a look at SimpleFx Tips

Our first trade

Through this chapter I'll help you to execute your first trade on a cryptocurrency exchange.

- Advantages of cryptocurrency exchanges

Opening an account on a broker and trading Stocks or Forex might be cumbersome for many different reasons.

- Fees are generally prohibitive for beginners
- The "real world" bureaucracy might be a show stopper

In cryptocurrency exchanges anyone can open an account and start trading straight away, the fees are a small percentual of your order.

This means your account balance literally doesn't matter, you can start right now with only 10 USD.

- Non Advantages of cryptocurrency exchanges

It wouldn't be nice of me to put you in paranoia mode, but also unfair if i don't say there are downsides as well. The simplest way i can put is: avoid dodgy and unstable websites at all costs.

So far i have had a great experience poloniex but that doesn't mean they are secure.

Do your research about exchanges, many have been hacked in the past, so people are really cautious about which exchange to use.

That's the main reason why it's recommended to keep coins you are not trading outside of exchanges.

- Next steps

I'm assuming by now you already got some bitcoins, if you don't please jump to "Bitcoin in a nutshell" chapter and get some.

For a start any amount will do, even 10 USD

Registering on an exchange

"An exchange is a marketplace in which securities, commodities, derivatives and other financial instruments are traded." (Source: investopedia)

There are many exchanges you can choose, some of them are listed on the "Useful links and resources" chapter.

For the sake of simplicity we will be using one of the most well know cryptocurrency exchanges poloniex.com, there you will be able to trade many cryptocurrencies.

It's free for registering and you don't need to send any proof of identity unless you plan to deposit or withdrawal more than 2000 USD/month.

Once you register and send some funds, you will be allowed to trade instantly!

Sending funds to the exchange

Once loged in go to balances and find your bitcoin deposit address by searching for "bitcoin" among your wallets, and clicking "Deposit":

☐ Hide 0 Balances	☐ Hide Delisted				bitcoin ⊗
Coin ▲	**Name**	**Total Balance**	**On Orders**	**BTC Value**	**Actions**
BTC	Bitcoin	XXXX	0.00000000	XXXX	Deposit Withdraw

Once you find your deposit address, send some of your bitcoins into that address:

☐ Hide 0 Balances	☐ Hide Delisted				bitcoin ⊗
Coin ▲	**Name**	**Total Balance**	**On Orders**	**BTC Value**	**Actions**
BTC	Bitcoin	xxxx	0.00000000	xxxx	**Deposit** Withdraw

Your Bitcoin Deposit Address

1G▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓

Show QR Code

IMPORTANT: Send only BTC to this deposit address.
Sending any other currency to this address may result in the loss of your deposit.

After making a deposit, you can track its progress on the Deposit & Withdrawal History page.

In case you still don't have bitcoins, please refer to "Bitcoin in a nutshell" chapter.

You will have to wait for a few minutes while all the needed confirmations for your transaction are verified, once that happens, you are free to trade!

Buying and selling on an exchange

TBD

What is lending ?

TBD

What is margin trading ?

TBD

Buying on Margin

TBD

Selling on Margin

TBD

Technical Analysis

Really simple and well done video on Technical Analisys, this guy has loads of interesting ones:

> **Watch this video! https://www.youtube.com/watch?v=51zV6xUjf98**

Simple Moving Average

I'm still looking for a great and simple moving average video.

This one seems to be short enough and it involves a "blackboard" so should be easy to understand:

> **Watch this video! https://www.youtube.com/watch?v=N4MNjjxLBWw**

Also don't forget to check the it SMA on investopedia

MACD

This is one of the most favoured indicators around, so much so that a lot of charts will draw MACD by default.

Without further do, go check Moving Average Convergence Divergence - MACD @ investopedia

There are also tons of MACD Strategy videos on Youtube

This one is very long, but i believe to be worth it

> **Watch this video! https://www.youtube.com/watch?v=ruPS0MZYCaU**

RSI

Another really important indicator, check What is the 'Relative Strength Index - RSI'

Bollinger Bands

Check Bollinger Band on investopedia (as usual!)

There are also loads and loads of videos about Bolinger Bands strategies on Youtube, for instance this one hour long video !

> **Watch this video! https://www.youtube.com/watch?v=ji0bEjhUReg**

Ichimoku Cloud

The list of indicators can go on and on, an infinite amount of indicators ("classics" and "custom ones") can by found on the internet.

It's important to remember: Becoming profitable is a matter of studying the market and finding it's rhythm.

You you just need a couple of simple indicators that are setup meaningfully.

A lot of indicators will "say the same thing" in slightly different ways, again: keep your chart simple so you understand where the decision points happen and then how to make them profitable.

That being said, have a look on this slightly exotic indicator:

> **Watch this video! https://www.youtube.com/watch?v=J3t2Tsn_lmk**

I would say "ichimoku Cloud" isn't exactly a "popular indicator" because it's surely not easy to understand and get your head around, but i would classify as "2nd level of popularity" as it seems to be very common among intermediate / advanced traders.

Developing your first strategy

Why Stop Loss is so necessary ?

A lot of people "try" to profit from trading but never set a **Stop Loss**, from time to time the market goes against their position and they get caught in this situation where you have to "have faith" the market will come back.

What is the change one day you will be away from your screen and the market will go violently against your position?

> Anything that can go wrong, will go wrong.

source: Murphy's Law @ wikipedia

Imagine you are on the blackboard, planning a strategy, how would you be able lay down a system if you never now how much you willing to lose in each trade?

Now you are in the same blackboard, planning a strategy, you have a look at the charts and come to the conclusion:

- A -5% stop would be a good place to abort this trade!

Which one you think would be easier to predict and work out?

Buy and Sell signals

Surely one of the most important things in your strategy is the "buy" and "sell" signals.

The most common way to generate signals is to analyzing values extracted from the charts and respond based on those values.

A very simple example would be to buy and sell when Simple Moving Averages are crossing

It's not unusual to find people selling signals or publishing signals online as well, which is very common on stocks and forex

Some people like to mix a few different signals and only trade when they match and so on.

A Simple Example

I know at first "developing a strategy" sounds scary and impossible for a beginner, so I'll play the cards early and hopefully encourage you: It's surprising how simple a strategy can be and still make You some money.

And it's always surprise to discover that the technical aspect of the charts won't be the hardest hurdle for most, at least for me, the discipline is by far the most challenging.

In order to constantly win you have to constantly play by the rules and by rules i mean the ones you have come up with, your own rules -- your strategy !

Once you understand it's not about each trade, but actually about a combination of many, you will see how things starts to be simpler.

Let's start with some sort of "home made" strategy, checkout what this lady has to show you, if the simplicity of this and the audio quality of this video doesn't surprise, i don't know what will !

> Watch this video! **https://www.youtube.com/watch?v=EEzJr6gbuhU**

In short the strategy consists of:

- Watch the market on the afternoon
- Look for a classic MACD crossover on the 15 minute chart
- When it histogram goes from "red" to "green": **BUY**, or **stop your short position**
- When it histogram goes from "green" to "red": **SELL**, or **stop your long position**

Bloody simple, right ?

Can it make money? YES !

What will happen if i started doing this right now? You gonna loose all your money, surely!

If you don't believe a simple strategy can make you money or if you think this example was crap, don't worry, i got something for you.. Go to tradingsetupsreview.com and have fun, there are tons and tons of strategies, from the most simple to the most complicated. You can spend many sleepless night looking for them, anyway trus'me: start by loving a simple one and move to the next step !

Research

Do you think a successful trader just walks around betting money on strategies they just heard of? Absolutely not, the invest money where they see opportunities and when they believe the odds are favourable to their position.

If you've learnt a setup and you believe it could yield good results, you will have to evaluate it yourself - remember it's your money you about to invest, naturally, nobody better than Yourself to check if an opportunity is a good as it looks like, that's part of the secret source, *believe in yourself and your judgement*.

back to the lady strategy..

Sometimes the setup that worked for her on the afternoon on the 15 minutes chart of GBP/USD will work for you on the 2H Chart of BTC/ETH, you never know, the possibilities are endless and that is the first important task you have to face is **Research**

Look for the setup in different pairs, different time frames, make annotations, the possibilities are endless and if the setup makes sense, it will actually happen in many different markets and time frames.

Annotate

Let's say you found a pair where the lady strategy works well on BTC/XMR, you zoom in to the 15 minutes chart and realize every afternoon when the MACD crosses there is some movement in that direction.

You then look for this setup multiple times, and take notes of the best cases and of the worst cases. Hoe much could you have made on the best opportunity? What is the average variation of this setup, does the value goes up by 2% ? 5% ? 0.5 % ?

What were the worst losses? What would be a good "exit plan", eg: which stop size would be great to avoid horrendous situations ?

How many times the setup were profitable when going long (buy side) vs how many times longing wasn't a good idea ? Was it better than 50% of the times ?

How many times the setup were profitable when going short (sell side) vs how many betting it would go down wasn't the best idea?

How many consecutive times you closed your position green in your best winning streak ?

How many consecutive times you closed your position red in your worst loosing streak ?

Sometimes a setup will work really well when on the buy side but not really when going short for instance. So might be a good idea to just wait for when the trend becomes bullish!

After the facts

Great, you found a a great setup and it seems to work in a pair you feel comfortable trading, for instance BTC/XMR. Now it's time to put together all the basic tools you have in hands, backtesting, position sizing, risk reward ratio, blah blah blah

Let's suppose have looked the 15 minutes MACD crossover and came to the conclusion the market will generally move 2% up at best and at worst case it will cross back to red - forcing you to exit the position - at about 1% of the value, you also notice sometimes it would go -5% those are the ones we will be avoiding by always having a stop loss set, **remember**:

> *always limit your losses.*

That's a risk ratio of 1:2 Risk/Reward ratio.

From looking behind you can also see that if you use a trailing stop and move it to break even after it goes to 1% up you can avoid loosing money 70% of the time.

You also noticed that if you take profit at 2% you will generally be in a good place, but sometimes there are spikes on about 4% up (when the volume is increasing very fast), so you might consider moving your stop loss higher to about 1% or 1.5% instead of taking profits at 2%.

Play time

There is no better school than actually doing something with your own hands. Have the feeling of moving something and see a consequence to your movement, that's when you really learn something.

In simple terms:

> *Talking about sex isn't the same as fucking*

When the time comes, you won't be able to avoid it. Your mouth start bubbling, you are SURE you got a nice strategy in your hands and you are looking so forward to f... find those crazy profits!

The best thing to do, is to see how the strategy plays in the real field, this will be a second "validation phase", where you will try to play as close to "the real game" as possible.

This will show you real life problems, like ***trading fees*** you forgot to consider, dealing with anxiety, uncertainty, fear and all the other challenges you will have to feel comfortable with.

Start with a demo account if you can't afford the real thing, but for those who really want to learn fast i suggest starting an account with some small amount, like 50 or 100 USD and invest that money into gaining real experience, this will level up your game immensely.

Back to the strategy

Let's say you started a new account and you got 100 USD loaded.

You keep staring at the chart, your setup is happening right now, what should you do? Throw all your money into this opportunity !!!!

NO, definitely not! Unless you want to loose money!

Remember the chapters about "risk management" and "position sizing", that's what you want to be thinking about now.

For example, when your setup happens, you bet 1 USD on it. If it goes wrong (your stop at -1% get hit) you won't get hurt, you will loose 1% of 1 USD which was 1% of your initial capital.

The next time, you "bet" the same, if it's go wrong and your 1% stop gets caught, you now at a loss of 2x 1% of 1USD.

That means, if the next time the setup happens you bet 1 USD again and it moves in your direction and gets your the 2% target, you will be back at the start !

This also means, from every 3 trades if you hit your target 1 time, you are back at break even! The rest is profit!

See how your starting to move the "luck" to your side?

Instead of going all in and getting all nervous, you now comfortable by knowing you betting a small amount and by betting that amount with that stop loss you just need to hit the 1 of 3 times.

Can you see some magic in this?

Imagine the opposite, every time you throw your whole cash at the setup: 100 USD, then you loose twice in a row, and have only 98 USD. If the third time you hit the 2% profit, you won't be back at 0, because 2% profit on 98 USD won't take you back to 100 USD !

That's what i call magic.

Understand this and being able to clearly see this being applied to my strategies - as opposed to reading about this and thinking that i understood - was one of my biggest EUREKA moments, and i hope the same happens to You.

The setups, the rules, it's all simple. The hard bit is to execute.

Work, work, work, execute

Well, nobody said it would be easy otherwise it wouldn't be called "**work**".

Now that you have your "parameters" together, it's time to work.

Work as in: punch the clock day in / day out, wait for your setup to happen, like a Fisher man waiting the fish to take the bait.

Once it happens, play your planned position size, no more no less.

Set your stop loss accordingly, you might also want to set your "take profit".

Learn the ins and outs, experience will tell you all the strong points and the weak ones.

At the beginning you might want to watch and and baby sit all your trades, but once the engine starts working and you might feel comfortable by entering a position, setting your stop loss, take profit and simply walk away, fearless.

That's perfection, everything is going as planned, you know your maximun loss - and it's part of the plan - you ready to take profits, and you not nervous because you not risking much.

Start small, game your game straight. Give it some time, so you sure you have constant results, if you don't, learn why you don't.

Make a journal about your trades, take notes on why you took the trade and when, how you were feeling, what you were expecting, annotate the date, your balance. Then read it, read it, read it, learn from it. Learn from yourself, from your mistakes. Taking notes (on paper or digitally) is the best way to learn and progress. Otherwise you might just forget all your great ideas and will never understand what have gone wrong.

If a strategy don't work for 2 weeks, it doesn't mean it won't work in the next two and vice-versa, so don't give up once a few bad trades happen.

In that case go back to the blackboard, read your journal, and find out, what is the next improvement.

Should you always add trailing stops to your gains? Should you increase your stop, is your balance moving too little ?

Only time and experience will tell, so take notes, be brave, face the **work**, hopefully the final reward will be proportional to your efforts!

More on position sizing

> *kids please don't do this at home*

This is super badly viewed (doubling / martingale / other strategies), but for those who never thought about it. It's always good to learn, so better ideas and better strategies might emerge from exploring different aspects of the game - for instance going deeper into position sizing theory (and buy a 400 USD book about it, lol).

Let's say you have a pretty unlucky streak and get your stop loss caught 4x in a row, but you now feel confident you will catch the next time. You can then bet 2 USD on the setup instead, so if you hit it, you will cover all your 4 losses. Worth saying, if your stop gets caught again, you will now be 6 losses behind, and if you keep doubling you will blow your account quickly.

This subject can go on and on

, just because you have stabilished a stop loss and have analised historical data you are now in a much more

How automated trading works?

The basic data flow would be:

1. An exchange provide access to a certain market
2. Some code is written to read new market data
3. Once the data is fetched the code process this information
4. If something relevant has happened the code executes an action

Sounds simple right? Riiiiiiiwrooooong!

Writing the code is actually the simplest part of this game, the difficult part is to write a good profitable strategy.

Before running your code with real money you will want to test the code using historical market data, that's called back-testing.

This way you can see how your strategy would have performed in a certain period.

Once you happy with your backtest results then you should be able to run your strategy on a real money account.

Setting up a robot

Let's imagine a situation, you just wrote the nicest strategy you ever could think of, you just backtested your script against historical market data and now you are ready and confident you could use this script on a real money account.

Great! Now you just need a computer online 24/7 running your robot relentless.

-- Urgh.. It doesn't sound easy.

You're right.

Developing a strategy, creating a backtest system, having a computer online all the time isn't something any human being will enjoy learning and doing

Specially when they want to focus on trading markets, learning profitable strategies and whatnot.

Don't worry, for the sake of quick learning (and fun) we will start using a nice shortcut.

Setting up a robot

Backtesting your first strategy

Since we still haven't built our backtest tool, we will start using one tool that let us backtest trading strategies online, for free.

This way we can start playing around without having to install or download any software, easy and effortless.

Please go ahead and create an account at https://cryptotrader.org/?r=556

```
i kindly remind you of using the inline links on this book, some of them
contain my referral ids ( the ones i currently use myself ).

In this particular link i have written the whole link so you understand
the links actually have some extra information in it.

That's one of the onlys way i can make a penny out of this book
```

Running your first strategy

Write a robot yourself and setting it up to run 24/7, ensure there is no code issues and it never stop running, your internet don't go offline, [...] isn't the simplest task of your life.

Luckily enough cryptotrader can also run our strategies and ensure the system will work as close as 24/7 as possible (Disclaimer: i don't work for them).

Surely that isn't something we want to be doing before even understanding how

Your robot will be there, restless working for you. That sounds cool, but also sounds like a lot of techy work, if you not into these things there must be an easier way, right?

That sounds like a lot of technical work right?

Drawing on the chart

Programming

First of all: If you have no clue about how programming works, don't worry.

I'm absolutely sure anyone with enough interest in automated trading will be able to learn enough to put a strategy together.

Actually, the good news are, you probably already know how to program you just don't know you know it. Programming is pretty much like thinking, so if you are able to think you are already qualified to do the job.

How come?

A program is simply a sequential thoughts and conditions to be executed, pretty much like thoughts in your head.

This list of sequential commands (in our analogy: *our thoughts*) will deal with some information received - just like we move numbers and possibilities in our heads - and then finally execute action.

This action might as simple as "instantly forget" or "do something with this glass".

If you never programmed before, i totally recommend this awesome, interactive, beautiful, short and fun online book.

You should be able to read this book in a few minutes, try out some code and if you never coded before, you surely will feel like a different person.

If you prefer you can also learn as you go through this book examples.

Installing node.js

If you are not familiar with command line i recommend going to node.js download page and downloading the installer.

If you are familiar with command line i recommend installing node.js using nvm so as time goes by you can easily switch between node.js versions.

Running scripts from your terminal

Using Github and Git

Understanding github.com and Git isn't exactly necessary at this point, but you surely will improve your workflow once you learn it.

Feel free to skip this page, you might get away for now while reading the book but surely if you want to be a prolific programmer you better learn it.

A good starting point could be this article:

- GitHub For Beginners: Don't Get Scared, Get Started

Programming your first script from scratch

For the code examples in this book we will be using a programming language which i believe will bring us the best results in the smallest amount of time.

Some people will prefer using other languages, and that's completely fine.

For now using Coffee Script will be a good choice since we will also be using it when writing scripts to run at cryptotrader.org

Coffee Script is a slightly different way of writing Javascript, it reminds me a lot of ruby and python. You can learn more at coffeescript.org, if you already know Javascript or any other programming languages you will get it in no time.

In order to use coffee script you have to install node.js in your computer and also have basically knowledge on how to run scripts from the terminal,

If you don't know how to do it, please refer to "Installing node.js" and "Running scripts from your terminal"

You will also have access to the sample code on this git repository, i'll try to keep it synchronized with the book, please let me know if something is weird.

The exchange API and API Key

Exchanges more often than not will have an API (Application Programming Interface) which allow users script to interact with the exchange data.

Poloniex has it's own API, you can read their full documentation here

As you will see there are two categories of API methods

- Public API Methods which anyone can use to obtain data for whatever reason without providing any identification. For instance: showing a ticker on your website
- Trading API Methods like **buy**, **sell** or **returnBalances** which needs account identification.

Obtaining an api key

If you planning to buy / sell, or at least fetch the current balance of your account you will need to create an api key, on poloniex is quite easy once you reach the "API KEYS" page.

It's a very good idea to keep the "enable withdrawal" checkbox **unticked**, this way if someone get access to your key they won't be able to simply move the funds to their personal accounts.

Once you have your Key and Secret, keep then in a secret note, you will need in when writing your first script.

Your first script

- Starting your project

From your terminal start by creating a new folder:

```
$ mkdir my_project
$ cd my_project
```

Let's create an npm project in this folder:

```
$ npm init .
```

Download a package that will let us access poloniex methods pretty easily:

```
$ npm install --save plnx
```

- for more information please refer to this package reference and the poloniex api page

- Writing your first script

Let's create a new file: *get_ticker.coffee*

On this example we will simply fetch the current "Ticker" for BTC/ETH market, this method is available through the "Public API" therefore we don't need any authentication.

```
plnx = require 'plnx'

plnx.returnTicker {}, ( error, data ) ->

  # print all markets at once
  # console.log data

  # print only ethereum market
  console.log data.BTC_ETH
```

Once you run it on the terminal:

```
$ coffee get_ticker.coffee
```

You will get something like:

```
{ id: 148,
last: '0.02035216',
lowestAsk: '0.02035216',
highestBid: '0.02035001',
percentChange: '-0.02876367',
baseVolume: '18297.08372074',
quoteVolume: '888128.60751199',
isFrozen: '0',
high24hr: '0.02129990',
low24hr: '0.01991000' }
```

Congratulations, you just read the current ask/bid price of a market using an automated script!

You see, it wasn't that hard to get it started, right?

I'm sure you want to do something more exciting now, like buying or selling some crypto.

That sounds like a good idea, but before you will have to know your balance.

Knowing your balance

Let's create a new file: *get_balance.coffee*

On this example we will simply fetch the current "Ticker" for BTC/ETH market, this method is available through the "Trading API" therefore we will need our KEY and SECRET, if you still don't have one, please get back to "The exchange API and API Key"

```coffee
plnx = require 'plnx'


key    = "YOUR_KEY"
secret = "YOUR_SECRET"

params =
  key   : key
  secret: secret

plnx.returnAvailableAccountBalances params, ( error, data ) ->

  if data.exchange?
    console.log "You have some funds in your exchange account:"

    if data.exchange.BTC
      console.log " - #{data.exchange.BTC} BTC"

  if data.margin?
    console.log "You have some funds in your margin account:"

    if data.margin.BTC
      console.log " - #{data.margin.BTC} BTC"
```

Once you run it on the terminal:

```
$ coffee get_ticker.coffee
```

You will get something like:

```
{ id: 148,
last: '0.02035216',
lowestAsk: '0.02035216',
highestBid: '0.02035001',
percentChange: '-0.02876367',
baseVolume: '18297.08372074',
quoteVolume: '888128.60751199',
isFrozen: '0',
high24hr: '0.02129990',
low24hr: '0.01991000' }
```

Congratulations, you just read the current ask/bid price of a market using an automated script!

Bitcoin in a nutshell

- Nutshell

- It's not possible to buy and sell bitcoins anywhere in the world
- It's now possible to spend bitcoins in any store, online or offline as long as they accept debit cards
- It's now possible to trade cryptocurrency markets
- It's now possible to trade regular Stocks and forex markets using Bitcoin

Bitcoin is an amazing technology, potentially the money of the future.

If not the money of the future it is at least the first "well accepted" money of the future, the one that brought to light a technological evolution as revolutionary as the e-mail.

We are living on the biggest ever evolution in history of human kind.

- Basic concepts

If you not familiar with bitcoin, there is an infinite amount of resources online about it, this wikipedia entry is a great place to start.

From a trader / regular person perspective, some of the most important aspects are the *efficiency*, *speed* and *easy of use*.

Believe me Bitcoin got to a point where it can fulfill this requirements very well.

Once you bought your coins, you can spend it anywhere in the world using services such as e-coin.io which is a **pre-paid debit card** provider with a key difference:

You can charge it using your Bitcoin.

- Buying bitcoins

I believe this is the biggest barrier for someone wanting to get into bitcoins, buying bitcoins it's not always easy.

Some cities will have bitcoins ATMs while others cities your only option will be to buy online.

You can easily find sellers online such as localbitcoins and use services like bittybot.co which supposedely find the cheapest sellers.

You can alternatively use exchanges like kraken.com which will let you deposit EUR.

Programmers can also get some bitcoins by solving github issues, checkout gitmoney.

In order to receive bitcoins you will need a Bitcoin address - or a "wallet" - which you can easily create at [blockchain.info] (http://blockchain.info

Once you have your bitcoins you can move your money to an exchange are you are ready to trade. Currently one of the most popular ones is poloniex.com but there are many others.

You can easily find a list of exchanges and currencies pairs they offer at coinmarketcap.com and exchangewar.info

After opening an account on an exchange you will have a "deposit" address for Bitcoin - and other cryptos.

That's your "address" within your exchange account, which you will send your coins in order to trade.

When buying bitcoins you can also use that exchange address to receive the coins, but those addresses are subjected to changing because they are assigned to you by the exchange.

- Spending bitcoins

As previously stated there are many websites on the internet which will accept bitcoin directly, but for all other cases using a pre paid card like the one provided by e-coin.io will allow you to shop anywhere in the web and if request a debit card, they will send you which means you can use it in any physical store, pizza places, [...]

TODO:

- Review topics, text, this chapter all around
- Describe how an end user can actually profit from bitcoins

More strategies and References

It's always a good idea to keep an eye open for different strategies, sometimes learning about strategies from other markets can inspire you and give yuo the right insights to improve your game in your favourite market.

I'm putting together a few links around so you can have an idea of what people are doing:

Short-Term Momentum Scalping in the Forex Market

```
Classic use of EMA/SMA combined with price action, very useful specially when trading manually.
```

MetaTrader

I'm sure someone a lot of people will disagree but from my personal point of view it's a great platform for beginners to learn and explore Automated Trading.

I must make clear that i don't believe MetaTrader to be the best tool for all tasks.

There are other brilliant tools like Ninjatrader that will outperform MetaTrader in some ways and surely there are many more, like this one

One great thing about playing around with MetaTrader is that it has been around for very long, so naturally you can find a *lot* of online content for free.

There are also "official websites" like mql5.com and mql4.com with more information than you can ever consume. You can even automatically copy trades from other traders, crazy!

With MetaTrader you can use what they call an "Expert Advisor" which is basically a piece of code that can buy and sell in your behalf.

They also have a "Strategy Tester" which allow you to do simple simulations using historical data.

You can find loads of examples online and MT also come with a couple of examples "out of the box".

You can learn a lot from reading other people's strategies, just remember to keep it simple! Don't fall into the trap of making something complicated. Stick to strategies that are simple to understand and easy to backtest! - at least for now.

Very interesting feature : The Indicators on the chart can be edited in "code form", You can draw valuable information on the screen that otherwise wouldn't be available in chart.

You will also notice that a lot of Brokers offers MT "for free", no surprise it's very popular among traders.

Installing and using a demo account

I highly advise you to install and have a play with a Demo account so you can get a feeling of how many traders work!

The quickest way to get a free demo account running in your desktop that i know is going to simplefx.com, you can easily login with a Facebook or Google account and then go to their download page, they also have a version for Mac which is very handy and not easily available around the web.

"MetaTrader 4" is also available for free on the App Stores, it comes with a Demo account and let you do some trades from a very simplified interface.

Once you understand how it works you can easily change your broker (for instance if you planning to trade Forex there will be places with better spread than simplefx!) and they will probably also have MetaTrader available for free, if they don't, they will surely have other tool that will be great or at least that You will be able to compare with MetaTrader and start having your own preferences.

Have phun!

learning on your own

You probably want to read Advanced Guide To MetaTrader 4 @ Investopedia.

Or watch some of the thousands of tutorials you will find on Youtube, like this tutorial !

Backtesting on MetaTrader 4

Very useful articles:

- What the numbers in the expert testing report mean
- How to evaluate the expert testing results
- Self-optimization of EA: evolutionary and genetic algorithms
- False trigger protection for trading robot

More Links and Tips

RSI Alert EA and more, surely there are free versions around the internet as well.

For instance you can search for "mql4 rsi alert" on google and you will find tons of versions, with sounds or email alerts, etcs..

https://academy.tradingheroes.com/forex-trading-tools/

EUR/USD MACD / EMA system

https://www.youtube.com/watch?v=mTlO3G-zhR4

Extras

Useful terms

- Slippage

FAQ

Other backtesting options

If we don't use a service like cryptotrader.org (i don't know of others with same capabilities, please let me know if you hear about something) we would need to :

- Install Software, download some data and run backtests on this software using the downloaded data **OR**
- Write our own backtest tool

Since we still didn't write our backtest tool and don't want to be fiddling with software just yet, i recommend you to keep playing around at cryptotrader.org and have a look into the other options later on, when you are more comfortable with the whole jazz.

Programming

- js2coffee.org It will convert Javascript to CoffeeScript - if you write Javascript on the left panel

  It will convert CoffeeScript to JavaScript - if you write CoffeeScript on the right panel

- codepen.io Perfect website for quick sketches and tests on your browser, supports CoffeeScript

Useful links and resources

- Crypto currency exchanges

- poloniex.com One of the most user friendly exchanges, simple and clean UI, well built website, great volume on ETH/BTC, ability to lend your coins and do margin trading.
- simplefx.com Great feature such as demo accounts, the ability to download and try MetaTrader platform for free, high leverage available.

  It also let's login using your facebook and trade online without installing any software using a demo account, this make it really easy for beginners to start.

  Some complain about their high "swap rate" and "spreads", other than that i never seen anyone complaining from anything aside from the top banner that shows up when the platform loads - ha.

- 1broker.com Very interesting broker, let's you use Bitcoin to trade Indices, Stocks, Commodities, Forex and Crypto, the website doesn't look very modern in the other hand it's simple and it works!

  They provide an API and the spreads seems to be smaller compared simplefx spreads.

- kraken.com Allows cash deposit, among other features like higher leverage than poloniex. Widely used, unfortunately i still didn't have the opportunity to trade there.
- exchangewar.info On this website you can find a very complete list of cryptocurrencies exchanges.

- Platforms for (automated) trading

Strictly automated trading

- cryptotrader.org Allow you to write scripts to trade cryptocurrencies using coffee-script, also provides a platform for backtesting and exchange of information among users, the UI can be a bit chagellenging at the beginning but once you understand it, it's actually a good bang for the buck. Be very careful if you decide to rent a bot instead of write one yourself as paid bots generally have closed source and you can't really tell what is actually doing.
- quantopian.com Allow you to write your own scripts using python, as far as i understand it's focused on Stocks, still worth checking. They have a pretty nice documentation/knowledge base/tutorials that surely will inspire you and open your mind regarding what you can do with code and automated trading.

Trading platforms

- https://www.haasonline.com I got very surprised by some of the videos i seen, this platform seems pretty "advanced" and "modular", definitely an amazing approach to trading. Check out what this guy can do! It's totally worth it!
- cryptowat.ch Definitely the most pleasant interface to look at, hands down!

  Every time i can look at a chart using cryptowat.ch i will ! I wish i could see any chart through their platform!

- https://www.coinigy.com Interesting platform which allows you to trade on many different crypto exchanges from the same interface. Very interesting they have an API which also allows you to interact with different markets therefore saving you the time to integrate your system with different APIs
- http://marginsoftware.de Another platform that let's you watch and trade different exchanges at the same time. They also claim to have "automated strategies" but i fail to find out how to create your own strategy, etcs.. Seems promising tough

- Forex, Shares, Precious Metals, [...]

If you fancy trading Forex and Shares using Bitcoin you could trade those markets using on brokers like 1broker.com and simplefx.com.

If you prefer to trade those markets with Fiat Currency (USD / GBP / EUR / ...) You will have to search for the broker that meets all your requirements.

It's very common to hear about interactivebrokers.co.uk among programmers, Quantopian for instance, one of the coolest online platforms for online automated trading can be linked to interactive brokers!

If you are in UK you might want to go the "spread betting" way, in that case i recommend you use ads-securities.co.uk they have really tight spreads and really good customer service! Don't forget to use my code when registering "**LDNRAFF16!**", this will pay bonus back for you and for me once you reach a certain Notional Value trading.

Further Reading

- General stuff

- Modern Portfolio Theory Modern portfolio theory (MPT) is a theory on how risk-averse investors can construct portfolios to optimize or maximize expected return based on a given level of market risk [...] Keep reading on Investopedia

- Books

- Technical Analysis for Dummies A great book for everyone getting into Technical Analysis, definitely an awesome starting point for programmers and traders wanting to grasp the basics automated trading
- Paul Wilmott on Quantitative Finance A classic in the area, super recommended "everywhere", not for everyone i would say.
- Mastering the trade I confess i still didn't finish reading this book i can tell this is definitely quality material, great to understand better the mindset of a trader, which i believe to be as important as your programming skills, this can bring great ideas and influences to your strategies

Online resources

crypto info and news

- coinmarketcap.com
- reddit.com/r/ethtrader
- reddit.com/r/xmrtrader/
    - reddit.com/r/BitcoinMarkets/

(Please let me know if you have suggestions)

trading / charts

- ChartSchool
- Investopedia
- Informed traders youtube channel

- Bitcoin market information and news

- CoinMarketcap
- reddit.com/r/BitcoinMarkets
- reddit.com/r/Ethtrader
- bitcointalk.org

TODO:

- List more sources, youtube channels
- Add discription to links