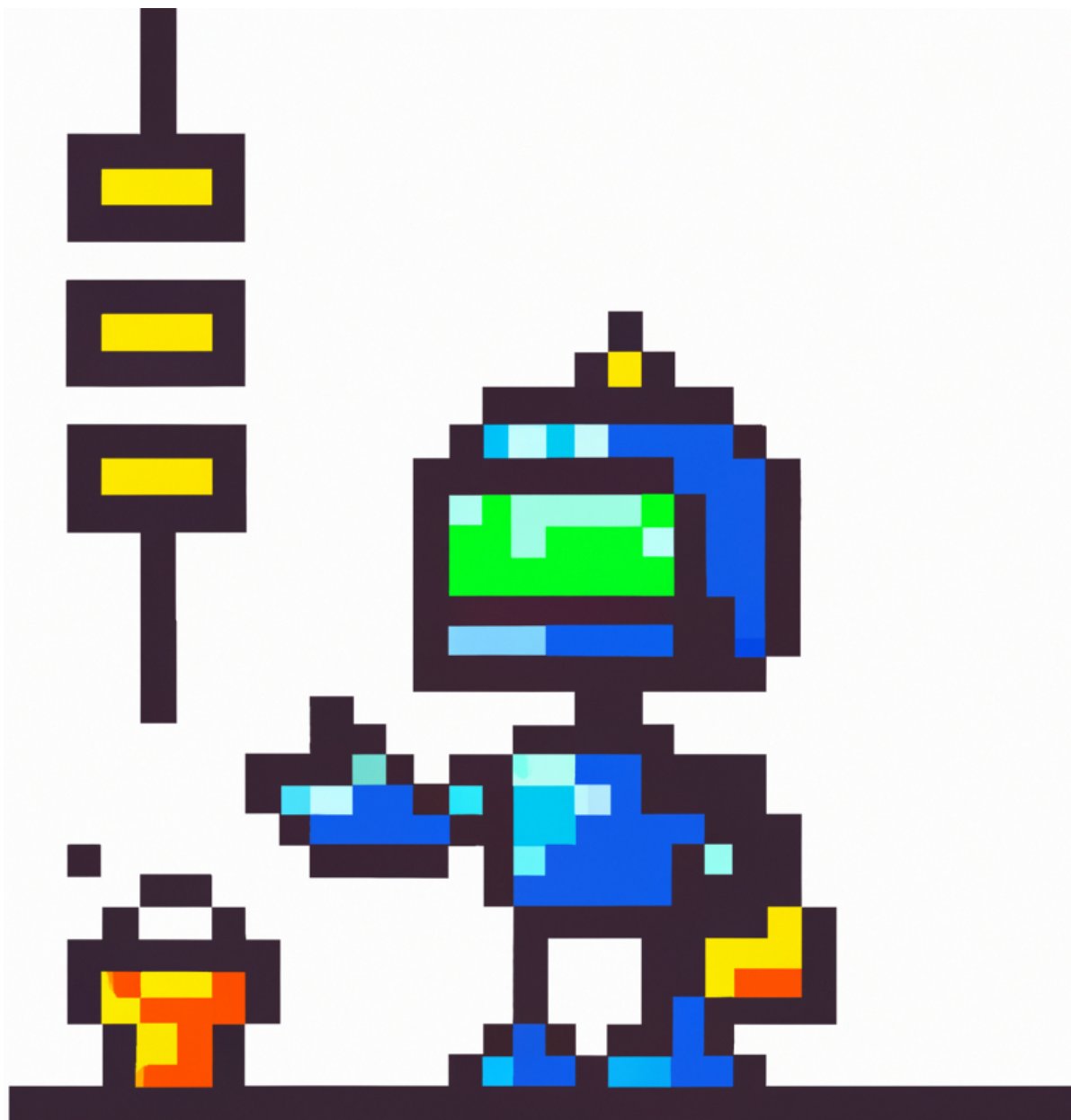


Trading Bot Strategy

“Always ride with the winners”



By **Théo Capelle**

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Description of the strategy

The trading strategy employed by the bot focuses on **identifying winning cryptocurrencies** of the day that are rapidly rising in value. The goal is to **enter positions on these cryptocurrencies** while they are in the **midst of an uptrend**, assuming that they are more likely to continue rising rather than immediately reversing after entry.

To **determine entry conditions**, the bot checks whether the cryptocurrency in question **is a winning asset** and whether it **is in the midst of an uptrend**. If both conditions are met, the bot will enter a position on the cryptocurrency. **Take profit** and **stop loss** will then be placed to close the position.

Description of the problem

❖ How do we identify the winning cryptocurrencies ?

A **winning crypto currency** is a crypto that is listed on binance main page, in the **“Gainers” section**.

❖ How do we identify that the winning assets are in the midst of an uptrend ?

A winning asset in the midst of an uptrend when he has a **big green hourly candle with no wicks**. The **minimum value** of the length of this candle needs to be determined.

❖ How do we identify the best take profit (TP) and stop loss (SL) to close the position ?

To identify the best take profit and stop loss to close the position, we need to **test a range of combinations** of the TP and SL ratios.



We can **conclude** from these answers that there are **3 parameters** we need to **test and optimize**:

- the **hourly candle length** parameter
- the **take profit ratio** parameter
- the **stop loss ratio** parameter

Dataset gathering

Now that we have determined the parameters we are going to test and optimize, we need to create a **large Dataset of fake trades** that has followed this strategy. With such a Dataset, we could **find the best values** for each of these parameters using data analysis.

❖ Metrics needed for each trades

TIME	Date of the trade	<i>String</i>
SYMBOL	Crypto currency symbol	<i>String</i>
ENTER_PRICE	Value of the entry price in \$	<i>Float</i>
TAKE_PROFIT	Value of the take profit in \$	<i>Float</i>
STOP_LOSS	Value of the stop loss in \$	<i>Float</i>
RESULT	Result of the trade	<i>Boolean</i>
HOURLY_CANDLE_LENGTH	Length of the minimal hourly candle	<i>Float</i>
TP_RATIO	Value of the take profit ratio	<i>Float</i>
SL_RATIO	Value of the stop loss ratio	<i>Float</i>
TAB_PRICES	Array of the chronological changes of the prices	<i>Tab[Float]</i>

The most important metric is **TAB_PRICES**. It will allow us to **check others values** for our parameters (Hourly candle length, TP and SL ratios) and then **determine which combination works the best**.

To create such a Dataset, the following **algorithm** (roughly) has been created in python, using the Binance API (the Binance historical data lack of precision and therefore cannot be used):

```
IF not in position
    FOR each winning_assets
        IF winning_asset candle > hourly_candle_length AND no wick
            take the position
IF in position
    IF live price < SL OR live price > TP
        close the position
```

Each trade is then conserved in a **spreadsheet** with all the metrics needed for the data analysis process.

Data Analysis

❖ Metadata

<i>HOURLY_CANDLE LENGHT</i>	> 2%
<i>TP_RATIO</i>	3%
<i>STOP_LOSS_RATIO</i>	2%
<i>number of trades</i>	801

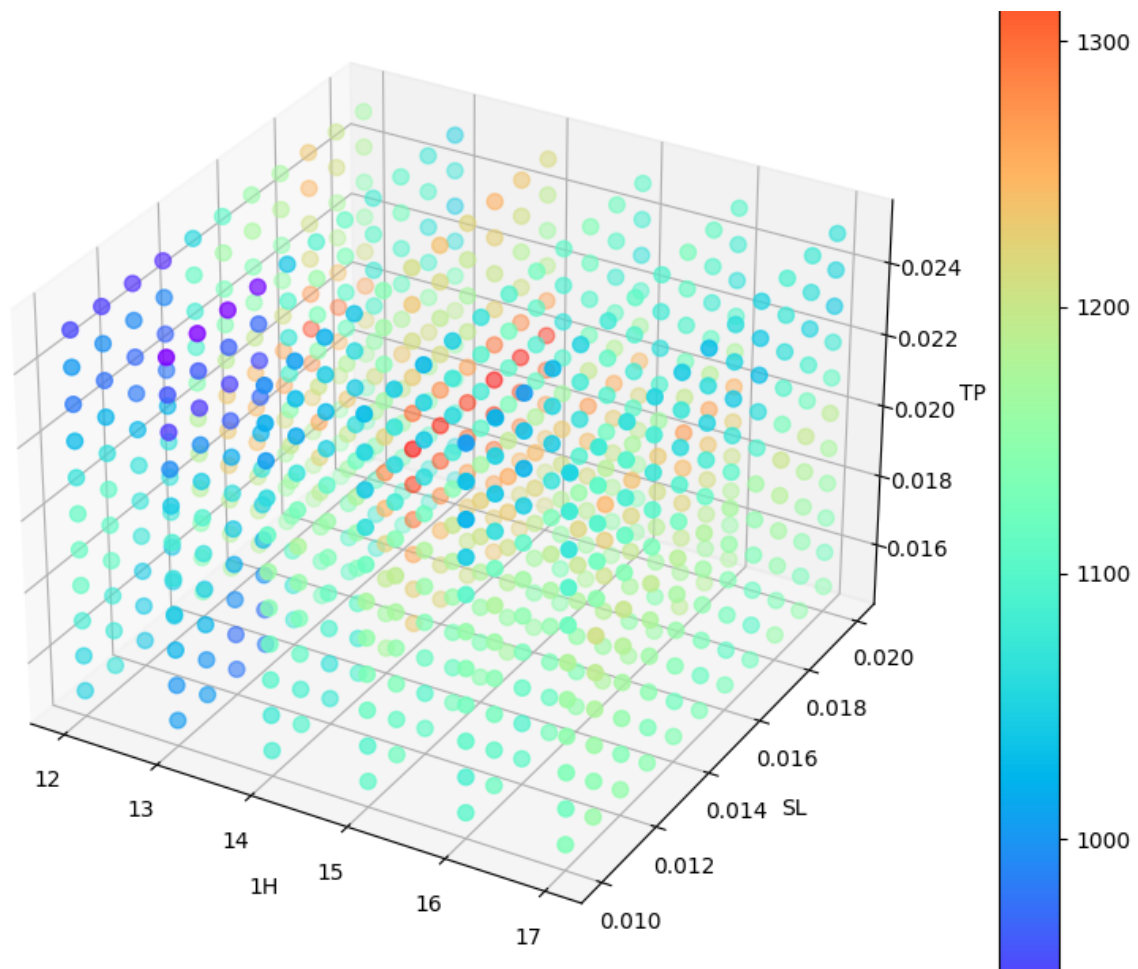
❖ Analysing the datas

Now that the dataset has been gathered and cleaned, we can **calculate** the outcome of **every combination** of these 3 parameters. The parameters exist for the following ranges of values:

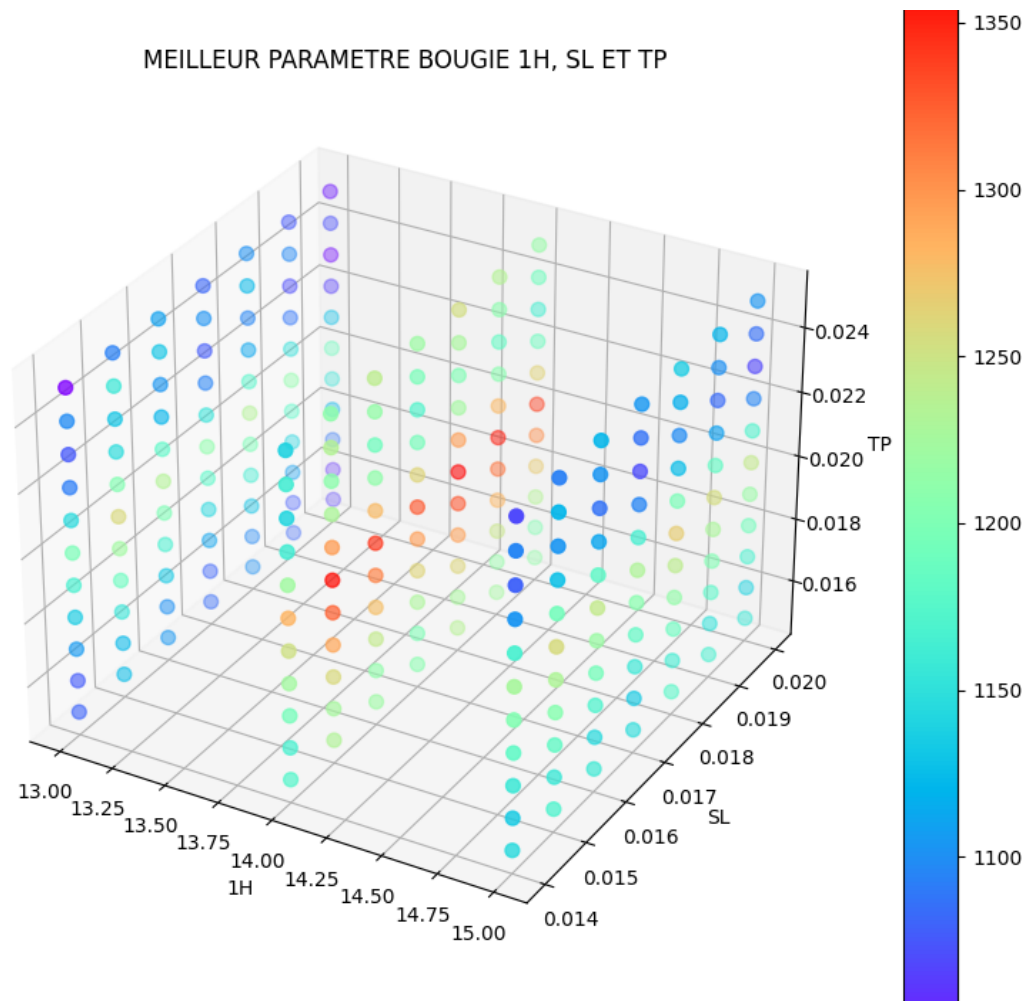
- *TP_RATIO* and *STOP_LOSS_RATIO* : **0** → **[parameter_value]**
- *HOURLY_CANDLE LENGHT* : **[parameter_value]** → **max_value**

To **compare** the result of each of those combinations, we will **simulate** all the trades with **1000\$** and **0.1% fees** and we will compare the **final balance** for each combination.

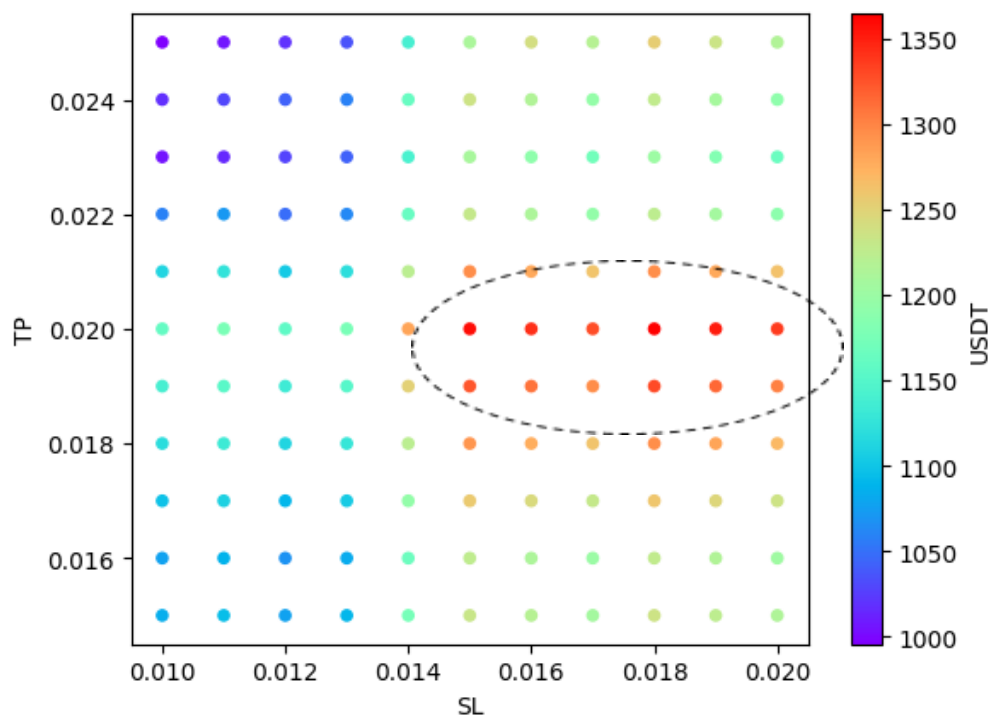
Here is the map that shows the result in color of each combinations :



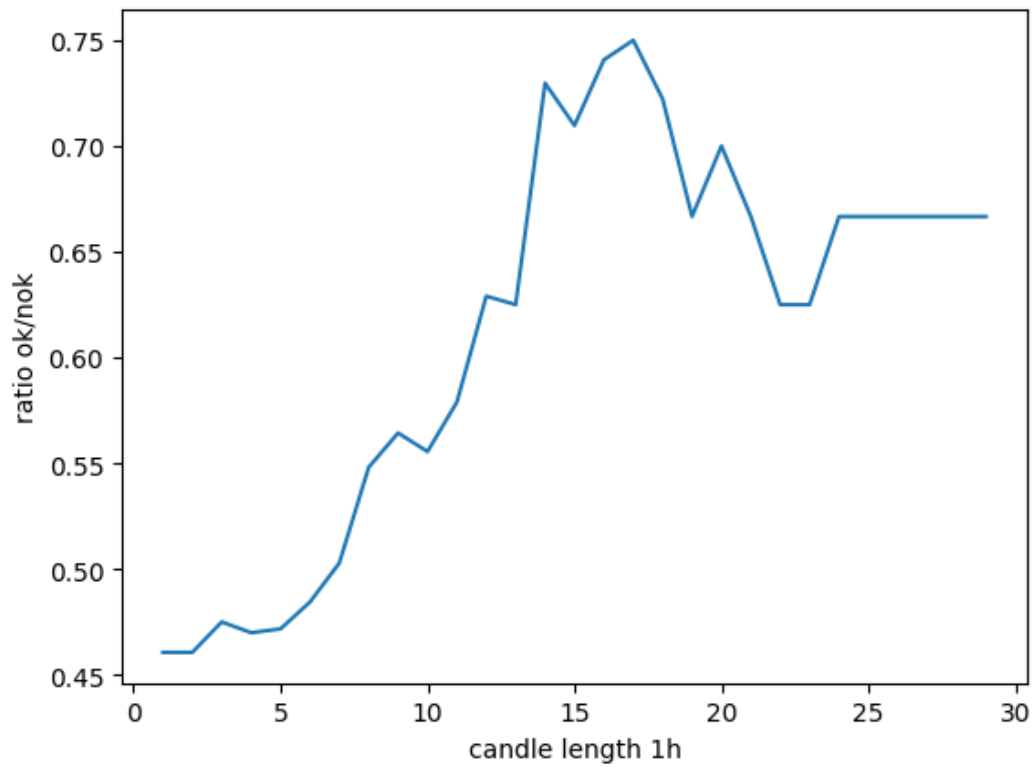
We can detect a **heat zone**. Let's zoom in a little bit:



We can clearly see the area here. Between **13 - 15 hourly**, **0.018 - 0.022 TP** and **0.014 - 0.02 SL**. Here is the 14h slice with the heat zone circled.



Here is a graph showing the **ratio of win and lose depending on the hourly candle length** (with TP and SL as selected above). It shows that **the more the crypto has boomed**, the more chance the trade has to **succeed**. With the peak at near 15.



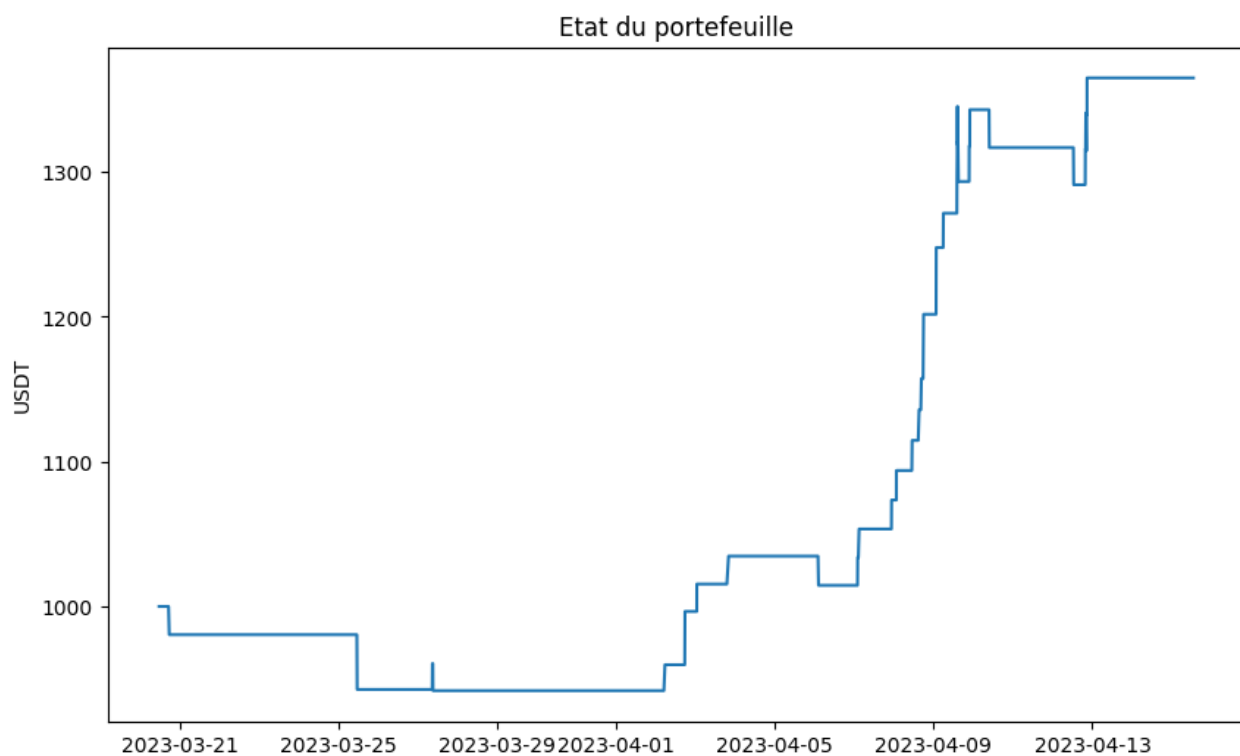
❖ Final result

With these plots and data, we can easily find the best parameters. Here are the **best values** for the strategy, according to this dataset:

HOURLY_CANDLE_LENIGHT	14%
TP_RATIO	2%
STOP_LOSS RATIO	1.8%

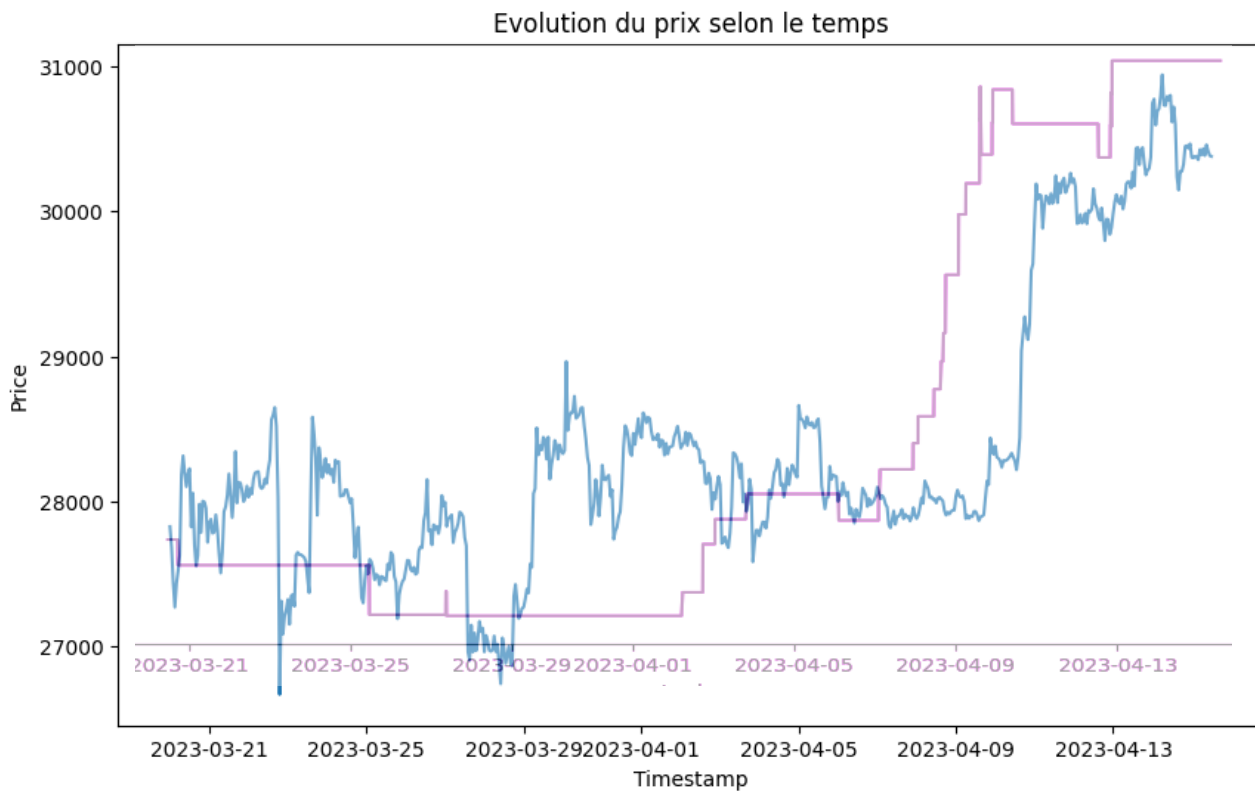
The best values are **not necessarily** the ones who have **performed the best** for these specific trades, but rather those who remain in **the center of the red area**. The ones that performed the best are not always in the center of the heat zone and therefore are **less trustworthy**.

Here is the **evolution of our wallet** with these specific values:



❖ Bitcoin comparison

Here is the **bitcoin chart** on top to compare



These are **very similar**, but we can see that the **wallet starts to rise before bitcoin** prices (as shown in the graph below), so I do think that the strategy is **not dependent on the volatility of bitcoin**. Even so, this would have **outperformed bitcoin** by far.



Results testing **[IN PROGRESS]**

As stated before, here is the **best values** for the **3 parameters** we have, according to our dataset :

HOURLY_CANDLE_LENHT	14%
TP_RATIO	2%
STOP_LOSS RATIO	1.8%

These are the **best values** that have been **determined** based on **one dataset** from March 21 to April 13.

In order to know if these parameters are **not biased** by the dataset and are in fact usable, we need to **test** these parameters on a **new dataset** with similar metadata.

[WIP] gathering of the 'test' dataset. Data is being collected as you read this.

❖ Metadata of the "test" dataset

<i>HOURLY_CANDLE_LENHT</i>	> 2%
<i>TP_RATIO</i>	3%
<i>STOP_LOSS_RATIO</i>	2%
<i>number of trades</i>	

❖ Results