**BTC Final Report**

**Problem:**

We are making an environment in which different person can invest his money on BTC Up dawn graph. We are going to predict BTC Value on next minute. Our system give prediction Buy or Sell and automatically investor amount as well BTC will be change.

**Requirement:**

* Data of BTC from any BTC website after every minutes in csv file
* A Server for save data of prediction
* A person for maintenance
* A web Developer to make front End and Data Base

**Implementation:**

Now we have implemented a sample with testing in which we model for next prediction as well indicator for clarify our prediction. We get data from Binance website [https://www.binance.com/en/markets](https://www.binance.com/en/markets%20) after every minute and update into my csv file by hitting API of binance but we have to face an issue binance block our hit after some time and we require continues data.

**CSV file Structure**

There are 5 columns and access data after every minute.

* Time
* Open
* High
* Low
* Close

**Prediction Case:**

* Strong Buy
* Buy
* Strong Sell
* Sell
* Neutral

**Model:**

We are using LSTM model for prediction and require last 25 value and get next five then predict on one new value.

**LSTM:**

It is special kind of recurrent neural network that is capable of learning long term dependencies in data. This is achieved because the recurring module of the model has a combination of four layers interacting with each other.

**Indicator:**

We use 4 indicators for prediction which are written below:

* [Relative Strength Index](https://www.tradingview.com/ideas/relativestrengthindex/)
* [Stochastic %K](https://www.tradingview.com/ideas/stochastic/)
* Stochastic %D
* [Commodity Channel Index](https://www.tradingview.com/ideas/commoditychannelindex/)
* Exponential Moving Average
* Sample Moving Average

**Relative Strength Index:**

The Relative Strength Index (RSI) is a well versed momentum based oscillator which is used to measure the speed (velocity) as well as the change (magnitude) of directional price movements.

RSI = 100 – 100/ (1 + RS)

RS = Average Gain of n days UP / Average Loss of n days DOWN

change = change(close)

gain = change >= 0 ? change : 0.0

loss = change < 0 ? (-1) \* change : 0.0

avgGain = rma(gain, 14)

avgLoss = rma(loss, 14)

rs = avgGain / avgLoss

rsi = 100 - (100 / (1 + rs))

Decision is taking on RSI

Range is 30 to 70 for Sell and Buy Respectively.

**Stochastic %K:**

The Stochastic Oscillator is a range bound momentum oscillator. The Stochastic indicator is designed to display the location of the close compared to the high/low range over a user defined number of periods. Typically, the Stochastic Oscillator is used for three things: Identifying overbought and oversold levels, spotting divergences and identifying bull and bear set ups or signals.

Stochastics can be broken down into two lines; %K and %D. %K is the percentage of the price at closing (K) within the price range of the number of bars used in the look-back period.

%K = SMA (100 \* (Current Close - Lowest Low) / (Highest High - Lowest Low), smooth K)

Decision on %K

Range is 30 to 70 for Sell and Buy Respectively.

**Stochastic %D:**

%D is a smoothed average of %K, to minimize whipsaws while remaining in the larger trend.'''

%D = SMA (%K, period D)

Lowest Low = The lowest price within the number of recent bars in the look-back period (period K input)  
Highest High = The highest price within the number of recent bars in the look-back period (period K input)

Decision on %D

Range is 30 to 70 for Sell and Buy Respectively.

**Commodity Channel Index:**

The Commodity Channel Index (CCI) is a momentum oscillator used in technical analysis that measures an instrument's variations from its statistical mean.

There are several steps involved in calculating the Commodity Channel Index. The following example is for a typical 20 Period CCI:

CCI = (Typical Price - 20 Period SMA of TP) / (.015 x Mean Deviation)

Typical Price (TP) = (High + Low + Close)/3

Constant = .015

The Constant is set at .015 for scaling purposes. By including the constant, the majority of CCI values will fall within the 100 to -100 range. There are three steps to calculating the Mean Deviation.

1. Subtract the most recent 20 Period Simple Moving from each typical price (TP) for the Period.
2. Sum these numbers strictly using absolute values.
3. Divide the value generated in step 3 by the total number of Periods (20 in this case).

Decision on CCI value

Range is 30 to 70 for Sell and Buy Respectively.

**Simple Moving Average (SMA):**

Simple Moving Average is an unweighted Moving Average. This means that each day in the data set has equal importance and is weighted equally. As each new day ends, the oldest data point is dropped and the newest one is added to the beginning.

**CALCULATION**

An example of a 3 period SMA

Sum of Period Values / Number of Periods  
Closing Prices to be used: 5, 6, 7, 8, 9  
First Day of 3 Period SMA: (5 + 6 + 7) / 3 = 6  
Second Day of 3 Period SMA: (6 + 7 + 8) / 3 = 7  
Third Day of 3 Period SMA: (7 + 8 + 9) /3 = 8

Decision on New value

Increase 50 dollars from previous Buy & decrease then Sell otherwise Neutral

**Exponential Moving Average:**

Exponential Moving Average is very similar to (and is a type of) WMA. The major difference with the EMA is that old data points never leave the average. To clarify, old data points retain a multiplier (albeit declining to almost nothing) even if they are outside of the selected data series length.

###### Calculation

There are three steps to calculate the EMA. Here is the formula for a 5 Period EMA

1. Calculate the SMA

(Period Values / Number of Periods)

2. Calculate the Multiplier

1. / (Number of Periods + 1) therefore (2 / (5+1) = 33.333%

3. Calculate the EMA

For the first EMA, we use the SMA (previous day) instead of EMA (previous day).

EMA = {Close – EMA (previous day)} x multiplier + EMA (previous day)

Decision on New value

Increase 50 dollars from previous Buy & decrease then Sell otherwise Neutral

**Decision:**

We are taking 7 Decision get average of these by making these condition which are written below:

**Strong buy:**

Buy is greater than 4

**Strong Sell:**

Sell is greater than 4

**Buy:**

Buy is greater then Sell or Buy is greater than 2

**Sell:**

Sell is greater then Buy or Sell is greater than 2

**Neutral:**

All other cases are neutral

**Accuracy:**

Our system accuracy to predict next value is more then 85%, For increase more we have to work on it. It will be increase day by day because it requires a minimum one person for maintaince of it. Algorithm value also change time to time by visualizing results.

**Close:**

This project is close in which a user can tell his/her name and initial amount then our predictor System working on it So, his/her investment change according to our decision. I have also made a readme file for implementation.