

# jhTAlib

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## jhTAlib

Technical Analysis Library Time-Series

You can use and import it for your:

- Technical Analysis Software
- Charting Software
- Backtest Software
- Trading Robot Software
- Trading Software in general

Work in progress. . .

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## Depends only on

- The Python Standard Library

---

## Docs

- .html
- .epub
- .json
- .odt
- .pdf
- .rst
- .rtf
- .xml

## Install

From PyPI:

```
$ [sudo] pip3 install jhtalib
```

From source:

```
$ git clone https://github.com/joosthoeks/jhTAlib.git
$ cd jhTAlib
$ [sudo] pip3 install -e .
```

---

## Update

From PyPI:

```
$ [sudo] pip3 install --upgrade jhtalib
```

From source:

```
$ cd jhTAlib
$ git pull [upstream master]
```

---

## Examples

```
$ cd example/
```

### Example 1

```
$ python3 example-1-plot.py
```

or

```
https://colab.research.google.com/github/joosthoeks/jhTAlib/blob/master/  
example/example-1-plot.ipynb
```

---

### Example 2

```
$ python3 example-2-plot.py
```

or

<https://colab.research.google.com/github/joosthoeks/jhTAlib/blob/master/example/example-2-plot.ipynb>

---

### **Example 3**

`$ python3 example-3-plot.py`

or

<https://colab.research.google.com/github/joosthoeks/jhTAlib/blob/master/example/example-3-plot.ipynb>

---

### **Example 4**

`$ python3 example-4-plot-quandl.py`

or

<https://colab.research.google.com/github/joosthoeks/jhTAlib/blob/master/example/example-4-plot-quandl.ipynb>

---

### **Example 5**

`$ python3 example-5-plot-quandl.py`

or

<https://colab.research.google.com/github/joosthoeks/jhTAlib/blob/master/example/example-5-plot-quandl.ipynb>

---

### **Example 6**

`$ python3 example-6-plot-quandl.py`

or

<https://colab.research.google.com/github/joosthoeks/jhTAlib/blob/master/example/example-6-plot-quandl.ipynb>

---

### Example 7

```
$ python3 example-7-quandl-2-df.py
```

or

<https://colab.research.google.com/github/joosthoeks/jhTAlib/blob/master/example/example-7-quandl-2-df.ipynb>

---

### Example 8

```
$ python3 example-8-alphavantage-2-df.py
```

or

<https://colab.research.google.com/github/joosthoeks/jhTAlib/blob/master/example/example-8-alphavantage-2-df.ipynb>

---

### Example 9

```
$ python3 example-9-cryptocompare-2-df.py
```

or

<https://colab.research.google.com/github/joosthoeks/jhTAlib/blob/master/example/example-9-cryptocompare-2-df.ipynb>

---

### Example 10

DF NumPy Pandas

<https://colab.research.google.com/github/joosthoeks/jhTAlib/blob/master/example/example-10-df-numpy-pandas.ipynb>

---

### Test

```
$ cd test/  
$ python3 test.py
```

---

## Reference

```
import jhtalib as jhta
```

### Behavioral Techniques

#### ATH | All Time High | DONE

- dict of lists of floats = jhta.ATH(df, price='High')
- 

#### LMC | Last Major Correction | DONE

- dict of lists of floats = jhta.LMC(df, price='Low')
- 

#### PP | Pivot Point | DONE

- dict of lists of floats = jhta.PP(df)
  - [https://en.wikipedia.org/wiki/Pivot\\_point\\_\(technical\\_analysis\)](https://en.wikipedia.org/wiki/Pivot_point_(technical_analysis))
- 

#### FIBOPR | Fibonacci Price Retracements | DONE

- dict of lists of floats = jhta.FIBOPR(df, price='Close')
- 

#### FIBTR | Fibonacci Time Retracements |

- 
- 

#### GANNPR | W. D. Gann Price Retracements | DONE

- dict of lists of floats = jhta.GANNPR(df, price='Close')
- 

#### GANNTR | W. D. Gann Time Retracements |

- 
-

### JDN | Julian Day Number | DONE

- `jdn = jhta.JDN(utc_year, utc_month, utc_day)`
  - [https://en.wikipedia.org/wiki/Julian\\_day](https://en.wikipedia.org/wiki/Julian_day)
- 

### JD | Julian Date | DONE

- `jd = jhta.JD(utc_year, utc_month, utc_day, utc_hour, utc_minute, utc_second)`
  - [https://en.wikipedia.org/wiki/Julian\\_day](https://en.wikipedia.org/wiki/Julian_day)
- 

### SUNC | Sun Cycle |

- 
- 

### MERCURYC | Mercury Cycle |

- 
- 

### VENUSC | Venus Cycle |

- 
- 

### EARTHHC | Earth Cycle |

- 
- 

### MARSC | Mars Cycle |

- 
-

**JUPITERC | Jupiter Cycle |**

- 

---

**SATURNC | Saturn Cycle |**

- 

---

**URANUSC | Uranus Cycle |**

- 

---

**NEPTUNEC | Neptune Cycle |**

- 

---

**PLUTO C | Pluto Cycle |**

- 

---

**MOONC | Moon Cycle |**

- 

---

**Candlestick**

**CDLBODYYS | Candle Body Size | DONE**

- list of floats = jhta.CDLBODYYS(df)
- <https://www.tradeciety.com/understand-candlesticks-patterns/>

---



### **CDLWICKS | Candle Wick Size | DONE**

- `list of floats = jhta.CDLWICKS(df)`
  - <https://www.tradeciety.com/understand-candlesticks-patterns/>
- 

### **CDLUPPSHAS | Candle Upper Shadow Size | DONE**

- `list of floats = jhta.CDLUPPSHAS(df)`
  - <https://www.tradeciety.com/understand-candlesticks-patterns/>
- 

### **CDLLOWSHAS | Candle Lower Shadow Size | DONE**

- `list of floats = jhta.CDLLOWSHAS(df)`
  - <https://www.tradeciety.com/understand-candlesticks-patterns/>
- 

### **CDLBODYP | Candle Body Percent | DONE**

- `list of floats = jhta.CDLBODYP(p)`
- 

### **CDLBODYM | Candle Body Momentum | DONE**

- `list of floats = jhta.CDLBODYM(df, n)`
  - book: Trading Systems and Methods
- 

### **QSTICK | Qstick | DONE**

- `list of floats = jhta.QSTICK(df, n)`
  - <https://www.fmlabs.com/reference/default.htm?url=Qstick.htm>
-

### **SHADOWT | Shadow Trends | DONE**

- dict of lists of floats = `jhta.SHADOWT(df, n)`
  - book: The New Technical Trader
- 

### **IMI | Intraday Momentum Index | DONE**

- list of floats = `jhta.IMI(df)`
  - <https://www.fmlabs.com/reference/default.htm?url=IMI.htm>
- 

### **Cycle Indicators**

#### **HT\_DCPERIOD | Hilbert Transform - Dominant Cycle Period |**

- 
- 

#### **HT\_DCPHASE | Hilbert Transform - Dominant Cycle Phase |**

- 
- 

#### **HT\_PHASOR | Hilbert Transform - Phasor Components |**

- 
- 

#### **HT\_SINE | Hilbert Transform - SineWave |**

- 
- 

#### **HT\_TRENDLINE | Hilbert Transform - Instantaneous Trendline |**

- 
-

## HT\_TRENDMODE | Hilbert Transform - Trend vs Cycle Mode |

- 
- 

## TS | Trend Score | DONE

- list of floats = `jhta.TS(df, n, price='Close')`
  - <https://www.fmlabs.com/reference/default.htm?url=TrendScore.htm>
- 

## Data

### CSV2DF | CSV file 2 DataFeed | DONE

- dict of tuples of floats = `jhta.CSV2DF(csv_file_path)`
- 

### CSVURL2DF | CSV file url 2 DataFeed | DONE

- dict of tuples of floats = `jhta.CSVURL2DF(csv_file_url)`
- 

### DF2CSV | DataFeed 2 CSV file | DONE

- csv file = `jhta.DF2CSV(df, csv_file_path)`
- 

### DF2DFREV | DataFeed 2 DataFeed Reversed | DONE

- dict of tuples of floats = `jhta.DF2DFREV(df)`
- 

### DF2DFWIN | DataFeed 2 DataFeed Window | DONE

- dict of tuples of floats = `jhta.DF2DFWIN(df, start=0, end=10)`
-

#### **DF\_HEAD | DataFeed HEAD | DONE**

- dict of tuples of floats = `jhta.DF_HEAD(df, n=5)`
- 

#### **DF\_TAIL | DataFeed TAIL | DONE**

- dict of tuples of floats = `jhta.DF_TAIL(df, n=5)`
- 

#### **DF2HEIKIN\_ASHI | DataFeed 2 Heikin-Ashi DataFeed | DONE**

- dict of tuples of floats = `jhta.DF2HEIKIN_ASHI(df)`
- 

#### **Event Driven**

##### **ASI | Accumulation Swing Index (J. Welles Wilder) | DONE**

- list of floats = `jhta.ASI(df, L)`
  - book: New Concepts in Technical Trading Systems
- 

##### **SI | Swing Index (J. Welles Wilder) | DONE**

- list of floats = `jhta.SI(df, L)`
  - book: New Concepts in Technical Trading Systems
- 

#### **Experimental**

##### **JH\_SAVGP | Swing Average Price - previous Average Price | DONE**

- list of floats = `jhta.JH_SAVGP(df)`
-

**JH\_SAVGPS | Swing Average Price - previous Average Price Summation | DONE**

- list of floats = `jhta.JH_SAVGPS(df)`
- 

**JH\_SCO | Swing Close - Open | DONE**

- list of floats = `jhta.JH_SCO(df)`
- 

**JH\_SCOS | Swing Close - Open Summation | DONE**

- list of floats = `jhta.JH_SCOS(df)`
- 

**JH\_SMEDP | Swing Median Price - previous Median Price | DONE**

- list of floats = `jhta.JH_SMEDP(df)`
- 

**jh\_SMEDPS | Swing Median Price - previous Median Price Summation | DONE**

- list of floats = `jhta.JH_SMEDPS(df)`
- 

**JH\_SPP | Swing Price - previous Price | DONE**

- list of floats = `jhta.JH_SPP(df, price='Close')`
- 

**JH\_SPPS | Swing Price - previous Price Summation | DONE**

- list of floats = `jhta.JH_SPPS(df, price='Close')`
-

### **JH\_STYPP | Swing Typical Price - previous Typical Price | DONE**

- list of floats = jhta.JH\_STYPP(df)
- 

### **JH\_STYPPS | Swing Typical Price - previous Typical Price Summation | DONE**

- list of floats = jhta.JH\_STYPPS(df)
- 

### **JH\_SWCLP | Swing Weighted Close Price - previous Weighted Close Price | DONE**

- list of floats = jhta.JH\_SWCLP(df)
- 

### **JH\_SWCLPS | Swing Weighted Close Price - previous Weighted Close Price Summation | DONE**

- list of floats = jhta.JH\_SWCLPS(df)
- 

## **General**

### **NORMALIZE | Normalize | DONE**

- list of floats = jhta.NORMALIZE(df, price\_max='High', price\_min='Low', price='Close')
  - <https://machinelearningmastery.com/normalize-standardize-time-series-data-python/>
- 

### **STANDARDIZE | Standardize | DONE**

- list of floats = jhta.STANDARDIZE(df, price='Close')
  - <https://machinelearningmastery.com/normalize-standardize-time-series-data-python/>
-

#### **SPREAD | Spread | DONE**

- `list of floats = jhta.SPREAD(df1, df2, price1='Close', price2='Close')`
- 

#### **CP | Comparative Performance | DONE**

- `list of floats = jhta.CP(df1, df2, price1='Close', price2='Close')`
  - <https://www.fmlabs.com/reference/default.htm?url=CompPerformance.htm>
- 

#### **CRSI | Comparative Relative Strength Index | DONE**

- `list of floats = jhta.CRSI(df1, df2, n, price1='Close', price2='Close')`
  - <https://www.fmlabs.com/reference/default.htm?url=RSIC.htm>
- 

#### **CS | Comparative Strength | DONE**

- `list of floats = jhta.CS(df1, df2, price1='Close', price2='Close')`
  - <https://www.fmlabs.com/reference/default.htm?url=CompStrength.htm>
- 

#### **HR | Hit Rate / Win Rate | DONE**

- `float = jhta.HR(hit_trades_int, total_trades_int)`
  - <http://traderskillset.com/hit-rate-stock-trading/>
- 

#### **PLR | Profit/Loss Ratio | DONE**

- `float = jhta.PLR(mean_trade_profit_float, mean_trade_loss_float)`
  - [https://www.investopedia.com/terms/p/profit\\_loss\\_ratio.asp](https://www.investopedia.com/terms/p/profit_loss_ratio.asp)
-

### **EV | Expected Value | DONE**

- `float = jhta.EV(hittrade_float, mean_trade_profit_float, mean_trade_loss_float)`
  - [https://en.wikipedia.org/wiki/Expected\\_value](https://en.wikipedia.org/wiki/Expected_value)
- 

### **POR | Probability of Ruin (Table of Lucas and LeBeau) | DONE**

- `int = jhta.POR(hittrade_float, profit_loss_ratio_float)`
  - book: Computer Analysis of the Futures Markets
- 

### **Information**

#### **INFO | Print df Information | DONE**

- `print = jhta.INFO(df, price='Close')`
- 

#### **INFO\_TRADES | Print Trades Information | DONE**

- `print = jhta.INFO_TRADES(profit_trades_list, loss_trades_list)`
- 

### **Math Functions**

#### **EXP | Exponential | DONE**

- `list of floats = jhta.EXP(df, price='Close')`
- 

#### **LOG | Logarithm | DONE**

- `list of floats = jhta.LOG(df, price='Close')`
- 

#### **LOG10 | Base-10 Logarithm | DONE**

- `list of floats = jhta.LOG10(df, price='Close')`
-



#### **SQRT | Square Root | DONE**

- `list of floats = jhta.SQRT(df, price='Close')`
- 

#### **ACOS | Arc Cosine | DONE**

- `list of floats = jhta.ACOS(df, price='Close')`
- 

#### **ASIN | Arc Sine | DONE**

- `list of floats = jhta.ASIN(df, price='Close')`
- 

#### **ATAN | Arc Tangent | DONE**

- `list of floats = jhta.ATAN(df, price='Close')`
- 

#### **COS | Cosine | DONE**

- `list of floats = jhta.COS(df, price='Close')`
- 

#### **SIN | Sine | DONE**

- `list of floats = jhta.SIN(df, price='Close')`
- 

#### **TAN | Tangent | DONE**

- `list of floats = jhta.TAN(df, price='Close')`
- 

#### **ACOSH | Inverse Hyperbolic Cosine | DONE**

- `list of floats = jhta.ACOSH(df, price='Close')`
-

#### **ASINH | Inverse Hyperbolic Sine | DONE**

- `list of floats = jhta.ASINH(df, price='Close')`
- 

#### **ATANH | Inverse Hyperbolic Tangent | DONE**

- `list of floats = jhta.ATANH(df, price='Close')`
- 

#### **COSH | Hyperbolic Cosine | DONE**

- `list of floats = jhta.COSH(df, price='Close')`
- 

#### **SINH | Hyperbolic Sine | DONE**

- `list of floats = jhta.SINH(df, price='Close')`
- 

#### **TANH | Hyperbolic Tangent | DONE**

- `list of floats = jhta.TANH(df, price='Close')`
- 

#### **PI | Mathematical constant PI | DONE**

- `float = jhta.PI()`
- 

#### **E | Mathematical constant E | DONE**

- `float = jhta.E()`
- 

#### **TAU | Mathematical constant TAU | DONE**

- `float = jhta.TAU()`
-

**PHI | Mathematical constant PHI | DONE**

- `float = jhta.PHI()`
- 

**CEIL | Ceiling | DONE**

- `list of floats = jhta.CEIL(df, price='Close')`
- 

**FLOOR | Floor | DONE**

- `list of floats = jhta.FLOOR(df, price='Close')`
- 

**DEGREES | Radians to Degrees | DONE**

- `list of floats = jhta.DEGREES(df, price='Close')`
- 

**RADIANS | Degrees to Radians | DONE**

- `list of floats = jhta.RADIANS(df, price='Close')`
- 

**ADD | Addition High + Low | DONE**

- `list of floats = jhta.ADD(df)`
- 

**DIV | Division High / Low | DONE**

- `list of floats = jhta.DIV(df)`
- 

**MAX | Highest value over a specified period | DONE**

- `list of floats = jhta.MAX(df, n, price='Close')`
-

**MAXINDEX** | Index of highest value over a specified period |

- 

---

**MIN** | Lowest value over a specified period | **DONE**

- `list of floats = jhta.MIN(df, n, price='Close')`

---

**MININDEX** | Index of lowest value over a specified period |

- 

---

**MINMAX** | Lowest and Highest values over a specified period |

- 

---

**MINMAXINDEX** | Indexes of lowest and highest values over a specified period |

- 

---

**MULT** | Multiply High \* Low | **DONE**

- `list of floats = jhta.MULT(df)`

---

**SUB** | Subtraction High - Low | **DONE**

- `list of floats = jhta.SUB(df)`

---

**SUM** | Summation | **DONE**

- `list of floats = jhta.SUM(df, n, price='Close')`

---

## Momentum Indicators

### ADX | Average Directional Movement Index |

- 
- 

### ADXR | Average Directional Movement Index Rating |

- 
- 

### APO | Absolute Price Oscillator | DONE

- `list of floats = jhta.APO(df, n_fast, n_slow, price='Close')`
  - <https://www.fmlabs.com/reference/default.htm?url=PriceOscillator.htm>
- 

### AROON | Aroon |

- 
- 

### AROONOSC | Aroon Oscillator |

- 
- 

### BOP | Balance Of Power |

- 
- 

### CCI | Commodity Channel Index |

- 
-

CMO | Chande Momentum Oscillator |

- 

---

DX | Directional Movement Index |

- 

---

MACD | Moving Average Convergence/Divergence |

- 

---

MACDEXT | MACD with controllable MA type |

- 

---

MACDFIX | Moving Average Convergence/Divergence Fix 12/26 |

- 

---

MFI | Money Flow Index |

- 

---

MINUS\_DI | Minus Directional Indicator |

- 

---

MINUS\_DM | Minus Directional Movement |

- 

---

#### **MOM | Momentum | DONE**

- `list of floats = jhta.MOM(df, n, price='Close')`
  - <https://www.fmlabs.com/reference/default.htm?url=Momentum.htm>
- 

#### **PLUS\_DI | Plus Directional Indicator |**

- 
- 

#### **PLUS\_DM | Plus Directional Movement |**

- 
- 

#### **PPO | Percentage Price Oscillator |**

- 
- 

#### **RMI | Relative Momentum Index | DONE**

- `list of floats = jhta.RMI(df, n, price='Close')`
  - <https://www.fmlabs.com/reference/default.htm?url=RMI.htm>
- 

#### **ROC | Rate of Change | DONE**

- `list of floats = jhta.ROC(df, n, price='Close')`
- 

#### **ROCP | Rate of Change Percentage | DONE**

- `list of floats = jhta.ROCP(df, n, price='Close')`
-

### **ROCR | Rate of Change Ratio | DONE**

- `list of floats = jhta.ROCR(df, n, price='Close')`
- 

### **ROCR100 | Rate of Change Ratio 100 scale | DONE**

- `list of floats = jhta.ROCR100(df, n, price='Close')`
  - <https://www.fmlabs.com/reference/default.htm?url=RateOfChange.htm>
- 

### **RSI | Relative Strength Index | DONE**

- `list of floats = jhta.RSI(df, n, price='Close')`
  - <https://www.fmlabs.com/reference/default.htm?url=rsi.htm>
- 

### **STOCH | Stochastic | DONE**

- `list of floats = jhta.STOCH(df, n, price='Close')`
  - <https://www.fmlabs.com/reference/default.htm?url=Stochastic.htm>
- 

### **STOCHF | Stochastic Fast |**

- 
- 

### **STOCHRSI | Stochastic Relative Strength Index |**

- 
- 

### **TRIX | 1-day Rate-Of-Change (ROC) of a Triple Smooth EMA |**

- 
-



## **ULTOSC | Ultimate Oscillator |**

- 
- 

## **WILLR | Williams' %R | DONE**

- `list of floats = jhta.WILLR(df, n)`
  - <https://www.fmlabs.com/reference/default.htm?url=WilliamsR.htm>
- 

## **Overlap Studies**

### **BBANDS | Bollinger Bands | DONE**

- `dict of lists of floats = jhta.BBANDS(df, n, f=2)`
  - <https://www.fmlabs.com/reference/default.htm?url=Bollinger.htm>
- 

### **BBANDW | Bollinger Band Width | DONE**

- `list of floats = jhta.BBANDW(df, n, f=2)`
  - <https://www.fmlabs.com/reference/default.htm?url=BollingerWidth.htm>
- 

## **DEMA | Double Exponential Moving Average |**

- 
- 

## **EMA | Exponential Moving Average | DONE**

- `list of floats = jhta.EMA(df, n, price='Close')`
  - <https://www.fmlabs.com/reference/default.htm?url=ExpMA.htm>
-

#### **ENVP | Envelope Percent | DONE**

- dict of lists of floats = `jhta.ENVP(df, pct=.01, price='Close')`
  - <https://www.fmlabs.com/reference/default.htm?url=EnvelopePct.htm>
- 

#### **KAMA | Kaufman Adaptive Moving Average |**

- 
- 

#### **MA | Moving Average |**

- 
- 

#### **MAMA | MESA Adaptive Moving Average |**

- 
- 

#### **MAVP | Moving Average with Variable Period |**

- 
- 

#### **MIDPOINT | MidPoint over period | DONE**

- list of floats = `jhta.MIDPOINT(df, n, price='Close')`
  - <http://www.tadoc.org/indicator/MIDPOINT.htm>
- 

#### **MIDPRICE | MidPoint Price over period | DONE**

- list of floats = `jhta.MIDPRICE(df, n)`
  - <http://www.tadoc.org/indicator/MIDPRICE.htm>
-

### **MMR | Mayer Multiple Ratio | DONE**

- `list of floats = jhta.MMR(df, n=200, price='Close')`
  - <https://www.theinvestorspodcast.com/bitcoin-mayer-multiple/>
- 

### **SAR | Parabolic SAR | DONE**

- `list of floats = jhta.SAR(df, af_step=.02, af_max=.2)`
  - book: New Concepts in Technical Trading Systems
- 

### **SAREXT | Parabolic SAR - Extended |**

- 
- 

### **SMA | Simple Moving Average | DONE**

- `list of floats = jhta.SMA(df, n, price='Close')`
  - <https://www.fmlabs.com/reference/default.htm?url=SimpleMA.htm>
- 

### **T3 | Triple Exponential Moving Average (T3) |**

- 
- 

### **TEMA | Triple Exponential Moving Average |**

- 
- 

### **TRIMA | Triangular Moving Average | DONE**

- `list of floats = jhta.TRIMA(df, n, price='Close')`
  - <https://www.fmlabs.com/reference/default.htm?url=TriangularMA.htm>
-

WMA | Weighted Moving Average

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## Pattern Recognition

CDL2CROWS | Two Crows |

CDL3BLACKCROWS | Three Black Crows |

CDL3INSIDE | Three Inside Up/Down |

CDL3LINESTRIKE | Three-Line Strike |

CDL3OUTSIDE | Three Outside Up/Down |

CDL3STARSINSOUTH | Three Stars In The South |

CDL3WHITESOLDIERS | Three Advancing White Soldiers |

CDLABANDONEDBABY | Abandoned Baby |

CDLADVANCEBLOCK | Advance Block |

CDLBELTHOLD | Belt-hold |

CDLBREAKAWAY | Breakaway |

CDLCLOSINGMARUBOZU | Closing Marubozu |

CDLCONSEALBABYSWALL | Concealing Baby Swallow |

CDLCOUNTERATTACK | Counterattack |

CDLDARKCLOUDCOVER | Dark Cloud Cover |

CDLDOJI | Doji |

CDLDOJISTAR | Doji Star |

CDLDRAGONFLYDOJI | Dragonfly Doji |

CDLENGULFING | Engulfing Pattern |

CDLEVENINGDOJISTAR | Evening Doji Star |

CDLEVENINGSTAR | Evening Star |

CDLGAPSIDESIDEWHITE | Up/Down-gap side-by-side white lines  
|

CDLGRAVESTONEDOJI | Gravestone Doji |

CDLHAMMER | Hammer |

CDLHANGINGMAN | Hanging Man |

CDLHARAMI | Harami Pattern |

CDLHARAMICROSS | Harami Cross Pattern |

CDLHIGHWAVE | High-Wave Candle |

CDLHIKKAKE | Hikkake Pattern |

CDLHIKKAKEMOD | Modified Hikkake Pattern |

CDLHOMINGPIGEON | Homing Pigeon |

CDLIDENTICAL3CROWS | Identical Three Crows |

**CDLINNECK | In-Neck Pattern |**

**CDLINVERTEDHAMMER | Inverted Hammer |**

**CDLKICKING | Kicking |**

**CDLKICKINGBYLENGTH | Kicking - bull/bear determined by the longer marubozu |**

**CDLLADDERBOTTOM | Ladder Bottom |**

**CDLLONGLEGGEDDOJI | Long Legged Doji |**

**CDLLONGLINE | Long Line Candle |**

**CDLMARUBOZU | Marubozu |**

**CDLMATCHINGLOW | Matching Low |**

**CDLMATHOLD | Mat Hold |**

**CDLMORNINGDOJISTAR | Morning Doji Star |**

**CDLMORNINGSTAR | Morning Star |**

**CDLONNECK | On-Neck Pattern |**

**CDLPIERCING | Piercing Pattern |**

**CDLRICKSHAWMAN | Rickshaw Man |**

**CDLRISEFALL3METHODS | Rising/Falling Three Methods |**

**CDLSEPARATINGLINES | Separating Lines |**

**CDLSHOOTINGSTAR** | Shooting Star |

**CDLSHORTLINE** | Short Line Candle |

**CDLSPINNINGTOP** | Spinning Top |

**CDLSTALLEDPATTERN** | Stalled Pattern |

**CDLSTICKSANDWICH** | Stick Sandwich |

**CDLTAKURI** | Takuri (Dragonfly Doji with very long lower shadow)  
|

**CDLTASUKIGAP** | Tasuki Gap |

**CDLTHRUSTING** | Thrusting Pattern |

**CDLTRISTAR** | Tristar Pattern |

**CDLUNIQUE3RIVER** | Unique 3 River |

**CDLUPSIDEGAP2CROWS** | Upside Gap Two Crows |

**CDLXSIDEGAP3METHODS** | Upside/Downside Gap Three Methods |

**Price Transform**

**AVGPRICE** | Average Price | **DONE**

- `list of floats = jhta.AVGPRICE(df)`
  - <https://www.fmlabs.com/reference/default.htm?url=AvgPrices.htm>
-

### **MEDPRICE | Median Price | DONE**

- `list of floats = jhta.MEDPRICE(df)`
  - <https://www.fmlabs.com/reference/default.htm?url=MedianPrices.htm>
- 

### **TYPPRICE | Typical Price | DONE**

- `list of floats = jhta.TYPPRICE(df)`
  - <https://www.fmlabs.com/reference/default.htm?url=TypicalPrices.htm>
- 

### **WCLPRICE | Weighted Close Price | DONE**

- `list of floats = jhta.WCLPRICE(df)`
  - <https://www.fmlabs.com/reference/default.htm?url=WeightedCloses.htm>
- 

## **Statistic Functions**

### **MEAN | Arithmetic mean (average) of data | DONE**

- `list of floats = jhta.MEAN(df, n, price='Close')`
- 

### **HARMONIC\_MEAN | Harmonic mean of data | DONE**

- `list of floats = jhta.HARMONIC_MEAN(df, n, price='Close')`
- 

### **MEDIAN | Median (middle value) of data | DONE**

- `list of floats = jhta.MEDIAN(df, n, price='Close')`
- 

### **MEDIAN\_LOW | Low median of data | DONE**

- `list of floats = jhta.MEDIAN_LOW(df, n, price='Close')`
-



**MEDIAN\_HIGH | High median of data | DONE**

- `list of floats = jhta.MEDIAN_HIGH(df, n, price='Close')`
- 

**MEDIAN\_GROUPED | Median, or 50th percentile, of grouped data | DONE**

- `list of floats = jhta.MEDIAN_GROUPED(df, n, price='Close', interval=1)`
- 

**MODE | Mode (most common value) of discrete data | DONE**

- `list of floats = jhta.MODE(df, n, price='Close')`
- 

**PSTDEV | Population standard deviation of data | DONE**

- `list of floats = jhta.PSTDEV(df, n, price='Close', mu=None)`
- 

**PVARIANCE | Population variance of data | DONE**

- `list of floats = jhta.PVARIANCE(df, n, price='Close', mu=None)`
- 

**STDEV | Sample standard deviation of data | DONE**

- `list of floats = jhta.STDEV(df, n, price='Close', xbar=None)`
- 

**VARIANCE | Sample variance of data | DONE**

- `list of floats = jhta.VARIANCE(df, n, price='Close', xbar=None)`
-

### COV | Covariance | DONE

- `float = jhta.COV(list1, list2)`
  - [https://en.wikipedia.org/wiki/Algorithms\\_for\\_calculating\\_variance#Covariance](https://en.wikipedia.org/wiki/Algorithms_for_calculating_variance#Covariance)
- 

### COVARIANCE | Covariance | DONE

- `list of floats = jhta.COVARANCE(df1, df2, n, price1='Close', price2='Close')`
  - [https://en.wikipedia.org/wiki/Algorithms\\_for\\_calculating\\_variance#Covariance](https://en.wikipedia.org/wiki/Algorithms_for_calculating_variance#Covariance)
- 

### COR | Correlation | DONE

- `float = jhta.COR(list1, list2)`
- 

### CORRELATION | Correlation | DONE

- `list of floats = jhta.CORRELATION(df1, df2, n, price1='Close', price2='Close')`
- 

### PCOR | Population Correlation | DONE

- `float = jhta.PCOR(list1, list2)`
- 

### PCORRELATION | Population Correlation | DONE

- `list of floats = jhta.PCORRELATION(df1, df2, n, price1='Close', price2='Close')`
-

### **BETA | Beta | DONE**

- `float = jhta.BETA(list1, list2)`
  - [https://en.wikipedia.org/wiki/Beta\\_\(finance\)](https://en.wikipedia.org/wiki/Beta_(finance))
- 

### **BETAS | Betas | DONE**

- `list of floats = jhta.BETAS(df1, df2, n, price1='Close', price2='Close')`
  - [https://en.wikipedia.org/wiki/Beta\\_\(finance\)](https://en.wikipedia.org/wiki/Beta_(finance))
- 

### **LSR | Least Squares Regression | DONE**

- `list of floats = jhta.LSR(df, price='Close', predictions_int=0)`
  - <https://www.mathsisfun.com/data/least-squares-regression.html>
- 

### **SLR | Simple Linear Regression | DONE**

- `list of floats = jhta.SLR(df, price='Close', predictions_int=0)`
  - <https://machinelearningmastery.com/implement-simple-linear-regression-scratch-python/>
- 

### **Uncategorised**

#### **Volatility Indicators**

### **ATR | Average True Range | DONE**

- `list of floats = jhta.ATR(df, n)`
  - <https://www.fmlabs.com/reference/default.htm?url=ATR.htm>
- 

### **NATR | Normalized Average True Range |**

- 
-

### **RVI | Relative Volatility Index | DONE**

- `list of floats = jhta.RVI(df, n)`
  - <https://www.fmlabs.com/reference/default.htm?url=RVI.htm>
- 

### **INERTIA | Inertia |**

- 
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### **TRANGE | True Range | DONE**

- `list of floats = jhta.TRANGE(df)`
  - <https://www.fmlabs.com/reference/default.htm?url=TR.htm>
- 

### **Volume Indicators**

#### **AD | Chaikin A/D Line | DONE**

- `list of floats = jhta.AD(df)`
  - <https://www.fmlabs.com/reference/default.htm?url=AccumDist.htm>
- 

#### **ADOSC | Chaikin A/D Oscillator |**

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- 

#### **OBV | On Balance Volume | DONE**

- `list of floats = jhta.OBV(df)`
  - <https://www.fmlabs.com/reference/default.htm?url=OBV.htm>
-