

MOVING AVERAGE

UTKARSHA GUPTA

MT19DCS002

- ▶ A moving average (MA) is a widely used indicator in **technical analysis** that helps smooth out price from random short-term price fluctuations. It is a trend-following, or **lagging**, indicator because it is based on past prices.
- ▶ Simple Moving Average(SMA) is the simple average of a security over a defined number of time periods

$$SMA = \frac{A_1 + A_2 + \dots + A_n}{n}$$

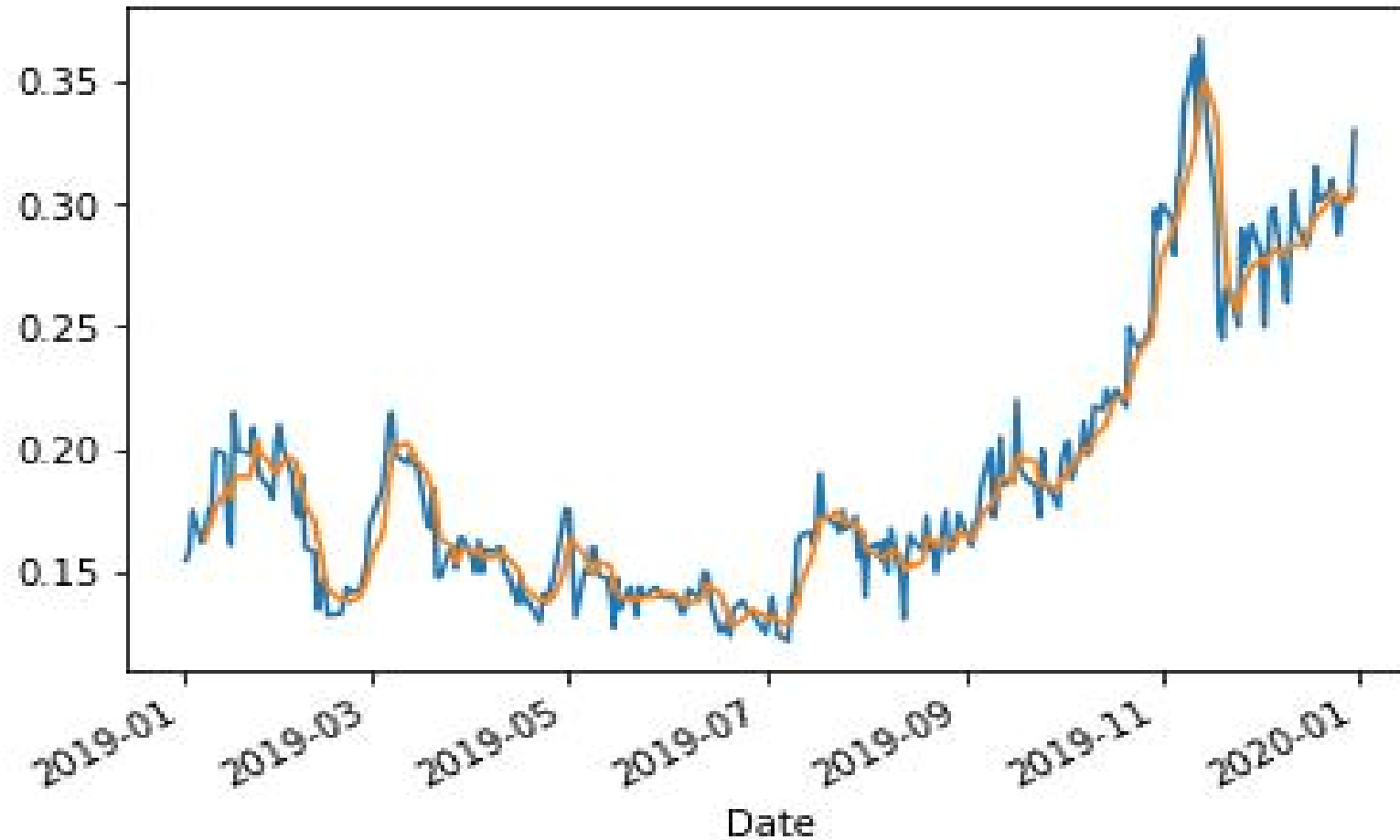


Data set:

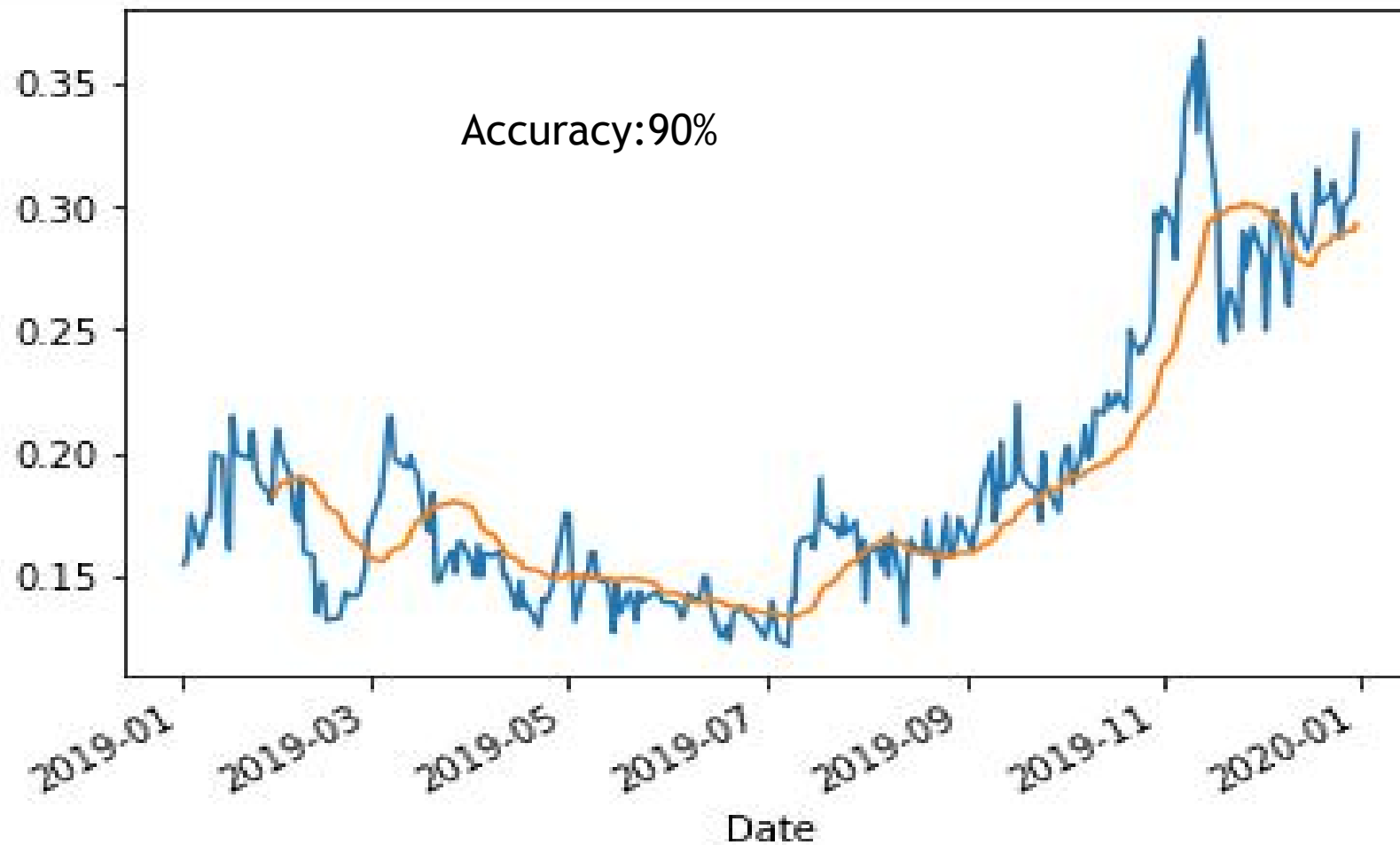
Reliance Global Group, Inc.

Time period- 1st january 2019-1st january 2020

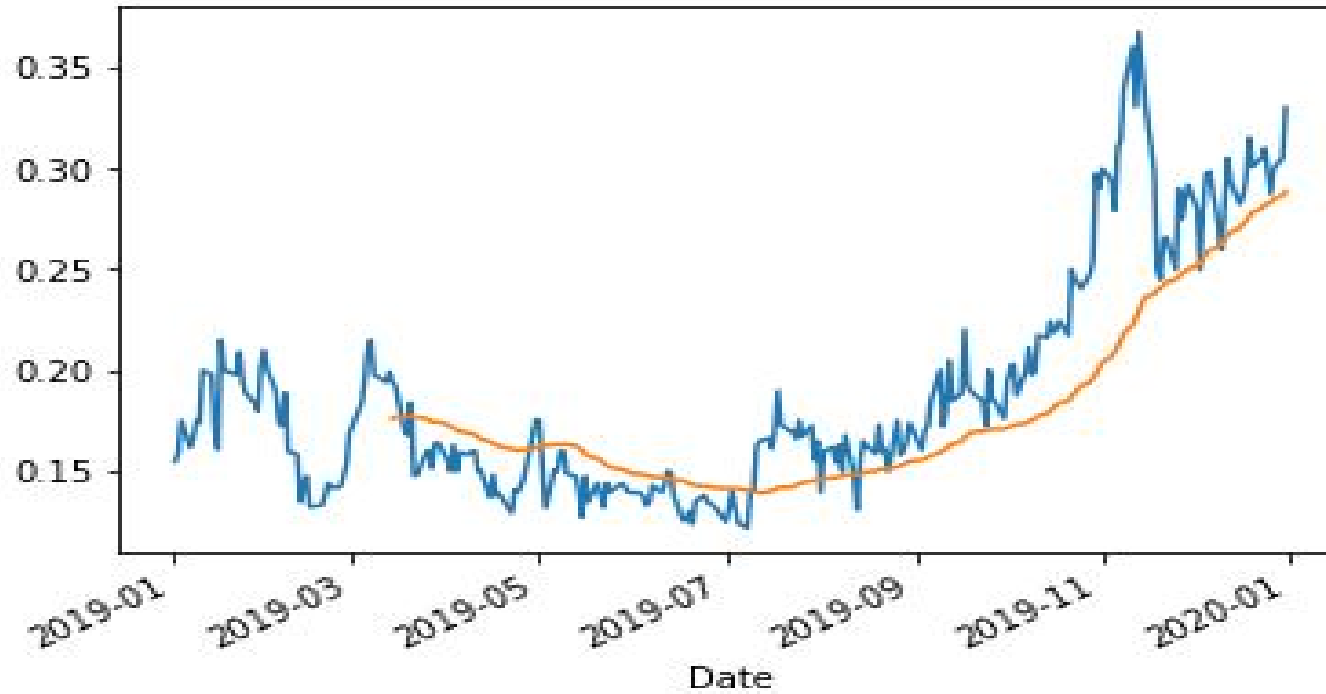
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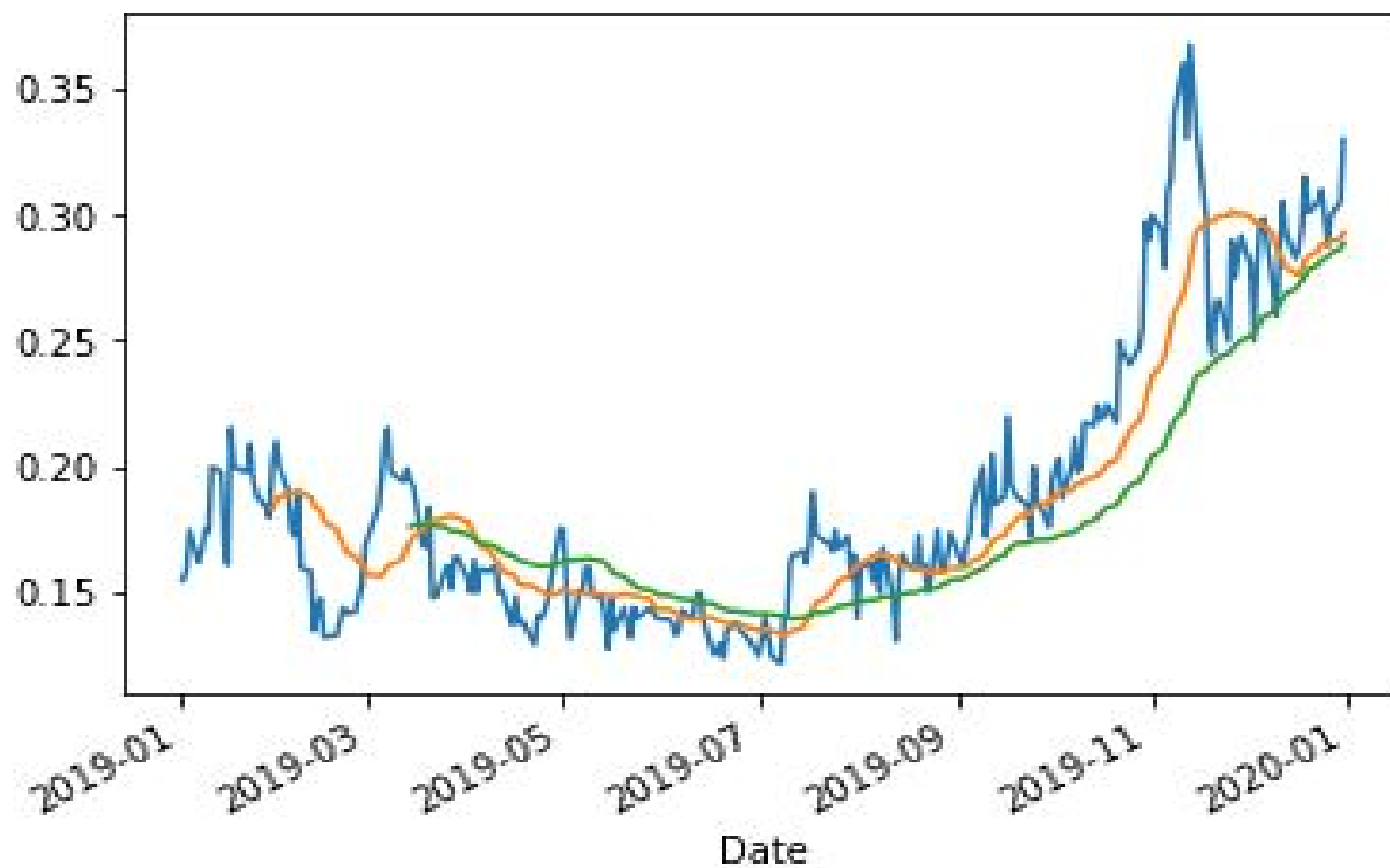


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For window size = 50





Limitation of Simple Moving Average

- ▶ Simple moving averages have a “lagging effect” because it is derived from past data.
- ▶ it respond slowly to rapid price changes
- ▶ The SMA is often favored by traders or analysts operating on longer time frames.
- ▶ Moving averages don't work well in non-trending or sideways kind of a market.

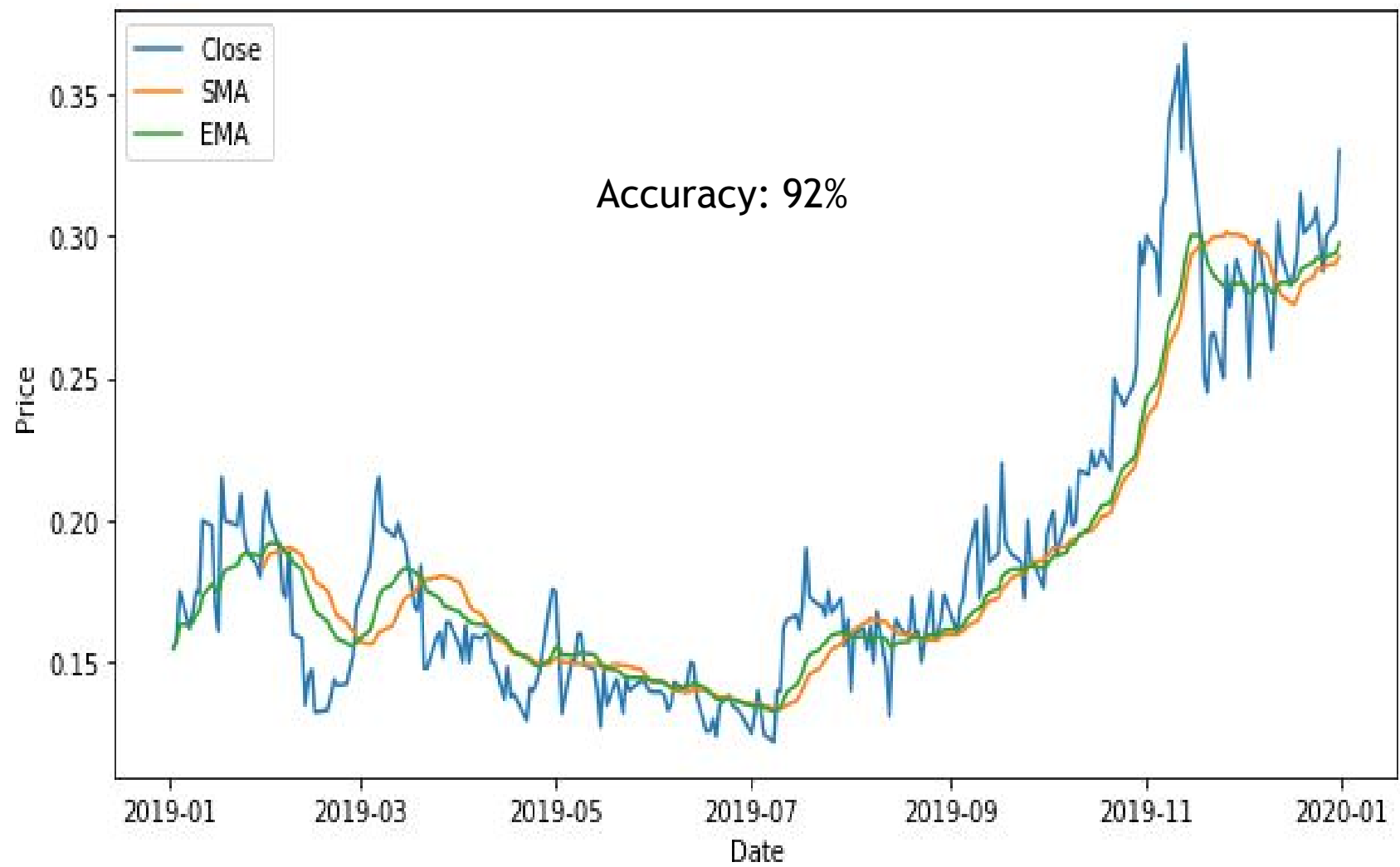
Exponential Moving Average

- An exponential moving average (EMA) is a type of moving average (MA) that places a greater weight and significance on the most recent data points.

$$EMA_{\text{Today}} = \left(\text{Value}_{\text{Today}} * \left(\frac{\text{Smoothing}}{1 + \text{Days}} \right) \right) + EMA_{\text{Yesterday}} * \left(1 - \left(\frac{\text{Smoothing}}{1 + \text{Days}} \right) \right)$$

where:

EMA = Exponential moving average



Limitation of EMA:

- ▶ It is unclear whether or not more emphasis should be placed on the most recent days in the time period or on more distant data. Many traders believe that new data will better reflect the current trend the security is moving with; meanwhile others feel that privileging certain dates than others will biases the trend. Therefore, the EMA is subject to recency bias.

BOLLINGER BANDS

$$\text{BOLU} = \text{MA}(\text{TP}, n) + m * \sigma[\text{TP}, n]$$

$$\text{BOLD} = \text{MA}(\text{TP}, n) - m * \sigma[\text{TP}, n]$$

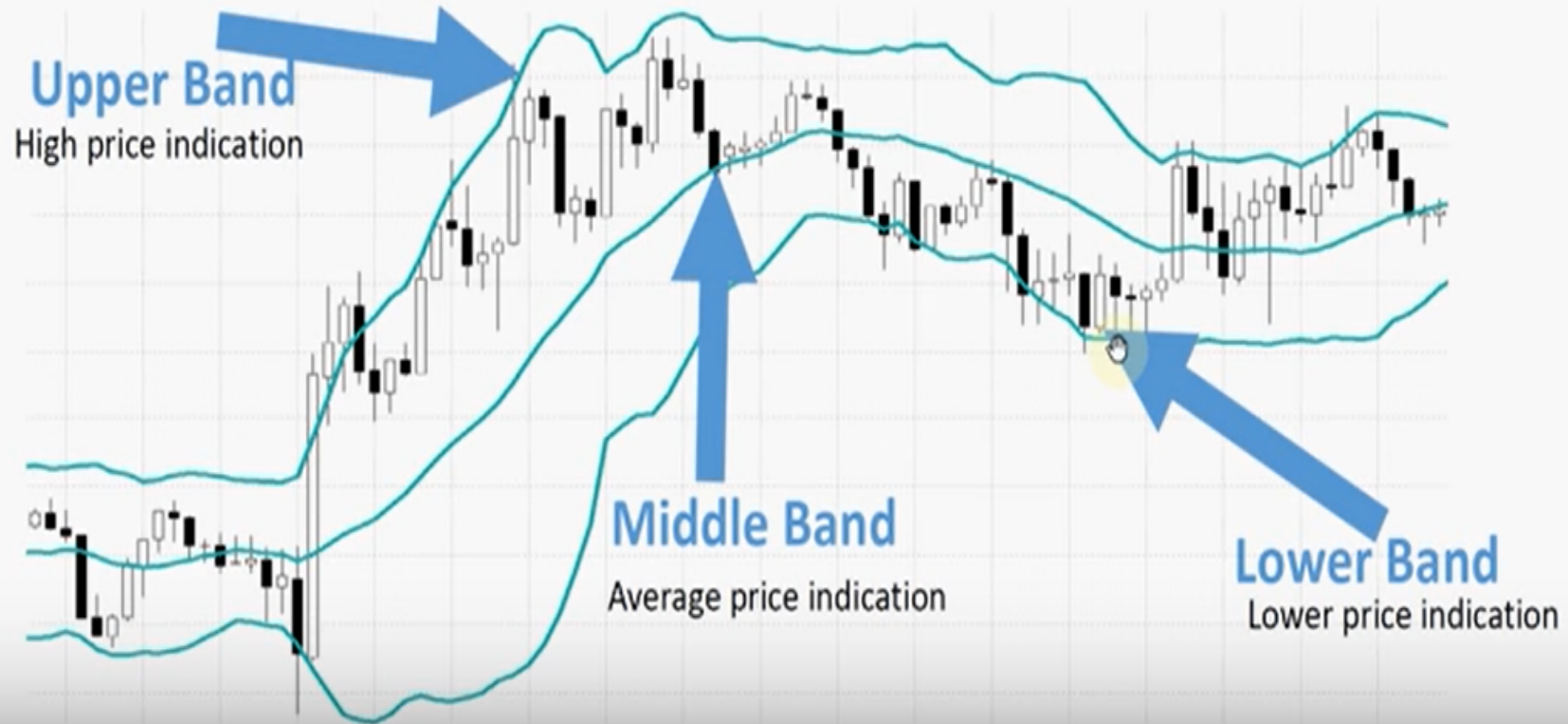
where:

BOLU = Upper Bollinger Band

BOLD = Lower Bollinger Band

MA = Moving average

$\sigma[\text{TP}, n]$ = Standard Deviation over last n periods of TP



Bollinger Bands Calculations

- Upper Band = 20-day SMA + (20-day standard deviation of price x 2)

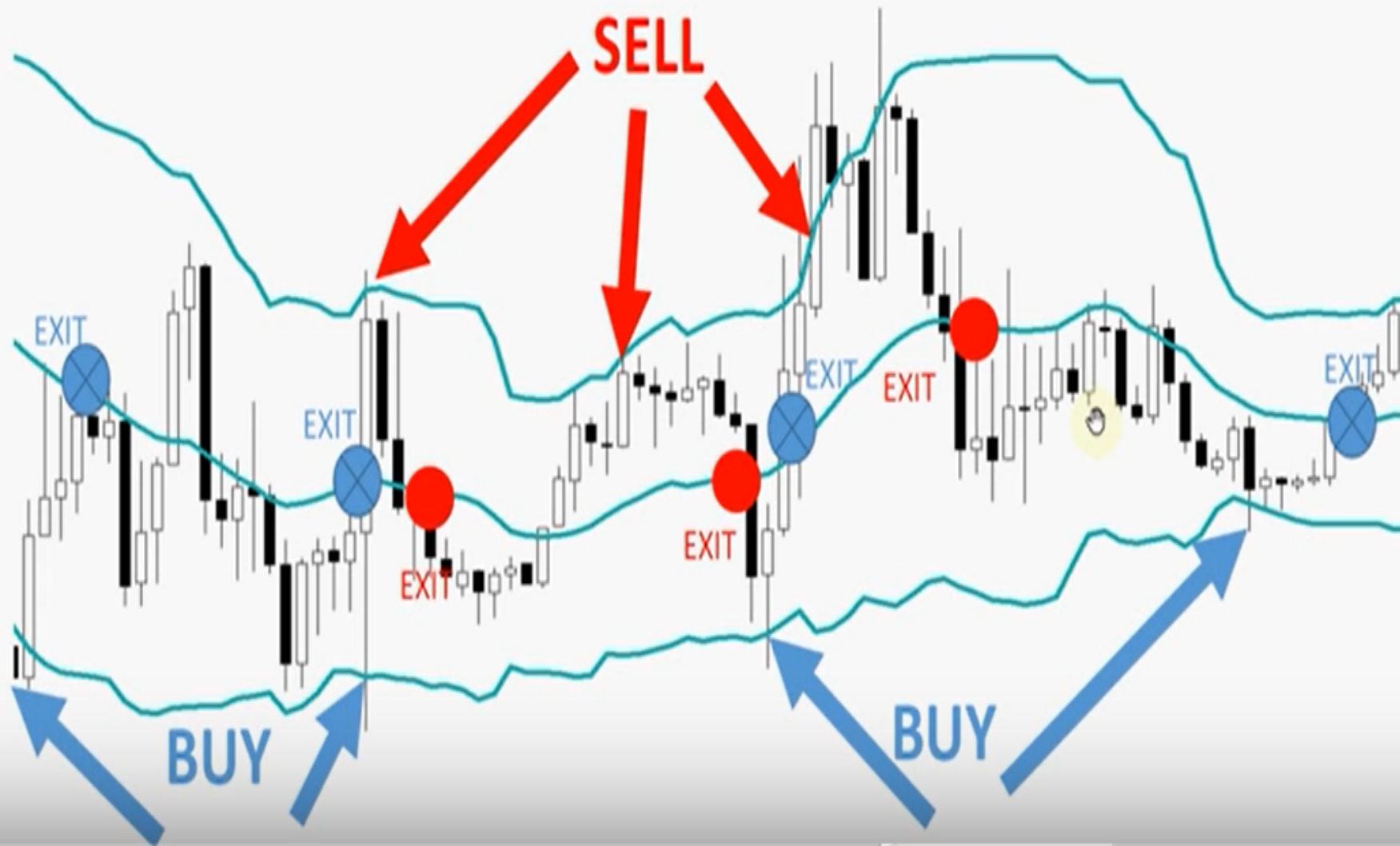


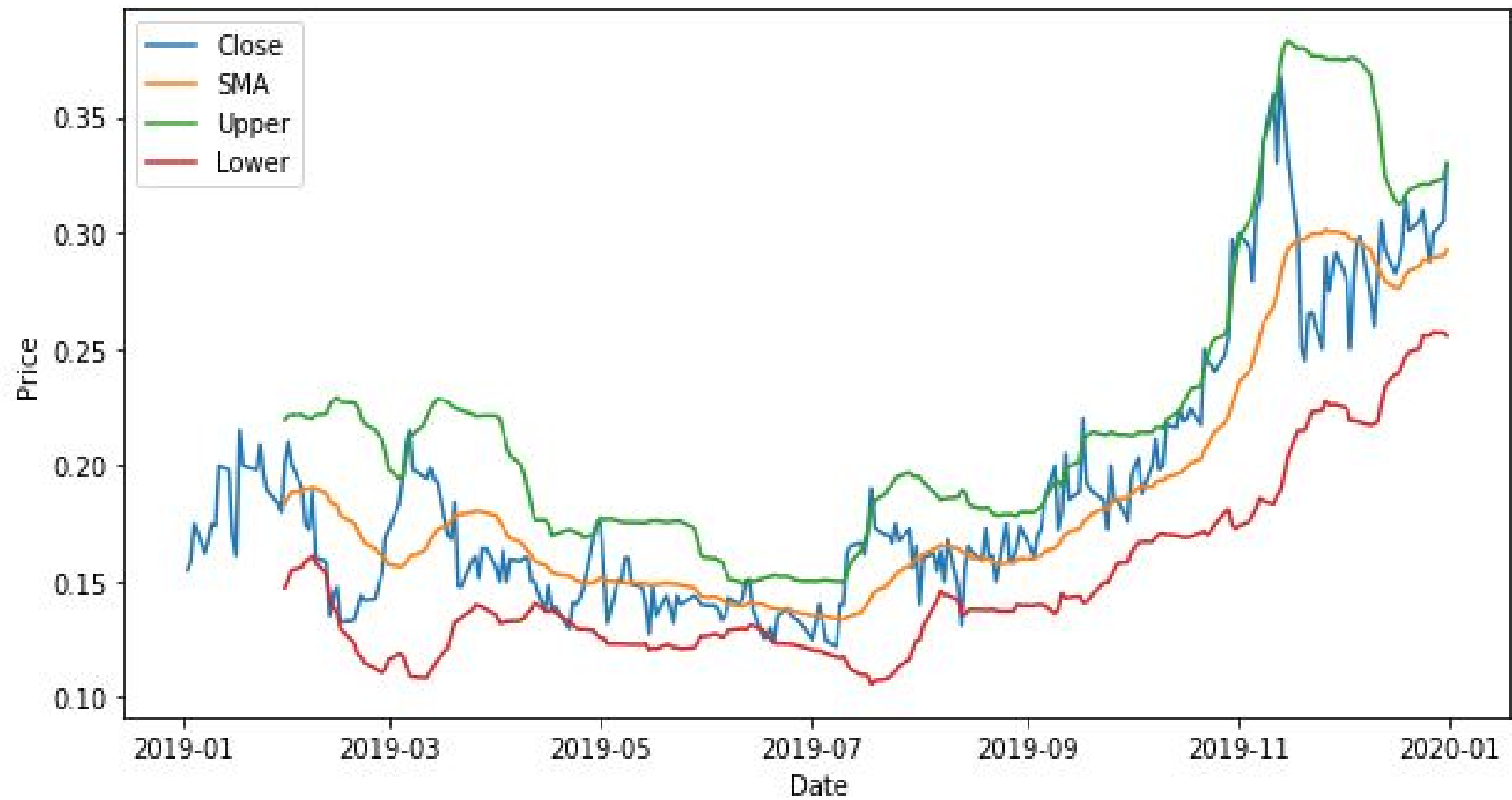
- Middle Band = 20-day simple moving average (SMA)

- Lower Band = 20-day SMA - (20-day standard deviation of price x 2)

Buy or Sell?

- If a stock price hits the lower band then many traders usually buy.
- if prices tend to stick on the middle moving average band it is a sign to exit the market.
- If a stock price hits the upper bands then many traders choose sell option.





Limitations of Bollinger Bands

- ▶ ~~Bollinger~~ Bands are primarily reactive, not predictive. The bands will react to changes in price movements, either uptrends or downtrends, but will not predict prices.
- ▶ Bollinger Bands work better in sideways markets than in trending markets

NEW INDICATOR:

Moving Average + Bollinger Band

Limitation of moving average is:

Moving averages don't work well in non-trending or sideways kind of a market.

Advantages of Bollinger Band:-

Bollinger Bands work better in sideways markets than in trending markets

