Stochastic Oscillators: Solution of a better future.

Stochastic oscillators assist stock traders everyday to make decisions about when to sell and buy indexes. It goes back to the time proven buy low sell high mentality. A stochastic oscillator is simply a formula that measures and learns about the past periods of trading (explicitly the high and low) and for every new input of information, it outputs a signal whether to buy or sell a given stock. The beauty of this function is in the simplicity and practicality of it. It is fundamentally a tool and allows for human intuition to judge whether to use said tool. Just like most tools, it distills work but yet is that much more powerful. The stochastic oscillator function has been used exclusively in the financial industry. I believe it could have wider applications for entrepreneurs, but before I explain how, a layman's explanation is necessary.

Investopedia defines a stochastic oscillator as follows: A stochastic oscillator is a momentum indicator comparing a particular closing price of a security to a range of its prices over a certain period of time. The sensitivity of the oscillator to market movements is reducible by adjusting that time period or by taking a moving average.

The formula depends on the theory that as prices increase, they will close at a price they have closed at within a price they have closed at at a recent time. When prices begin to move in the opposite direction, then that produces a signal to the trader they should buy or sell.

The two numbers that are tracked is the percentage of K and D which is a 3 day moving average of K.

K is defined here:

$$\%K = \left(\frac{C - L14}{H14 - L14} \right) \times 100$$

$C =$ The most recent closing price

$L14 =$ The lowest price traded of the 14 previous trading sessions

$H14 =$ The highest price traded during the same 14-day period

$\%K =$ The current value of the stochastic indicator

K measures the percentage change of stock from new information inputs. When D and K are above the 80% threshold, a standard within the industry, that is a signal that the direction of the stock is overbought and will begin to move into correction territory which to a traders means to sell. Conversely, when both D and K are below a 20% threshold, that sends the signal to the trader that the stock is possibly going to trend up.

Luckily we can accomplish this with a simple code.

```python
# Finding %K
Kvalue=[]
for x in range(kperiods,array_close.size):
    k = ((array_close[x]-array_lowest[x-kperiods])*100/(array_highest[x-kperiods]-array_lowest[x-kperiods]))
    Kvalue.append(k)
print(len(Kvalue))
print(Kvalue)
```

Some of the downfalls with using stochastic oscillators is that once a signal is given it is not always guaranteed that the stock will immediately start reversing course. Instead, a stock can remain above or below the thresholds which can make a stock traders job unpredictable. To help strengthen a stochastic oscillator, the ability to measure the momentum of a stock in conjunction with the oscillator will depend on the art of data scientist.

As mentioned earlier, we can adopt this function to help entrepreneurs decide when to enter into a market and develop a sense of the direction of a local economy. Instead of looking at stock prices, we track the monthly GDP numbers and our periods would extend into areas of growth and recession. All of this can't be possible without the simple and beautiful formula of stochastic oscillation.

http://www.andrewshamlet.net/2017/07/13/python-tutorial-stochastic-oscillator/

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