Prediction Algorithm

Approach-1

Input:

Technical Indicators

Financial Sentiment Analysis of Material News

Settlement data (share wise, sector wise)

Trading data (Local buying, Foreigner buying, Future trading)

Historical Data

Output:

A numerical value (combined effect of all inputs)

Algorithm working:

First we assign weightages to all the inputs given above based on its impact on stock market. We meet with some trading experts to guide us. Weightages are out of 100. Data about all of these input to algorithm is in numerical form. News sentiment analysis also calculates to numerical value between -1 to 1.

|  |  |
| --- | --- |
| Technical Indicators | 70% |
| News | 5% |
| Settlement | 10% |
| Trading data | 10% |
| Historical Data | 5% |
|  |  |

We also assigned weightages to individual indicators. Because all the indicators listed below calculates differently and their effect on future price of stocks is different. For that we have to study technical indicators in detail. We also took guide from trading experts.

|  |  |
| --- | --- |
| **INDICATORS** | **WEIGHTAGE** |
| Moving Averages (Simple, Exponential) | 30% |
| RSI (Relative Strength Index) | 25% |
| MACD (Moving Average Convergence Divergence) | 25% |
| STOCH (Stochastic Oscillator) | 20% |

Technical indicators calculate to purely numerical values. The range of indicators are different like RSI fluctuates b/w 0 to 100 while MACD -10 to 10. So firstly we normalized indicators ranges to one range. Two possible effects of indicators are there. A indicator value may signal buy (+ve) or sell (-ve). So after calculating the weightage of that indicator + or – sign is assigned.

**Test case**

if RSI=80

If we take normalization range -50 to +50

(-50, 0) for negative effect

(0, 50) for positive effect

**Normalization step** **RSI - 50 = 80 - 50 = 30**

**Applying weightage 30 %.3= 9**

**In the similar way all other indicators effect is calculated.**

According to rule of Pakistani stock market a share price can change by value ± 5%.so if UBL opening price is 200 it can change between 190 to 200. We call this range as prediction range in our algorithm. After calculating all the factors combined effect. We normalize it to prediction range and add the value to previous day closing price.

Today closing price= Previous day closing price + Net effect of all Factors

Approach-2

The problem with the first approach was that we have to change the range of all factors to one single range. So we design another strategy. In this approach we categorize the indicators numerical values in Buy and sell. For indicator RSI

If RSI is between (0,50) = SELL

RSI is between (50,100) = BUY

Similarly, all other indicators values as buy or sell are calculated. Than buy counting total no of buy and sell we categorize it into

|  |  |  |
| --- | --- | --- |
| **Category** | **Effect** | **Numerical Effect** |
| Strong Sell | Highly Negative | - (value × weightage) |
| Sell | negative | - (value × weightage)/2 |
| Neutral | No effect | 0 |
| Buy | Positive | (value × weightage)/2 |
| Strong Buy | Highly Positive | (value × weightage) |

The effect of other factors is calculated in the same way as in approach-1. And the next day closing price is calculated. Buy formula given below

Today Closing = Previous Day Closing + (Indicators effect + News Effect + Settlement Effect + Historical Data Effect)