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Algorithmic Trading Division

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Directional Movement Indicator

This week we are sharing the programming code of the Directional Movement Indicator expressed in only 1 line. We will be making considerations to read the code and showing how to enhance the decision making process in trading with trends.

The directional movement indicator (also known as the directional movement index - DMI) is a valuable tool for assessing price direction and strength. This indicator was created in 1978 by J. Welles Wilder, who also created the popular relative strength index. DMI tells you when to be long or short. It is especially useful for trend trading strategies because it differentiates between strong and weak trends, allowing the trader to enter only the strongest trends. DMI works on all time frames and can be applied to any underlying vehicle (stocks, mutual funds, exchange-traded funds, futures, commodities and currencies).

DMI is a moving average of range expansion over a given period. The positive directional movement indicator (+DMI) measures how strongly price moves upward; the negative directional movement indicator (-DMI) measures how strongly price moves downward. The two lines reflect the respective strength of the bulls versus the bears. Each DMI is represented by a separate line. Some short-term traders refer to DMI line on top as the dominant DMI. The dominant DMI is stronger and more likely to predict the direction of price. For the buyers and sellers to change dominance, the lines must cross over.

In this article, we are sharing an indicator written to show the +DMI and the –DMI in only one line. This bring us 2 important benefits when making the frequent analysis to the assets: It's easier and better to watch it and read it, and we can draw trendlines to spot support, resistance and divergence, enhancing our decision making process. As all the programming code of our strategies and indicators, we seek always to optimize the flexibility of the code, using strategic variables or functions to modify and evaluate modifications of the strategy or indicator logic.

The first part of the programming code is the function that mix the two directional movements into one line. This is especially helpful identifying false or true trend reversals. We use the +DMI and -

DMI functions to calculate the average of certain length and then, save the difference in an independent value. Here is the code:

_DMIdiff {FUNCTION}

```
// Difference of DMI Pos/Neg.  Bearish/Bullish cross at 50.
// See indicator _DMIdiff Trend

Inputs: Length (numericsimple), Smooth(NumericSimple);

{DMI +/-  Difference}
Value4 = (average(DMIplus(Length),Smooth));
Value5 = (average(DMIminus(Length),Smooth));
Value6 = (Value4 - value5)+ 50;

_dmiDiff = value6;
```

The second part of the programming code is where we calculate the mentioned function for 14 days and plot the DMI difference. Then, identifying the behavior day after day we are going to add a color to the line we have of the indicator. If the DMI difference is trending up the graph will be green and if is going down it will be magenta. We must have into account we can easily modify in any moment the length, the smooth level and the average of the DMI difference if we decide to plot it (last line of code). Here is the code:

_DMIdiff Trend {Indicator}

```
// Plots DMI +/- as one indicator.  Bearish/Bullish cross at 50.

inputs: Len(14), Smooth(1), Avg(25),TrendUpColor(green), TrendDnColor(magenta);

value1 = _DMIdiff(Len,Smooth);
 plot1 (value1, "DMI Diff");
 Plot2(50,"zero line");

If value1 > Value1[2] then begin
        plot1[1](value1[1],"DMI Diff",TrendUpColor);
        plot1(value1,"DMI Diff",TrendUpColor);
end else begin
        plot1[1](value1[1],"DMI Diff",TrendDnColor);
        plot1(value1,"DMI Diff",TrendDncolor);
end;

//plot3(averageFC(value1,Avg), "Avg");
```

Next, we have a layout of Live Cattle future contract for April, in a daily timeframe. In the first part of the graph we have the asset price where we identify a probable downtrend due to it is completing

the second shoulder, the new indicator has crossed down and the Fibonacci retracement show an important support level. The second section of the graph shows the DMI difference indicator where we can follow the strength of the trend easily and identify patterns. There is drawn a resistance level that helps to confirm the downtrend. In the third part of the graph we can observe the +DMI, -DMI and the average.

If you would like to learn more about this strategy or other far more complex and robust, please feel free to visit our website or get in touch using the information provided below.

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