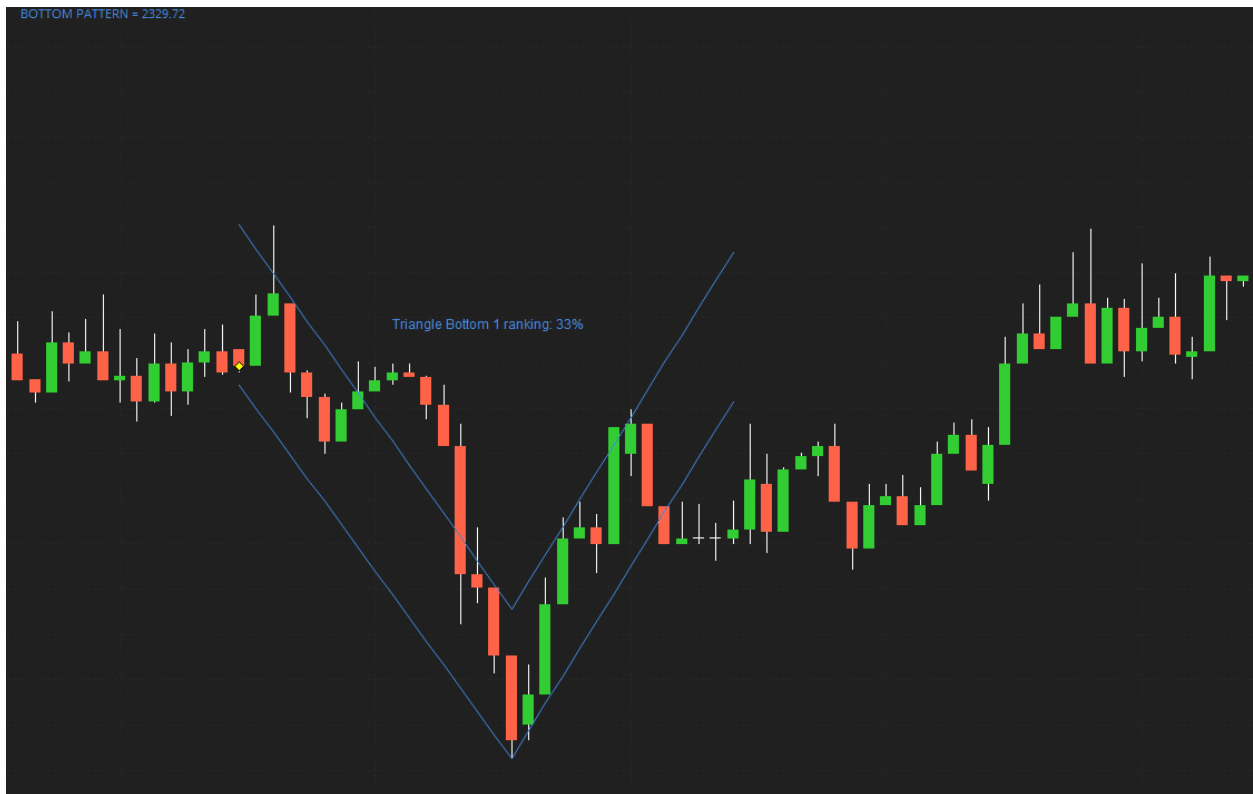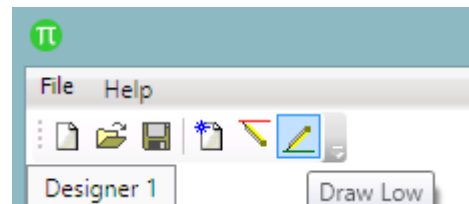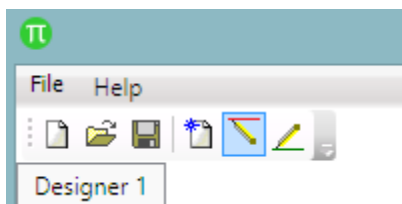# Advanced Pattern Recognition

APR Pattern Designer Utility

The APR Pattern Designer is a utility application that allows you to draw pattern templates and save them in XML format. You may then pass the XML template files to the APR library in order to scan for the patterns that you have designed.


Creating a Pattern

To being, click the Draw High button on the toolbar. This will enable the drawing tool. You may then create the upper boundary of your pattern by left clicking on the chart to create points.
You may create as many points as necessary to generate the pattern. You may draw anywhere within the drawing area. Right click to finish the upper line drawing then select the Draw Low button to begin drawing the lower boundary.

If you make a mistake while drawing the pattern, you may click the "Clear" button on the toolbar to clear the line drawings and start over.
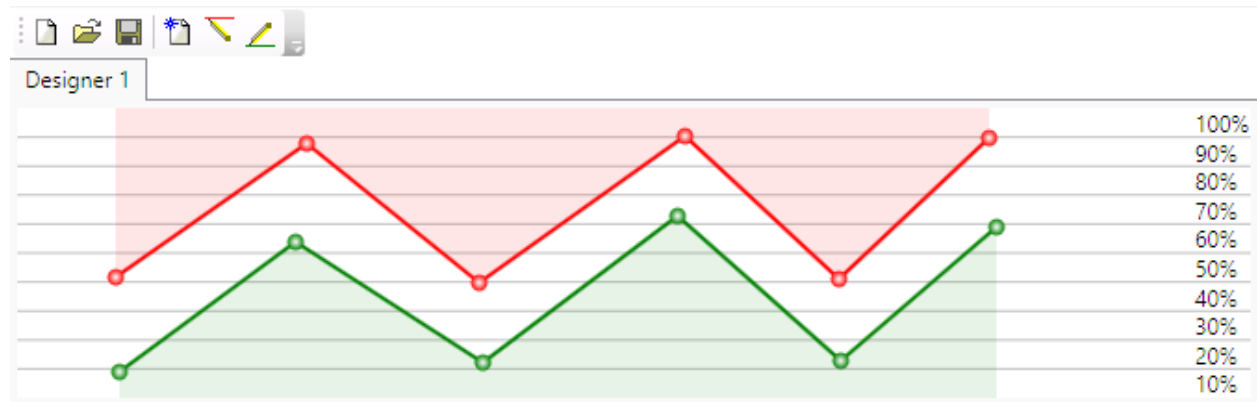
APR Fuzzy Logic Parameters
Before describing the fuzzy logic parameters and their meanings, it is important to understand how APR works. APR scans through data by paging through incremental "windows". A window is defined by the Max Bars and Min Bars parameters. For example, if you specify 50 for the maximum number of bars and 10 for the minimum number of bars, APR will search for patterns consisting of a number of records up to 40 bars in length. More weight is given to patterns containing the most number of bars. The minimum value for Min Bars is 5. Each window of data is passed through a fuzzy logic filter. It is beyond the scope of this document to explain how the filter works. The filter is based on our patent-pending fuzzy logic algorithm, and may be reviewed in the DLL source code under a separate license.

Ranking Values
APR returns a ranking value for each pattern that is identified. This value ranges between 0 and 1, with 1 being a perfect pattern and zero being no match at all. Values above 0.6 seldom occur. Most ranking values are between 0.35 and 0.6.

Max Bars (10 to 1000, default 50)
Maximum number of bars in the pattern window. Processing time increases with the window size (Max Bars – Min Bars). Higher rankings are given to patterns containing the largest number of records. This value cannot be less than Min Bars.

Min Bars (5 to 990, default 1)
Minimum number of bars in the pattern window. Processing time increases with the window size (Max Bars – Min Bars). Higher rankings are given to patterns containing the largest number of records. This value cannot exceed Max Bars - 10.

Fitness Threshold (0 to 0.95, default 0.3)
Filters patterns that have a fitness ranking below the specified value. For example, if a rank is 0.3 and Fitness Threshold is 0.31, the pattern will not be added to the results list.

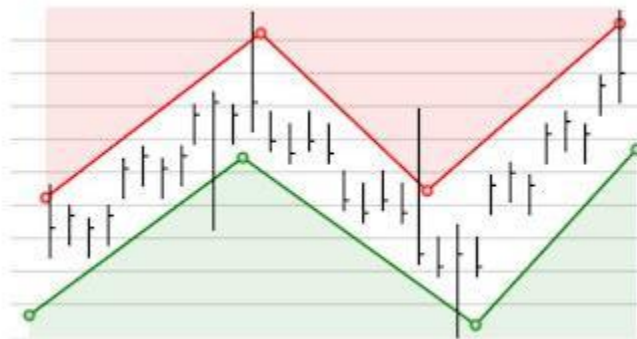**Breakout Error Threshold (0 to 1, default 0.3)**
This threshold value filters patterns if any bar is more than n-% outside the pattern channel. For example, if Breakout Error Threshold is set to 0.5 and any one bar in the pattern window is over 50% outside the channel, the pattern will not be added to the results list.
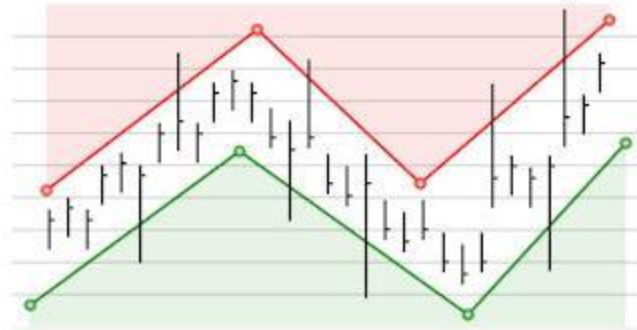
Breakout Error Threshold

**Point Breakout Error Threshold (0 to 1, default 0.25)**
This threshold value filters patterns if any bar that is within 1 record of a pattern data point is more than n-% outside the pattern channel. For example, if Point Breakout Error Threshold is set to 0.5 and any single bar in the pattern window that is within 1 record of a pattern point is over 50% outside the channel, the pattern will not be added to the results list.

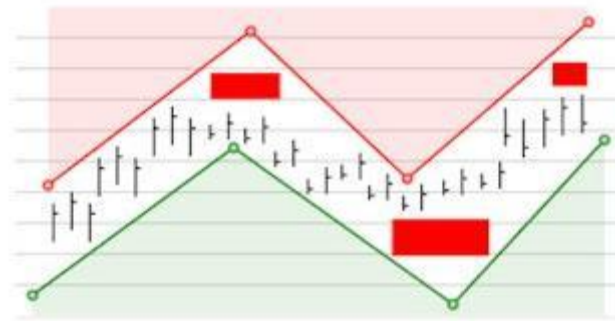**Point Breakout Error Threshold**

Channel Error (0 to 1, default 0.3)
Filters patterns that have an accumulative error of abs(high | low - trend) that is more than n-% outside this tolerance value.
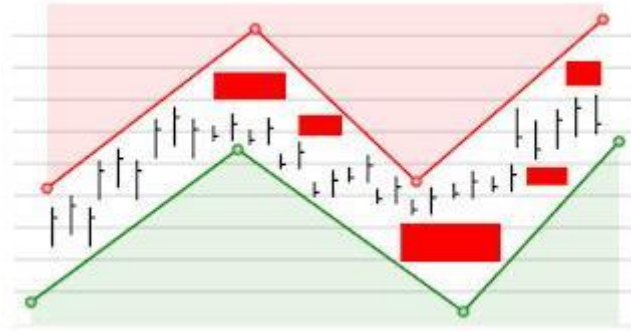
Channel Error

Point Error
Filters patterns that have an accumulative error of abs(high | low - trend) that is more than n-% outside this tolerance value near pattern data points.

Point Error