Overview of Moving Difference and Moving Ratio

Overview

The purpose of this system is to produce two statistics that will be measured for each stock price collected from the web server. These statistics, known as “moving differences” and “moving ratios,” serve to identify the longest and steadiest rises and falls in a company’s historical stock prices over any length of time given numerical data. The beginnings of these steady rises and falls represent points in time that would have been ideal for trading stock. Statistics that are commonly used in the stock market, such as moving averages, would then be used on the ideal trading points located by this system to identify a signal for when to trade in the future, which would appear as a recurring series of events such as an inflection in the moving average or the intersection of a 20-day and a 50-day moving average before each ideal trading point.

What is a Moving Difference?

A moving difference is found by taking the stock price for one day and then subtracting from it the stock price for a previous day. The distance in time, in days, between each stock is decided by the user, as is the type of price used (open, high, low, or close). This statistic moves from one pair of days to the next, from the first day in the set that covers the pre-defined distance in time from the beginning of the set, up to the last day of the set.

For this statistic, one abstract class represents the general concept of a moving difference, and then several reusable classes are derived to support specific types of moving differences based on their attributes.

What is a Moving Ratio?

A moving ratio is the ratio of positive moving differences over a window of consecutive moving differences. Like moving differences, this window moves from the earliest possible date for a window of its length to the last date in the set. The window length varies depending on user input, with larger windows being a stronger signal of steady change. Windows in which this ratio is notably high (close to 100%) indicate that price is mostly increasing, and windows in which this ratio is notably low (close to 0%) indicate that price is mostly decreasing. This system reports the windows with the highest and lowest ratios, indicating the steadiest rises or falls, respectively.

This statistic follows the abstract class design described for moving differences, except the only attribute the user would define is window length.

Why Not Moving Averages?

While moving averages are a standard measurement for stock prices, they are not a direct measurement of change in price over a length of time. Moving differences, when used in conjunction with moving ratios, locate the longest windows in time in which the price is steadily increasing or decreasing, which would be the optimal trading points for an investor. While one could find moving averages and sort them to find the highest and lowest over time, those values are susceptible to sudden change, or “noise,” especially when found using a shorter period on the moving average. The concept of moving differences and ratios is designed just to track whether change in price is positive or negative over a window of time, a binary system that is blind to sharp, but temporary change. This system is meant to be used on past data (historical prices) so that the user does not have to locate these periods of interest, or trading points, manually.