

Recursive Future Average Of A Time Series Data Based On Cosine Similarity

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Technical Note

Abstract

In this research Technical Note the author have presented a Recursive Future Average Of A Time Series Data Based on Cosine Similarity.

Theory

The Recursive Future Average Of A Time Series Data Based on Cosine Similarity can be given by the following methods:

Method 1:

$$y_{n+1} = \frac{\sum_{i=1}^n (y_i) \{CS(y_i, y_{n+1})\}}{\left\{ \sum_{i=1}^n (\{CS(y_i, y_{n+1})\})^2 \right\}^{1/2}}$$

$$\text{where } CS(y_i, y_{n+1}) = \left\{ \frac{\text{Smaller of } (y_i, y_{n+1})}{\text{Larger of } (y_i, y_{n+1})} \right\}$$

when the Time Series Data is of the kind

$$S = \{y_1, y_2, y_3, \dots, y_{n-1}, y_n\}$$

Method 2:

$$y_{n+1} = \frac{\sum_{i=1}^n (y_i) \{CS(y_i, y_{n+1})\} \{CS(y_i, y_{n+1})\}}{\sum_{i=1}^n \{CS(y_i, y_{n+1})\}}$$

$$\text{where } CS(y_i, y_{n+1}) = \left\{ \frac{\text{Smaller of } (y_i, y_{n+1})}{\text{Larger of } (y_i, y_{n+1})} \right\}$$

when the Time Series Data is of the kind

$$S = \{y_1, y_2, y_3, \dots, y_{n-1}, y_n\}$$

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