The Recursive Future And Past Equation Based On The Ananda Damayanthi Normalized Similarity Measure

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Abstract

In this research investigation, the author has presented a Recursive Future Equation based on the Ananda-Damayanthi Normalized Similarity Measure [1].

Theory

The Recursive Future Equation

Given a Time Series $Y = \{y_1, y_2, y_3, ..., y_{n-1}, y_n\}$

we can find y_{n+1} using the following Recursive Equation.

$$y_{n+1} = \sum_{k=1}^{n} \frac{\left\{ \dfrac{Smaller\ of\ (y_{n+1}, y_k)}{Larger\ of\ (y_{n+1}, y_k)} \right\}}{T} y_k$$

where $T = \left\{ \sqrt{\sum_{k=1}^{n} \left\{ \left\{ \dfrac{Smaller\ of\ (y_{n+1}, y_k)}{Larger\ of\ (y_{n+1}, y_k)} \right\}^2 \right\}} \right\}$

From the above Recursive equation, we can solve for y_{n+1}

The Recursive Past Equation

Given a Time Series $Y = \{y_1, y_2, y_3, ..., y_{n-1}, y_n\}$

we can find y_0 using the following Recursive Equation.

$$y_0 = \sum_{k=0}^{n-1} \frac{\left\{ \dfrac{Smaller\ of\ (y_n, y_k)}{Larger\ of\ (y_n, y_k)} \right\}}{T} y_k$$

where $T = \left\{ \sqrt{\sum_{k=0}^{n-1} \left\{ \left\{ \frac{Smaller\ of\ (y_n, y_k)}{Larger\ of\ (y_n, y_k)} \right\}^2 \right\}} \right\}$

From the above Recursive equation, we can solve for y_0

References

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