Bagadi, R. (2017). The Recursive Future And Past Equation Based On The Ananda-Damayanthi Similarity Measure Considered To Exhaustion. ISSN 1751-3030. *PHILICA.COM Article number 1022.*
http://www.philica.com/display_article.php?article_id=1022

The Recursive Future And Past Equation Based On The Ananda-Damayanthi Similarity Measure Considered To Exhaustion

ISSN 1751-3030

Author: ***Ramesh Chandra Bagadi***
Data Scientist
International School Of Engineering (INSOFE)
2nd Floor, Jyothi Imperial, Vamsiram Builders,, Janardana Hills, Above South India Shopping Mall, Old Mumbai Highway, Gachibowli, Hyderabad, Telangana State, 500032, India.

Abstract

In this research investigation, the author has presented a Recursive Past Equation and a Recursive Future Equation based on the Ananda-Damayanthi Similarity Measure considered to Exhaustion [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 Past Equation

$$y_n = \underset{p \to \infty}{Limit}\left\{\sum_{k=0}^{n-1} y_k \left\{\frac{\left\{\frac{S_k}{L_k}\right\}+\left\{\frac{S_{k+1}}{L_{k+1}}\right\}+\left\{\frac{S_{k+2}}{L_{k+2}}\right\}+.........+\left\{\frac{S_{k+p-1}}{L_{k+p-1}}\right\}+\left\{\frac{S_{k+p}}{L_{k+p}}\right\}}{\sqrt{\sum_{k=0}^{n-1}\left\{\left\{\frac{S_k}{L_k}\right\}^2+\left\{\frac{S_{k+1}}{L_{k+1}}\right\}^2+\left\{\frac{S_{k+2}}{L_{k+2}}\right\}^2+.........+\left\{\frac{S_{k+p-1}}{L_{k+p-1}}\right\}^2+\left\{\frac{S_{k+p}}{L_{k+p}}\right\}^2\right\}}}\right\}\right\}$$

where

$S_k = Smaller\ of\ (y_n, y_k)$ and $L_k = L\arg er\ of\ (y_n, y_k)$

$S_{k+1} = Smaller\ of\ ((L_k - S_k), y_k)$ and $L_{k+1} = L\arg er\ of\ ((L_k - S_k), y_k)$

$S_{k+2} = Smaller\ of\ ((L_{k+1} - S_{k+1}), y_k)$ and $L_{k+2} = L\arg er\ of\ ((L_{k+1} - S_{k+1}), y_k)$

$S_{k+p-1} = Smaller\ of\ ((L_{k+p-2} - S_{k+p-2}), y_k)$ and $L_{k+p-1} = L\arg er\ of\ ((L_{k+p-2} - S_{k+p-2}), y_k)$

$S_{k+p} = Smaller\ of\ ((L_{k+p-1} - S_{k+p-1}), y_k)$ and $L_{k+p} = L\arg er\ of\ ((L_{k+p-1} - S_{k+p-1}), y_k)$

From the above Recursive Equation, we can solve for y_0.

Bagadi, R. (2017). The Recursive Future And Past Equation Based On The Ananda-Damayanthi Similarity Measure Considered To Exhaustion. ISSN 1751-3030. *PHILICA.COM Article number 1022*.
http://www.philica.com/display_article.php?article_id=1022

The Recursive Future Equation

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

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

$$y_{n+1}=\underset{p\to\infty}{Limit}\left\{\sum_{k=1}^{n} y_k \left\{\frac{\left\{\frac{S_k}{L_k}\right\}+\left\{\frac{S_{k+1}}{L_{k+1}}\right\}+\left\{\frac{S_{k+2}}{L_{k+2}}\right\}+\ldots\ldots+\left\{\frac{S_{k+p-1}}{L_{k+p-1}}\right\}+\left\{\frac{S_{k+p}}{L_{k+p}}\right\}}{\sqrt{\sum_{k=0}^{n-1}\left\{\left\{\frac{S_k}{L_k}\right\}^2+\left\{\frac{S_{k+1}}{L_{k+1}}\right\}^2+\left\{\frac{S_{k+2}}{L_{k+2}}\right\}^2+\ldots\ldots+\left\{\frac{S_{k+p-1}}{L_{k+p-1}}\right\}^2+\left\{\frac{S_{k+p}}{L_{k+p}}\right\}^2\right\}}}\right\}\right\}$$

where

$S_k = Smaller\ of\ (y_{n+1}, y_k)$ and $L_k = Larger\ of\ (y_{n+1}, y_k)$

$S_{k+1} = Smaller\ of\ ((L_k - S_k), y_k)$ and $L_{k+1} = Larger\ of\ ((L_k - S_k), y_k)$

$S_{k+2} = Smaller\ of\ ((L_{k+1} - S_{k+1}), y_k)$ and $L_{k+2} = Larger\ of\ ((L_{k+1} - S_{k+1}), y_k)$

$S_{k+p-1} = Smaller\ of\ ((L_{k+p-2} - S_{k+p-2}), y_k)$ and $L_{k+p-1} = Larger\ of\ ((L_{k+p-2} - S_{k+p-2}), y_k)$

$S_{k+p} = Smaller\ of\ ((L_{k+p-1} - S_{k+p-1}), y_k)$ and $L_{k+p} = Larger\ of\ ((L_{k+p-1} - S_{k+p-1}), y_k)$

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

References

1.Bagadi, R. (2016). Proof Of As To Why The Euclidean Inner Product Is A Good Measure Of Similarity Of Two Vectors. *PHILICA.COM Article number 626*. See the Addendum as well.
http://philica.com/display_article.php?article_id=626

2.http://www.vixra.org/author/ramesh_chandra_bagadi

3.http://philica.com/advancedsearch.php?author=12897