

Theoretical Model for Causal One Step Forecasting of Any Time Series Type Sequence

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Abstract- In this research investigation, the author has detailed the Theoretical Model for Causal One Step Forecasting of Any Time Series Type Sequence.

INTRODUCTION

A lot of literature is available in the domain of One Step Forecasting. The reader can refer to the types of Forecasting dealt in the subject of Time Series Analysis Forecasting.

THEORY (AUTHOR'S MODEL FOR CAUSAL ONE STEP FORECASTING OF ANY TIME SERIES TYPE FORECASTING)

Given any time series or non-time series sequence of the kind

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

values of Exhaustive Similarities $es_{i \rightarrow (i+1) \rightarrow (i+2)}$ &

Exhaustive Dissimilarities $eds_{i \rightarrow (i+1) \rightarrow (i+2)}$ which

give as Future Average $y_{(i+2)}$ when we use $y_{(i)}$ and $y_{(i+1)}$

Using the technique of finding the Future Average using the scheme laid out by Bagadi, R.C. [1]. Note that, i can take positive integer values such that $n \leq (i+2)$. For a sequence of n numbers, we will then have $(n-2)$ number of Exhaustive Similarities and Exhaustive Dissimilarities.

We now consider the thusly found $(n-2)$ number of Exhaustive Similarities, found in order of the given sequence) as a new Time Series Type Sequence and find again the $(n-4)$ in number Exhaustive Similarities. We keep repeating this procedure pyramidally upwards till we are left with only one Final Exhaustive Similarity Value. We now

consider k Step Evolution (using the method detailed by Bagadi, R.C. [2]) Of this Final Exhaustive Similarity Value. We now use this value to find the future average of the last two values of the line of values just below the peak line (or rather one value line) of the pyramid. We keep repeating this procedure going pyramidally downward so that we can finally forecast the Exhaustive Similarity part

component of the Future Average y_{n+1}

Similarly, we repeat this procedure to forecast the Exhaustive Dissimilarity part component of the

Future Average y_{n+1} . We now add these two

components to get the Forecasted Future Value y_{n+1} .

An important note here, is to understand that every system has a unique k value or some limited neighbourhood spectrum of k .

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ACKNOWLEDGEMENTS

The author would like to express his deepest gratitude to all the members of his Loving Family, Respectable Teachers, En-Dear-Able Friends, Inspiring Social Figures, Highly Esteemed Professors, Reverence Deserving Deities that have deeply contributed in the formation of the necessary scientific temperament and the social and personal outlook of the author that has resulted in the conception, preparation and authoring of this research manuscript document. The author pays his sincere tribute to all those dedicated and sincere folk of academia, industry and elsewhere who have sacrificed a lot of their structured leisure time and have painstakingly authored treatises on Science, Engineering, Mathematics, Art and Philosophy covering all the developments from time immemorial until then, in their supreme works. It is standing on such treasure of foundation of knowledge, aided with an iota of personal god-gifted creativity that the author bases his foray of wild excursions into the understanding of natural phenomenon and forms new premises and scientifically surmises plausible laws. The author strongly reiterates his sense of gratitude and infinite indebtedness to all such 'Philosophical Statesmen' that are evergreen personal librarians of Science, Art, Mathematics and Philosophy.