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EXPONENTIAL SMOOTHING IN DISCRETE SIGNALS: RETROSPECT AND PROSPECTS

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ABSTRACT

Exponential smoothing is a form of smoothing which can be effectively used in discrete signals. Exponential smoothing is basically Exponential Weighted Moving Average (EWMA) process where greater weights are given to more recent observations and considers all previous observations also. Hence positional importance is a necessary parcel of exponential smoothing. Although Holt (1957) and Winters (1960) developed the idea of exponential smoothing long days back, but still it has wide application in discrete signals. Basically there can be two popular forms of exponential smoothing viz. simple exponential smoothing (SES) and double exponential smoothing (DES). SES can be used in the signals which have no trend. But if trend is prevailed in a signal better prescription is to use DES as it involves instrument of trend smoothing in addition to the usual tool of signal smoothing. In SES only parameter involved which works as signal smoothing parameter is coined as α where as in the case of DES the signal smoothing parameter is termed as α and the trend smoothing parameter is denoted as β. Under normal mathematical common sense we have $\alpha, \beta \in (0,1)$. But that information never completely connects to the effectiveness of the design. In this talk analytic study is furnished to have effective range of α for SES and effective ranges of α and β both for DES in order to have efficient smoothing. In addition to this treatise different analytical perspectives are viewed for both SES and DES.

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