Time series prediction based on Grey system theory: A demonstration of GM (1, 1).

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Abstract

As it is known extrapolating past behavior of data for the prediction of future is the main goal of time series analysis which a sequential set of data points, measured typically over successive times. Analyzing time series is a dynamic research field and thus has attracted attentions of researchers. Moreover, the importance of time series forecasting in numerous practical fields such as business, economics, finance, science and engineering is indispensable. As a result, various important time series forecasting models have been evolved such as Autoregressive Integrated Moving Average (ARIMA), Autoregressive (AR), Autoregressive (AR), Autoregressive Moving Average (ARMA), Box and Jenkins in literature. In this study a recent approach Grey prediction model GM (1, 1) is tried to be demonstrated which can be adapted to times series analysis in the case of limited data conditions. GM (1, 1) is the part of grey system theory developed by Deng in 1980s and which has been applied to predict stock prices, energy consumption, economic growth, electricity demand etc.

Keywords: GM (1, 1), Prediction, Time series

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