



Exponential Smoothing for Time Series with Multiple Seasonal Cycles

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Time: 1.30 pm

Room: Lecture Theatre 10

Abstract: Time series of intraday observations often consist of more than one seasonal cycle. Previous work adapted the Holt-Winters exponential smoothing method in order to capture the intraday and intraweek cycles in half-hourly electricity demand. This paper evaluates the usefulness of this double seasonal method for minute-by-minute demand observations for prediction from 10 to 30 minutes ahead. The paper also presents a triple seasonal adaptation of the Holt-Winters method in order to accommodate the additional intrayear cycle evident in a large sample of half-hourly data. For application to intraday call centre arrivals, a count data version of the double seasonal method is developed. The focus here is density forecasting with Poisson arrivals being the standard assumption. Data used in the paper includes British and French electricity demand series, and call centre arrivals data from a large UK retail bank and NHS Direct.

Bio: James W. Taylor is a Professor of Decision Science at the Said Business School, University of Oxford. His research is in the area of time series forecasting with particular focus on exponential smoothing, quantile prediction and density forecasting. He is interested in a variety of application areas, including inventory control, energy, financial markets and call centres.

His research papers are available at: <http://users.ox.ac.uk/~mast0315/>