

## A NOVEL SEASONAL FUZZY TIME SERIES METHOD

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### Abstract

Fuzzy time series forecasting methods, which have been widely studied in recent years, do not require constraints as found in conventional approaches. On the other hand, most of the time series encountered in real life should be considered as fuzzy time series due to the vagueness that they contain. Although numerous methods have been proposed for the analysis of time series in the literature, these methods fail to forecast seasonal fuzzy time series. The limited number of seasonal fuzzy time series methods consider only the fuzzy set having the highest membership value, rather than the membership value of observations belonging to each fuzzy set. This is contrary to fuzzy set theory and causes information loss, thus affecting forecasting performance negatively. In this study, a new seasonal fuzzy time series method which considers the membership value of the observations belonging to each set in both forecasting fuzzy relations and in the defuzzification step is proposed. The proposed method is applied to a real seasonal time series.

**Keywords:** Fuzzy time series, SARIMA, Fuzzy C-means, Feed forward artificial neural network.,

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