Special Session:

Advances in Time Series Forecasting/Prediction using Fuzzy Set

Summary:

Time series forecasting is a branch of science that deals with modelling historical time series. Time series arise from various phenomena such as weather, finance, demographic growth, scientific experiments, etc. Consequently, time series forecasting models are very useful for critical analysis and future oriented decision-making. Time series data are non-stationary and uncertain in nature, so developing models using these data is a challenging task. For example, a sudden increase/decrease in the daily temperature/stock index price or a decrease/increase in monthly precipitation shows that these phenomena are highly unpredictable. The properties of all these phenomena cannot be fully described, and we always have incomplete knowledge about them. As a result, mathematical or statistical models usually do not take this incomplete knowledge into account in the simulation, which leads to dilute the forecast precision.

In recent decades, the real-time world time series data have become increasingly complex, noisy, high dimensional and high throughput. As a result, its modeling and prediction are some of the most fundamental problems and have therefore been subject to intensive research. Many public and private organizations have shown interest in the successful forecasting of time series.

In time series forecasting, 100% accuracy is not possible because it is mostly dynamic and uncertain in nature. To resolve this problem, various time series forecasting models are available. But, inherited problems of time series data make their advance prediction very tedious.

To discuss all these problems, this session calls the research articles that contribute in the following (but not limited), as:

a) New algorithm / technique for time series data discretization
b) Rule-generation and filtration technique for time series data
c) Time series data fuzzification and defuzzification technique
d) Predictive model design using Type-1 and Type-2 fuzzy sets
e) Hybrid model design for time series prediction
f) Big data time series forecasting model

g) Dynamic and complex events forecasting, such as Stock Index and Summer Monsson Rainfall
h) Fuzzy set and meta-heuristic optimization-based hybrid model for better decision-making in time series prediction
i) Neural computing and evolutionary computing for time series analysis and modeling.
j) Application of other theories like neutrosophic set and intuitionistic fuzzy set in time series prediction
k) Deep learning based model for time series prediction.

Keywords: Time series forecasting, fuzzy set, fuzzy-neuro hybrid model, fuzzy and meta-heuristic optimization, deep learning.

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