# Abstract

Nowadays, time series forecasting get more and more attention from the scientific community. There are several methods which are introduced to model and forecast for time series data. In that, artificial neuron network has been used as a widely promising method thanks to its nonlinear approximate capacity but many studies found that neuron network is not able to model seasonal and trend time series.

In this work, we use two ways to improve neuron network for forecasting seasonal and trend time series. The first way, we remove seasonality and trend from the time series then train the neuron network in the new time series. Outputs of neuron network will be added trend and seasonality to generate final forecast results. The second way, we combine neuron network and exponential smoothing to create a hybrid model. The model attempts to incorporate the good modeling capacity for linear trend and seasonal time series of exponential smoothing and the good nonlinear approximate capacity of neuron network to generate better forecast result than neuron network.

We implement and use five real-world trend and seasonal time series to test the two model and found that their forecast values are more better than neuron network.