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Tourism Time Series Forecast - Different ANN Architectures with Time Index Input

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Abstract

Tourism demand is usually characterized by the time series of the "Monthly Number of Guest Nights in the Hotels". Considering the increasing importance of this sector of activity, the prediction tools became even more relevant for public and private organizations management. Artificial Neural Networks (ANN) are a competitive model compared to other methodologies such the ARIMA time series models or linear models. In this paper the feedforward, cascade forward and recurrent architectures are compared. The input of the ANNs consists of the previous 12 months and two nodes used to the year and month. The three architectures produced a mean absolute percentage error between 4 and 6%, but the feedforward architecture behaved better considering validation and test sets, with 4,2% error.

Keywords: Artificial Neural Network Architectures; Time series forecast; Tourism.