
Sales forecasting using improved LSTM deep learning model

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Time series Analysis (TSA) is used to explore, analyze and predict time series data, and its ultimate goal is to predict future values based on historical data. Sales forecasting plays a vital role in business management; it is one of the most common research areas in time series data analysis. Revenue prediction based on sales forecasting is a critical processes in a business because so many areas of business are integrated into it. Most companies forecast their future sales revenue in the coming season/yearly wise to take financial decisions, expand/minimize their business and supply chains, employee hiring process, advertising & marketing, and many more. Accurate forecasting is crucial for a sales company for decision-making; inaccurate forecasting negatively impacts the company in the short or long term. Sales forecasts help to achieve target sales/revenue by identifying early warnings in their sales pipeline and mitigating the loss of revenue and its risk. According to the literature, sales forecasting performs based on the regional, country, and seasonal-wise. In this paper has used different algorithms (RNN, Random Forest, XGBoost, LSTM and proposed CNN-LSTM model) to compare weekly, monthly and quarterly sales prediction accuracies. For the implementation, Tensorflow has used with the computational support of GPU. Minimum MSE observed in proposed model for weekly sales; i.e mse = 19.18. By applying the CNN layer to the existing LSTM model focused to identify the hidden patterns in multivariate time series data. So compared to the above mentioned models, the CNN- LSTM model performed well and minimizes the MSE value.

Keywords: Sales forecasting, LSTM, Time series data modelling, deep learning.

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