

## Performance Evaluation of the Classic seq2seq Model versus a Proposed Semi-supervised Long Short-Term Memory Autoencoder for Time Series Data Forecasting

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**Abstract :** The study is aimed at designing encoders for deciphering intricacies in time series data by redescribing the dynamics operating on a lower-dimensional manifold. A semi-supervised LSTM autoencoder is devised and investigated to see if the latent representation of the time series data can better forecast the data. End-to-end training of the LSTM autoencoder, together with another LSTM network that is connected to the latent space, forces the hidden states of the encoder to represent the most meaningful latent variables relevant for forecasting. Furthermore, the study compares the predictions with those of a traditional seq2seq model.

**Keywords :** LSTM, autoencoder, forecasting, seq2seq model

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