

Automated Machine Learning Algorithm Using Recurrent Neural Network to Perform Long-Term Time Series Forecasting

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Abstract : Long-term time series forecasting is an important research area for automated machine learning (AutoML). Currently, forecasting based on either machine learning or statistical learning is usually built by experts, and it requires significant manual effort, from model construction, feature engineering, and hyper-parameter tuning to the construction of the time series model. Automation is not possible since there are too many human interventions. To overcome these limitations, this article proposed to use recurrent neural networks (RNN) through the memory state of RNN to perform long-term time series prediction. We have shown that this proposed approach is better than the traditional Autoregressive Integrated Moving Average (ARIMA). In addition, we also found it is better than other network systems, including Fully Connected Neural Networks (FNN), Convolutional Neural Networks (CNN), and Nonpooling Convolutional Neural Networks (NPCNN).

Keywords : automated machines learning, autoregressive integrated moving average, neural networks, time series analysis

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