A parallel deep learning framework for time series prediction

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Résumé

In this paper, a reliable PA-CNN-LSTM model is employed to address the issues of small sample size, non-stationarity, and the presence of numerous change points leading to model prediction failure in time series forecasting. To validate the effectiveness of the PA-CNN-LSTM model, commonly used deep learning models including RNN, LSTM, and CNN are compared across one publicly available time series dataset and one private dataset. The accuracy of the models is evaluated using three common metrics: MSE, MAE, and R2. The results indicate that our model achieved the best performance on all datasets, with R2 around 0.8, demonstrating the strong interpretability of our model. All experimental results demonstrate the robustness and reliability of our model.

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