Fuel consumption prediction of ships based on Informer model

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Abstract— With the shipping industry increasing demands for energy saving and emission reduction, accurate prediction of ship fuel consumption has become particularly important. This study employs the Informer model to establish a time series model for fuel consumption prediction. The Transformer framework, with its powerful sequential modeling capabilities and parallel processing performance, has achieved significant results in fields such as natural processing. Based on actual ship operational data, this paper utilizes the Informer model to capture multidimensional factors affecting fuel consumption, including but not limited to ship speed, displacement, and draft conditions, weather, and sea conditions. Compared with traditional fuel consumption prediction models, the Informer model demonstrates superior prediction accuracy. This study provides an effective intelligent solution for ship fuel consumption management, contributing to the further reduction of carbon emissions in the shipping industry.

Keywords—Ship fuel consumption, Prediction, time series analysis, Informer