There are many extensive studies on models for time series data forecasting. The performance of ARIMA models and other machine learning models were contradicted from various literatures.(1999, yao) (1999, Hansen) both compares ARIMA and ANN models that concludes ANN model obtained more accurate results. Whereas (2017, Lee)(2010, Merh) have better results from ARIMA model and ANN model. (2008, Lahane) points out the ARIMA model generates directional forecasting and ANN is better in value forecasting.

Advantages of ARIMA model are it is proficient in low-frequency data (2017, Li)(2019, Jiang). But insufficient in long-term data (2014, Adebiyi) paper presented the superiority of ANN model in forecasting 22 years of Dell stock comparing to ARIMA model. Multiple studies on hybrid model of ARIMA and machine learning model indicates hybrid model reduces computation complexity and improve in performance of models’ accuracy. (2019, Li).

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With different voices on the performance of ARIMA and machine learning model, a hybrid statistical and machine learning model tend to have better performance than single model alone in better accuracy rate and less computation complexity. This paper seeks to discover whether hybrid ARIMA model and commercial deep-learning models out performance singular model itself.