A Hybrid Nowcasting Approach for Stock Price Prediction

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Rapid advancements in financial services technologies have democratized participation in the stock markets around the world. With the increasing number of success stories, individuals' interest in stock market investment is increasing at an exponential rate. To bring some objectivity and certainty to decision-making, investors seek to predict stock prices. However, stock prices are influenced by a multitude of factors that make it very difficult to predict stock prices. Researchers have built numerous techniques and strategies that make use of various analyses and market indicators to predict stock prices. Market indicators are derived by quantifying crucial factors that are expected to affect stock prices, per fundamental and technical analyses. However, they are not very responsive to price changes in real-time. Researchers have used real-time indicators such as Google trends and sentiment analysis to solve this problem. Real-time indicators can capture real-time changes but are unable to forecast changes in future. None of the prediction techniques used hitherto combined fundamental analysis, technical analysis, and real-time indicators simultaneously to predict stock prices. Further, very few studies have been found useful to predict stock prices using high-frequency data. This study aims to fill that lacuna by combining technical analysis, fundamental analysis, and real-time indicators to predict stock prices with higher precision. The proposed Hybrid Nowcasting Model (HNM) has two main components: the predictor model and the Nowcasting model. The Predictor model is used to generate a leading indicator which is further used by the Nowcasting model to nowcast stock prices. The HNM model generates all the indicators internally and uses the prediction algorithm at its core. After rigorous testing and comparison of 5 state-of-the-art algorithms, Ridge regression was selected as the prediction algorithm for HNM model. The study also compares prediction performance using technical indicators, real-time indicators, and the proposed HNM model individually on a standalone basis. It

is found that the proposed HNM Model has the lowest RMSE and MAPE. To test the robustness of the HNM model, it is evaluated on high-frequency (hourly) data, the results show better performance than state-of-the-art-model such as ARIMA and Prophet. The study was further generalized by testing on FTSE and S&P500 indices. The findings demonstrate that the HNM model outperforms ARIMA and Prophet model which means the study is not limited to the selected stocks but can also be used on any stock exchange, stocks from any industry, and for both high and medium frequency prediction.