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SHORT-TERM FORECAST OF NEW CONFIRM CASE OF COVID-19 IN HUBEI, CHINA USING NAÏVE METHOD, MEAN MODEL, AUTOREGRESSIVE INTEGRATED MOVING AVERAGE (ARIMA) AND STATE SPACE MODEL

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STUDENT'S DECLARATION

I certify that this report and the research to which it refers are the product of my own work and that any ideas or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

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ABSTRACT

The new virus and disease have been found (COVID-19), with the outbreak started in December 2019 in Wuhan, unknown China. Coronavirus disease 2019 is a global pandemic that affects many countries. The number of confirmed cases worldwide on 4 May 2020 is 3,435,894 cases, with 239,604 deaths. On 25 March 2020, China recorded the highest number of confirmed cases with 81,848 cases and 3,827 deaths. The new confirmed cases keep on increasing day by day. Therefore, this study is conducted to forecast the new confirmed cases of COVID-19 in Hubei, China for a short-term period by using the Naïve method, Mean model, Autoregressive Integrated Moving Average (ARIMA), and State space model. There are 9 different training sets and test sets for every method in this study. All the methods are also divided into 4 datasets in which each dataset will predict a 3-step ahead forecast by using the best model that produces the least error measure. The result shows that the Naïve method is the best model for all 4 datasets since it produces the lowest error measure. However, the prediction of new confirmed cases by the Naïve method is not accurate to the actual new confirmed cases from the Kaggle website.

Keywords: COVID-19, R-programming, Naïve, Mean, ARIMA, State Space Model

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