Universiti Teknologi Mara

Predicting The Daily Cases of Covid-19 in United State using Artificial Neural Network and Autoregressive Integrated Moving Average

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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

Corona Virus Disease 2019 or better known as COVID-19 is a disease caused by a novel coronavirus now called as the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). COVID-19 was first discovered amid an outbreak of respiratory disease cases in China located in Wuhan City of the Hubei Province. The motivation behind this study is to help the citizen to be aware about the dangers of this virus that can lead to death since there are still people out there, who do not take this matter seriously. Therefore, this research is to identify the trend of COVID-19 cases as time increase. Furthermore, secondary data of COVID-19 new cases, in daily from US is used, and this research conducted to forecast the value of daily confirmed cases in 197 days ahead based on actual data for 147 days. Also, compared which method is the best based on error measurement of Mean Square Method (MSE) using the Artificial Neural Network (ANN) and Autoregressive Integrated Moving Average (ARIMA). There are two software used in this research which are the Alyuda NeuroIntelligence and R Studio. The ANN is used Alyuda NeuroIntelligence to analyse the data while ARIMA is used R Studio. In ANN methods, there are six architectures build and [2-2-1] is considered as the best model, consequently, has the lowest Akaike Information Criterion (AIC) and test error values. As for ARIMA generated 17 models, but model 16 is chose as the best method among other models. Lastly, ANN method is chosen as the best model compared to ARIMA method thus it has the lowest MSE.

Keywords: COVID-19, Prediction, ANN, ARIMA, MSE

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