Short-Term Forecasting of Daily Confirmed COVID-19 Cases in Malaysia Using RF-SSA Model

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Abstract

Novel coronavirus (COVID-19) was discovered in Wuhan, China in December 2019, and has affected millions of lives worldwide. On 29th April 2020, Malaysia reported more than 5,000 COVID-19 cases; the second highest in the Southeast Asian region after Singapore. Recently, a forecasting model was developed to measure and predict COVID-19 cases in Malaysia on daily basis for the next 10 days using previously-confirmed cases. A Recurrent Forecasting-Singular Spectrum Analysis (RF-SSA) is proposed by establishing L and ET parameters via several tests. The advantage of using this forecasting model is it would discriminate noise in a time series trend and produce significant forecasting results. The RF-SSA model assessment was based on the official COVID-19 data released by the World Health Organization (WHO) to predict daily confirmed cases between 30th April and 31st May, 2020. These results revealed that parameter L = 5 (T/20) for the RF-SSA model was indeed suitable for short-time series outbreak data, while the appropriate number of eigentriples was integral as it influenced the forecasting results. Evidently, the RF-SSA had over-forecasted the cases by 0.36%. This signifies the competence of RF-SSA in predicting the impending number of COVID-19 cases. Nonetheless, an enhanced RF-SSA algorithm should be developed for higher effectivity of capturing any extreme data changes.

Keywords

Author Keywords: COVID-19; eigentriples; forecasting; recurrent forecasting; singular spectrum analysis; trend; window length
Keywords Plus: SINGULAR SPECTRUM ANALYSIS; RAINFALL; CORONAVIRUS; PREDICTION; TREND

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