UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

FUZZY STATE SPACE MODELLING OF COVID-19 ENDEMIC

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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ABSTRACT

The first Covid-19 case was discovered in Malaysia on the 25th of January 2020 and the infection rate continued to rise until the transition to the endemic phase on the 1st of April 2022. Covid-19 still triggers large epidemics around the globe. The objective of this research is to predict the cumulative number of detected cases and the cumulative number of deaths. A mathematical representation of the state-space model is presented from the SIR model of the multi-wave dynamic of Covid-19. The data are taken from a real-time database of the Ministry of Health in Malaysia starting from 8th June 2022 until 14th June 2022 and are verified using MATLAB and Simulink to predict 12 weeks of the upcoming cases. Based on the simulation conducted, the results show the number of detected cases and death are increased as the number of infections detected cases existed. This result shows a positive relationship with the real-life situation.