1/2021

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UNIVERSITI PUTRA MALAYSIA
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# INSPEM'S ONLINE
# WEEKLY SEMINAR

**DATE : 8 JANUARY 2021 | TIME : 3.15 PM**
**MEDIUM : VIDEO CONFERENCE (ZOOM)**

zoom *Meeting ID: 921 7208 7407*
*Passcode: 308161*


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## Topic : Predictive Model for Pandemic Outbreaks: In Response to COVID-19


## ABSTRACT

A predictive model for COVID-19 outbreaks in the form of Graphical User Interface (GUI) was developed. The model can monitor and forecast the evolution of the cumulative number of positive cases of COVID-19 in Malaysia. A user will enter two parameters, namely the re-opening date after lockdown and the percentage of Malaysians who will follow the standard operation procedure (SOP) and practise 3W (wash, wear, warn). Then, the projection graph of the outbreak with numeric values will appear. The mathematical concept that underlying the method is compartmental SIRD model. Factors of intervention measures, such as lockdown, quarantine, healthcare system, and treatment were formulated in the model as piecewise functions to reflect the timely dependent epidemiological parameters. Through a system of ordinary differential equations, the model was solved by using the Runge-Kutta method that was embedded with parameter fitting techniques in MATLAB. The model gained a satisfactory result and adequately reflected the trend of the COVID-19 data. The proposed model improved the fit of the SIRD model compared to other methods as it produced the closest similarity between model and data. This GUI makes simulation much more accessible to non-experts, especially with minimal experience in programming and the knowledge of mathematics.


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