# A hybrid model using genetic algorithm and neural network for predicting dengue outbreak

ABSTRACT

Prediction of dengue outbreak becomes crucial in Malaysia because this infectious disease remains one of the main health issues in the country. Malaysia has a good surveillance system but there have been insufficient findings on suitable model to predict future outbreaks. While there are previous studies on dengue prediction models in Malaysia, unfortunately some of these models still have constraints in finding good parameter with high accuracy. The aim of this paper is to design a more promising model for predicting dengue outbreak by using a hybrid model based on genetic algorithm for the determination of weight in neural network model. Several model architectures are designed and the parameters are adjusted to achieve optimal prediction performance. Sample data that covers dengue and rainfall data of five districts in Selangor collected from State Health Department of Selangor (SHD) and Malaysian Meteorological Department is used as a case study to evaluate the proposed model. However, due to incomplete collection of real data, a sample data with similar behavior was created for the purpose of preliminary experiment. The result shows that the hybrid model produces the better prediction compared to standalone models.

**Keyword:** Hybrid model; Genetic algorithm; Neural network; Prediction; Dengue outbreak