

## A Model for Diagnosis and Prediction of Coronavirus Using Neural Network

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**Abstract :** Meta-heuristic and hybrid algorithms have high adeptness in modeling medical problems. In this study, a neural network was used to predict covid-19 among high-risk and low-risk patients. This study was conducted to collect the applied method and its target population consisting of 550 high-risk and low-risk patients from the Kerman University of medical sciences medical center to predict the coronavirus. In this study, the memetic algorithm, which is a combination of a genetic algorithm and a local search algorithm, has been used to update the weights of the neural network and develop the accuracy of the neural network. The initial study showed that the accuracy of the neural network was 88%. After updating the weights, the memetic algorithm increased by 93%. For the proposed model, sensitivity, specificity, positive predictivity value, value/accuracy to 97.4, 92.3, 95.8, 96.2, and 0.918, respectively; for the genetic algorithm model, 87.05, 92.07, 89.45, 97.30 and 0.967 and for logistic regression model were 87.40, 95.20, 93.79, 0.87 and 0.916. Based on the findings of this study, neural network models have a lower error rate in the diagnosis of patients based on individual variables and vital signs compared to the regression model. The findings of this study can help planners and health care providers in signing programs and early diagnosis of COVID-19 or Corona.

**Keywords :** COVID-19, decision support technique, neural network, genetic algorithm, memetic algorithm

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