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Identify the necessity of conducting a PCR test for COVID-19 by Random Forest Model

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The World Health Organization (WHO) declared the Coronavirus disease (COVID-19) as a pandemic in 2020, and it is still being dominated over the world. On that account, people tend to give their attention to the prevention and control of COVID-19. Although the Polymerase Chain Reaction (PCR) test was utilized to diagnose the virus in a person, it was a very difficult task for developing countries due to the cost. The purpose of this study was to create a model to identify the necessity of conducting PCR tests by using a Random Forest classifier in the Scikit-learn package. The data was collected from an online questionnaire survey provided to the university students who were living all over the country, in the Faculty of Science, University of Ruhuna, Sri Lanka during the period March-April 2021. Random Forest classifier of Scikit-learn in Python was used to construct the model using input factors—fever, sore throat, fatigue, first contact, loss of taste, headache, dry cough, and quarantine. The random trees were constructed using 100 bootstrap samples retrieved from data set of 70% of 81 complete responses. The accuracy of the developed random forest model was measured by the rest of the responses in the survey. As a result, the accuracy of the model which was 68.4% implies that the developed model can be used to identify the necessity of conducting PCR tests for any person using the relevant input factors. It will help to save the money of the country. In future, the developed model will be compared with other machine learning techniques to understand the precision of the current technique over others.

Keywords: COVID-19, PCR test, Random Forest

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