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| Title | The mathematical and machine learning models to forecast the COVID-19 outbreaks in Bangladesh | | |
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| Published Journal Name | Journal of Interdisciplinary Mathematics | | |
| Type of Publication | Journal | | |
| Volume | 25 | Issue | Special |
| Publisher | Taylor & Francis | | |
| Publication Date | Feb 21, 2022 | | |
| ISSN | 0972-0502 | | |
| DOI | https://doi.org/10.1080/09720502.2021.2015095 | | |
| URL | https://www.tandfonline.com/doi/abs/10.1080/09720502.2021.2015095 | | |
| Other Related Info. | Page 1 - 20 | | |
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| Abstract |  |
| The COVID-19 virus mutates in many different variants after its outbreak. Although several vaccines have been developed by many countries and implemented worldwide, it is difficult to prevent the outbreaks due to the pops out of different variants from its regular mutations. This study is an attempt to develop models which could precisely forecast the COVID-19 outbreaks in Bangladesh. In this study, we have developed a SEIRD based machine learning model to forecast the next possible one year outbreaks scenario in this country. We have tested the accuracy of this model by fitting the results with the considered historical data from March 08, 2020 to October 14, 2021. Also, we have validated this model by predicting the future inside the existing dataset, which is almost similar to the real dataset. It is observed that the final future forecasting results are very realistic compared to the current outbreak situation. Additionally, we have shown that the classical SEIRD model cannot predict the COVID-19 future outbreaks even it does not fit with the real datasets of outbreaks. Moreover, another machine learning time series forecasting model, FBProphet, has been implemented to forecast the future outbreaks of Bangladesh. Finally, we have analyzed and compared the forecasting results and hence identify the limitations of the proposed models which can improve future research in this field. | |