

# Predicting the vulnerability of Covid-19 using Machine Learning Algorithm

Vinita Raorane  
Vidyavardhini's College of  
Engineering and Technology  
[vinita.181643201@vcet.edu.in](mailto:vinita.181643201@vcet.edu.in)

Prathamesh Ramane  
Vidyavardhini's College of  
Engineering and Technology  
[prathamesh.181633105@vcet.edu.in](mailto:prathamesh.181633105@vcet.edu.in)

Yash Raul  
Vidyavardhini's College of  
Engineering and Technology  
[yash.181663105@vcet.edu.in](mailto:yash.181663105@vcet.edu.in)

Dr. Megha Trivedi

HOD, Vidyavardhini's College of  
Engineering and Technology  
[megha.trivedi@vcet.edu.in](mailto:megha.trivedi@vcet.edu.in)

## ABSTRACT

In this research, a quantitative model is developed to predict people's susceptibility to Covid-19 supported by their comorbid diseases and factors associated with Covid-19. Researchers have found that individuals with comorbid diseases have higher chance of being infected and developing more severe Covid-19 conditions. However, these patterns are only observed through correlational analyses between patient phenotypes and the severity of their Covid-19 infection. The research reported in this paper presents a comprehensive approach to determine the impact of pre-existing disorders on Covid-19. This might be substantiated by a complete study of the patient level dataset, which includes their prior conditions, vital health information, and age group, as well as the influence of Covid-19 on them. The analysis revolves around how each disease affects a patient's immunity, which includes endpoints such as admission of patients to a regular ward, semi-ICU, or ICU. Monitoring the patient's current conditions, supports the final outcome.

**KEYWORDS** Covid-19 Analysis, Comorbidities, Random Forest, Neural Network, Machine Learning, Diseases, Health.

## 1. Introduction

Covid-19 is the greatest issue that the entire planet is currently facing [9]. This pandemic has been declared a public health emergency in India and a few other nations. The virus' rapid spread has increased the number of patients. There is a need to mitigate the infection, which might be accomplished by putting in place appropriate safeguards based on the number of cases.

The death toll rises since patients are unable to overcome unless a vaccine is developed. The number of

people who die as a result of the virus could be reduced if patients could be identified early enough. AI is frequently employed to combat pandemics. AI-based medications will be highly effective while being inexpensive. The time it takes to find the right combination may be reduced to half using AI. [15]

Understanding the Covid-19 epidemic relies heavily on data science. It is customary to evaluate both organized and unstructured data in order to get prospective insights. Risk assessment, patient prioritizing, screening, diagnosis, contact tracing, automated patient care, vaccine research, and economic interventions are all aided by it [6]. As a result, data science aids in the management of the pandemic by assisting in decision-making.

Classification, prediction, and grouping are all common uses of machine learning models. As observed in different papers, there are various machine learning algorithms applied such as Random Forest, Logistic Regression, Naïve Bayes, Decision tree, etc. [4]. These algorithms with different accuracies are successful in predicting the severity level of Covid-19.

Organization of paper is as follows: Section 2 elaborates the previous related research in this field. Section 3 illustrates the methodology of implementation and different algorithms used. The detail architecture and experimental setup are described in Section 4 followed by the results in Section 5. The conclusion is summarised in section 6 followed by the references in Section 7.

  
HEAD  
Dept of Computer Engg.,  
Vidyavardhini's College of  
Engineering and Technology,  
Vasai Road 401 202





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Session Chair

Organizing Secretary  
Prof. S. V. Ramanan

Conference Chair  
Dr. V. Bindhu

HEAD  
Dept of Computer Engg.,  
Vidyaaradhini's College of  
Engineering and Technology,  
Vasai Road 401 202

