

Predicting the Severity of Patients with Coronavirus Using Neuronal Networks

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Although more than two years have passed since the beginning of the spread of the Coronavirus, there are no indications that the pandemic is about to leave, despite the massive vaccination campaigns and measures against this epidemic, as well as the availability of tests to detect infection early.

Researches have proven the effectiveness of artificial intelligence performance in medical case prediction models and medical decision support [1-3].

During the past two years, it presented multiple models of deep learning using neural networks to reach rapid automated models that help detect cases of Coronavirus using wide range of features.

In [1,2,4-7] it was presented multiple models of deep learning using neural networks to reach rapid automated models that help in detecting cases infected with the Coronavirus in chest computed tomography (CT) images and simple chest X-ray images.

Other researchers have also classified cases of infection with the Coronavirus according to the degree of infection using CT scans of the chest [8].

In another study, a predictive model based on artificial intelligence (AI) and machine learning algorithms was designed and developed to identify health risks and predict the mortality risk of patients with Coronavirus. This model used demographic features, medical information and some patients' clinical symptoms. The results showed an overall accuracy of 93% in predicting mortality [9].

In recent search proposed a classifier prediction model to predict mortality risks depending on different variables: demographic data, physiological symptoms of patients, the radiological findings of the chest x-ray, computed tomography CT scan and laboratory findings of daily blood tests, which are one of the least costly, effort and time diagnostic methods. The results showed the efficiency of the proposed classification model with accuracy of 95.9%, in addition the factors (cough, fever and the presence of interstitial opacities in chest radiographs and low oxygen saturation) increase the probability of death of infected patients [10].

In another study aimed to improve the Predicting of the Severity Of patients with Coronavirus using Boruta algorithm, genetic algorithm, KNN algorithm and Ridge coefficient with neural networks to reduce the number of the features while keeping the performance of the classifier to find the most important features that help in detecting the severity of the patients.

The results showed that all the extraction algorithms agreed with the age as the most important feature for the increased risk of infection with Coronavirus. The high temperature is a common feature with different degrees of importance among the extraction algorithms. In addition, coughing, fluid leaching and the number of neutrophils play an important role in increasing the possibility of increased risk of infection with Coronavirus. The developed system can help hospitals and medical facilities identify cases that require greater priority for hospital attention and care, increasing the number of daily recoveries, eliminating delays in providing the necessary care, and decreasing in the number of deaths [11]. To give them priority in treatment and care, and to support the medical decision in managing them as quickly as possible.

The models have achieved success, despite that, scientific research in this field has not stopped, and many scientific papers are still published daily to further develop these models and obtain the best performance for them in diagnosing and controlling the spread of Corona virus.

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