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Update of the article on the detection of a fully automatic deep network for the detection of corona from new and large sets of lung CT scans

Professor: Dr. Islami

Student: Amirhossein Zahedi-40014140111032

South Tehran University

Early diagnosis of corona disease is very important and necessary to prevent the deterioration of a person's condition.

This disease has spread all over the world and there is still no definitive cure for this disease. Corona disease is one of the most discussed diseases in the world today. This disease first started to spread from Wuhan, China and now it has affected the whole world. The work of this disease is to involve the person's respiratory system. In normal condition, it is confused with a cold, but the advanced type of this disease in people with special conditions who have underlying diseases (cardiac, respiratory, etc.) or old age, has more severe symptoms and may lead to death.

Screening of this disease is possible using CT scan images.

Several methods can be used to diagnose corona disease with the help of CT images, one of the suggested methods

The use of deep learning techniques is based on a convolutional neural network. In this manuscript we model the distinction between images

It shows those that contain disease with images that are free of disease.

The use of machine learning is also very important in order to check the exact condition of the patient at any moment.

Another method that is based on deep learning is the proposed scheme based on the use of the residual network

which uses jump coupling and allows the model to go deeper.

Another method that can be used in examining CT images is the use of artificial intelligence techniques. That using Convolutional neural networks can be used to detect and limit conflict intensity.

In any case, the use of CT images in order to be non-invasive and speed up the process of diagnosing the disease and that the accuracy of using these images

It is above 80%, it can be a suitable option for diagnostic and therapeutic work.

proposed model:

The purpose of this model is to classify a specific chest X-ray image into the normal or covid-19 category, which includes two critical steps: pre-processing (normalization and augmentation) and classification using pre-trained CNN architectures. Each step is described in the following sections. given in detail.

Preprocessing

This section gives a detailed description of the methods used in the pre-processing stage. Normalization: Data normalization is a basic step and is generally used to maintain numerical stability in CNN architecture. With normalization, a CNN model learns faster and the downward slope of the probability will be stable

Data augmentation: CNN models require a large amount of data to train more effectively and have been shown to perform better on larger datasets. However, the X-ray training images in the considered dataset are very less. This issue has been one of the major concerns when performing the analysis of medical images using DL algorithms because collecting medical information is a difficult task. To deal with this problem, the data augmentation method has been widely used, which helps you to expand the number of images by using sets of transformations and preserving class labels.

CNN models have superior results in a wide range of medical image processing applications. However, it is difficult to train these models from the beginning due to the limited availability of X-ray samples to

predict the cases of Covid-19. Using 9 pre-trained models using the concept of transfer learning (TL) can be useful in such conditions. In TL, the knowledge obtained from a DL model trained on a large data set is used to solve a task related to a relatively smaller data set. This helps in eliminating the need for a large data set and longer learning time as DL methods are trained from scratch.

The results of this section present the results of several tests. We have conducted a comprehensive empirical analysis for predicting Covid-19 from X-ray images using eight pre-trained CNN models, namely, VGG-16, AlexNet, ResNet 34-ResNet, Squeezenet, V2-MobileNet, GoogleNet 50-ResNet and We did V3-Inception. We analyzed the effect of several parameters related to these models and analyzed comparisons among eight CNN models. Finally, the best execution model is obtained. We also compared the results with recent advanced approaches and showed that 34-ResNet performed better than other competitive networks with an accuracy of 33.98%, and hence it can be considered as a potential model for predicting the covid-19 infection.

Radiologists can use this model to check the screening and consequently their use, and it can reduce their workload. This study also paves the way for further development of deep CNN models (using residual connections) for more accurate detection of covid-19 infection. The proposed DL model achieves significant forbidden classification performance (covid-19 vs. normal). has been built and a limited number of studies have been presented so far for multi-class classification (Covid vs. pneumonia vs. normal). Therefore, in future studies, the effectiveness of the proposed model for the multi-class classification problem will be verified.

In addition, we intend to explore the use of optimization algorithms along with the DL models used in this study to design a more reliable model.