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A Survey on

"COVID-19 DETECTION THROUGH TRANSFER LEARNING "

Bhagat Vivek Hanumant, Ajay Sanjay Awchar, Ninaad Mangesh Chandgude, Pritam Ashok Devdare

Guided By

Prof. P. S. Gawali

Sinhgad Academy Of Engineering

Abstract:

The flare-up of the Coronavirus sickness 2019 (COVID-19) caused the demise of an enormous number of individuals and announced as a pandemic by the World Health Organization. A large number of individuals are tainted by this infection and are as yet getting contaminated each day. As the expense and demanded investment of traditional Reverse Transcription Polymerase Chain Reaction (RT-PCR) tests to identify COVID-19 is uneconomical and extreme, analysts are attempting to utilize clinical pictures like X-beam and Computed Tomography (CT) pictures to recognize this illness with the assistance of Artifcial Intelligence (AI)- based frameworks, to help with robotizing the checking method. In this paper, we evaluated a portion of these recently arising AI-based models that can recognize Coronavirus from X-beam or CT of lung pictures. We gathered data about accessible exploration assets and investigated a absolute of 80 papers till June 20, 2020. We investigated and dissected informational indexes, preprocessing strategies, division techniques, highlight extraction, classifcation, and exploratory outcomes which can be useful for fnding future examination bearings in the space of programmed determination of COVID-19 infection utilizing AI-based structures. It is additionally refected that there is a shortage of clarified clinical pictures/informational indexes of COVID-19 afected individuals, which requires improving, division in preprocessing, and space variation in move learning for a model, creating an ideal outcome in model execution. This overview can be the beginning stage for an amateur/novice scientist to chip away at COVID-19 classifcation.

Keywords- Currency Detection, Convolutional Neural Network, Neural Network, Deep Learning

I. INTRODUCTION

Early finding of the Covid infection (COVID-19) is fundamental to diminish the spread of the

infection and give care for forestalling complexities. The day to day augments in Coronavirus cases overall and the impediments of the ongoing symptomatic devices force difficulties in distinguishing and dealing with the pandemic. Scientists overall are effectively taking part to track down compelling indicative methodology and speed up the improvement of an antibody and medicines.

As of the composition of this paper, three symptomatic methods are usually utilized: blood tests, viral tests, and clinical imaging [1]. Blood tests identify the presence of extreme intense respiratory condition Covid 2 (SARS-CoV-2) antibodies in the blood.

The world has ground to a halt because of the effect made by the original Coronavirus COVID-19 which is a infectious viral sickness that began from Wuhan city and presently it has transformed into a worldwide pandemic. It prompts lung contamination with side effects like dry hack, fever, and trouble in breathing, and so on. The effect of Coronavirus has shown an intense destruction of the economy and the enormous loss of living souls in different regions of the planet. The ordinary everyday exercises what's more, way of life of individuals have changed a great deal. Life has gone web based beginning from instructive establishments to looking for fundamental necessities.

II. Literature Survey

Detection of Covid-19 in Chest X-ray Image using CLAHE and Convolutional Neural Network Author: BuyutKhoirulUmri ,Muhammad WafaAkhyari Abstract ::- In 2019, the COVID-19 virus has spread to various parts of the world including Indonesia. This global pandemic becomes a lethal outbreak since there is no vaccine to treat or prevent transmission of the virus. Rapid Test is selected as an essential method to detect Covid-19 in Indonesia because the price is fairly cheap compared to the SWAB test. The increase in Covid-19 patients tends to lead to limited capacity for the Covid-19 test available at the hospital so that the latest technology to detect and overcome this pandemic issue is needed. Thus, the present research aims to examine the total of 100 X-Ray chest images of the Covid- 19 patients and 100 X-ray normal chest images. The application of Contrast Limited Adaptive Histogram Equalization (CLAHE) and Convolutional Neural Networks (CNN) methods are implemented to analyze the dataset with two scenarios in obtaining the detection results. The results of this research reveal that the application of CLAHE is likely to affect Covid-19 detection accuracy using CNN.

: Convolutional Sparse Support Estimator-Based COVID-19 Recognition From X-Ray Images Author name: Mehmet Yamac¸ , Mete Ahishali , AysenDegerli , Serkan Kiranyaz abstract : Coronavirus disease (COVID-19) has been the main agenda of the whole world ever since it came into sight. X-ray imaging is a common and

easily accessible tool that has great potential for COVID-19 diagnosis and prognosis. Deep learning techniques can generally provide state-of-the-art performance in many classification tasks when trained properly over large data sets. However, data scarcity can be a crucial obstacle when using them for COVID-19 detection. Alternative approaches such as representation-based classification [collaborative or sparse representation (SR)] might provide satisfactory performance with limited size data sets, but they generally fall short in performance or speed compared to the neural network (NN)-based methods. To address this deficiency, convolution support estimation network (CSEN) has recently been proposed as a bridge between representation-based and NN approaches by providing a noniterative realtime mapping from query sample to ideally SR coefficient support, which is critical information for class decision in representation-based techniques. The main premises of this study can be summarized as follows: 1) A benchmark X-ray data set, namely QaTa-Cov19, containing over 6200 X-ray images is created. The data set covering 462 X-ray images from COVID-19 patients along with three other classes; bacterial pneumonia, viral pneumonia, and normal. 2) The proposed CSEN- based classification scheme equipped with feature extraction from state-ofthe-art deep NN solution for X-ray images, CheXNet, achieves over 98for COVID19 recognition directly from raw X-ray images when the average performance of 5- fold cross validation over QaTa-Cov19 data set is calculated. 3) Having such an elegant COVID-19 assistive diagnosis performance, this study further provides evidence that COVID-19 induces a unique pattern in X-rays that can be discriminated with high accuracy

III Proposed Method and Algorithm

A. Proposed Methodology:

In a proposed system, we are proposing experiment COVID-19 detection using transfer learning

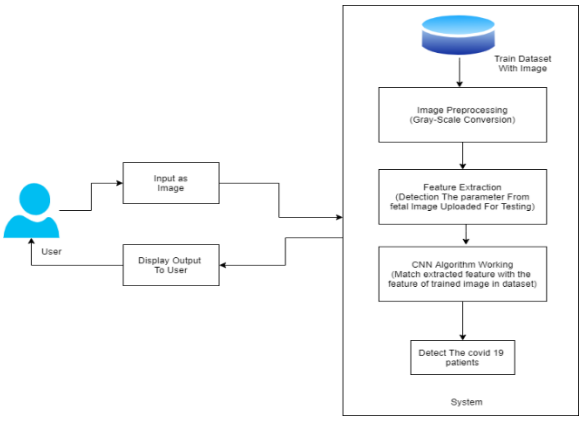

Fig1. Proposed Architecture

B. Algorithms

1. Convolutional Neural Networks (CNN)

Convolutional Neural Networks (which are additionally called CNN/ConvNets) are a kind of Artificial Neural Networks that are known to be tremendously strong in the field of distinguishing proof just as picture order.

Four main operations in the Convolutional Neural Networks are convolutional layer, max

pooling layer, relu and fully connected layer.

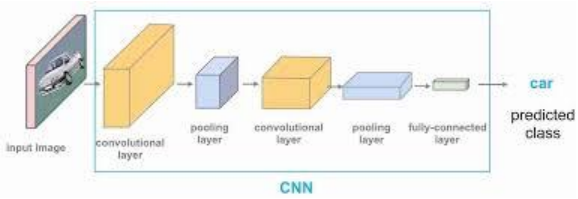

Fig.2. CNN Architecture

IV. Conclusion

This paper provides a survey of the recent advances in the literature review on the detection of outbreak Covid-19 virus. Reviewed paper is performed in the five last months. Many approaches are proposed using mainly deep architecture. We identified only one paper using handcraft features. However, there is no new contribution on machine Learning architecture almost all papers are trying to present a prompt solution to COVID-19.

REFERENCES

1. Dong, E., Du, H. & Gardner, L. An interactive web-based dashboard to track COVID-19 in real time. Lancet Infect. Dis. https://doi.org/10.1016/S1473-3099(20) 30120-1 (2020).

2. Gozes, O. et al. Rapid AI development cycle for the coronavirus (COVID-19) pandemic: initial results for automated detection & patient monitoring using deep learning CT image analysis. arXiv e-prints 2003, arXiv:2003.05037 (2020).

3. Song, Y. et al. Deep learning Enables Accurate Diagnosis of Novel Coronavirus (COVID-19) with CT images. medRxiv https://doi.org/10.1101/2020.02.23.20026930 (2020).

4. Wang, S. et al. A deep learning algorithm using CT images to screen for Corona Virus Disease (COVID-19). medRxiv, https://doi.org/10.1101/2020.02.14.20023028 (2020).

5. Jin, C. et al. Development and evaluation of an AI system for COVID-19 diagnosis. medRxiv, https://doi.org/10.1101/2020.03.20.20039834 (2020).

6. Punn, N. S. & Agarwal, S. Automated diagnosis of COVID-19 with limited posteroanterior chest X-ray images using fine-tuned deep neural networks. arXiv:2004.11676 [cs, eess] (2020)