

# The Covid-19 Detection with Contactless Method based on Deep Learning

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**Abstract**—The spread of corona virus diseases among medical workers is a big problem in this pandemic corona virus. There are many medical workers suffer and some of them died. The infected medical workers of corona virus are caused through directed or closed contacts between infected patients and medical workers. The closed and directed contact in medical services take place especially in diagnostic process. In order to handle this problem, the proposed method prevents the closed or directed contacts of medical workers to the suspected patients. The method uses RMI images or chest X-ray images data to predict the infected suspects. The proposed method is detecting the infected lung X-Ray image through Deep Learning model. It uses pre-trained model of GoogleNet, with modification. The Confusion Matrix and ROC curve are used to measure accuracy the predicted. They show that proposed method has high accuracy. Finally, the proposed method is able to replace closed or directed contact diagnostic done by medical workers to Covid-19 suspects. It has ability to handle the spread of Covid-19 among medical workers.

**Keywords**—*contactless method, chest X-ray, corona virus, medical workers*

## I. INTRODUCTION

The growing of victims caused by coronaviruses increase sharply. Especially, they who work on the hospital environment, such as medical workers, officers, The number of victims among medical workers rise. They are doctors, nurses, workers on laboratory and other workers in hospital environment[1]. In Semarang, Indonesia, the victim of medical workers rise to almost 50 after the infected travelers failed to inform their travel history[2]. The characteristic of patient to hide their health record provide dangerous impacts. The case does not only arise in Semarang, but almost in Indonesia country. The Indonesia Doctors Association (IDI) released the many of medical workers infected of Covid-19 because of contracted from the suspects[3]. In this case, in Indonesia, the diagnosis of suspects Covid-19 is done through a closed contact between patients and the doctors. It caused many of medical workers contracted Covid-19. The spread of coronavirus among medical workers starting. Furthermore, the spread of covid-19 outbreak reaches entire the world quickly, then it threatens healthcare world society[4]. The method of scattering covid-19 is through bat pests at the beginning [5]. Then, the spread of coronaviruses develops from human to human relationships. Since, this phenomena scatters to the whole world, WHO declared that Covid-19 as a sixth public health emergency of international concerns[6].

The Covid-19 has symptoms such as pneumonia, fever is as the common symptom, followed by cough. Then, it also shows ground-glass opacity of the lung[6]. There are many methods have used to detect the infected person of Covid-19 diseases. The Hematological examination test, it counts the white blood cells. The condition might be normal or decreased. The second, molecular diagnosis, it measures DNA viruses or Polymerase Chain Reaction (PCR test). The sample is taken from upper respiratory track can be diagnosed by RT-PCR. These both methods implemented through contacting mechanism phase between suspect and medical workers. Otherwise, chest radiography have ability to detect the early phase of disease. The image of chest contains some deposits stick to the lung [7]. This kind of method uses non-contact process between the suspect and the medical workers. The other methods also use Chest X-Ray to detect the Covid-19 suspect. performed without closed or directed contact between patients and medical workers. The detecting infected Covid-19 methods using chest X-ray also possesses many techniques too. The Chest radiological features (CXR) of Covid-19 and Clinical outcomes are correlated each other. The utilization of ANOVA algorithm was able to classify the infected and non- infected person of Covid-19. It finds patchy or opacities of lung[8]. The use of CT scan data also helps to detect the SARS and MERS diseases[9]. The X-ray data also used in Deep Learning method to identify the Covid-19 infected patients fulfilled a desired time. The extracted features with CNN simplifies SVM algorithm to classify[10].

## II. METHODOLOGY

### A. Data Acquisition

The Chest X-Ray (CXR) image is commonly a high resolution, with the large size and high dynamic range. Thus, the image can offer very detailed information of the objects[11]. The images are stored in a film materials, so that is difficult to distributed. Technically, the CXR is divided into two main procedures. The first is area or zone detector and line detectors. The first is faster achieved, but it has more radiation produced and lack of accuracy. The second, the line detector contained more detailed information. Since the characteristics of Chest X ray imaging is very complex, it needs very high capacity to store the data. In order to understand information inside the CXR image, there are some image processing fields to manipulate and display the information. Image transformation, image filtering, feature extraction and so on are the applications that can be performed