Face Mask Recognition

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Abstract: Coronavirus pandemic has quickly impacted our everyday life upsetting the world exchange and developments. Wearing a defensive facial covering has turned into another ordinary. Soon, numerous public specialist co-ops will request that the clients wear covers effectively to profit of their administrations. Along these lines, facial covering identification has turned into a vital assignment to help worldwide society. This paper presents an improved way to deal with accomplish this reason utilizing some essential Machine Learning bundles like TensorFlow, Keras, OpenCV and Scikit-Learn. The proposed strategy distinguishes the face from the picture effectively and afterward recognizes if it has a veil on it or not. As an observation task entertainer, it can likewise distinguish a face alongside a cover moving. The strategy accomplishes precision up to 95.77% and 94.58% separately on two distinctive datasets. We investigate advanced upsides of boundaries utilizing the Sequential Convolutional Neural Network model to identify the presence of covers effectively without causing over-fitting.

Keywords: Coronavirus disease 2019, Face mask , CNN

I. INTRODUCTION

The spread of COVID-19 is progressively stressing for everybody on the planet. This infection can be impacted from one human to another through the drops and airborne. As indicated by the guidance from WHO, to diminish the spread of COVID-19, each individual needs to wear facial covering, do social separating, sidestep the group region and furthermore continuously keep up with the invulnerable framework. Consequently, to ensure one another, each individual should wear the facial covering appropriately when they are outside. Notwithstanding, the majority of narrow-minded individuals will not wear the facial covering appropriately for such countless reasons.

To conquer the present circumstance, a strong facial covering location should be created. All together to identify a facial covering, the item discovery calculation can be carried out According to the World Health Organization (WHO)'s official Situation Report – 205, coronavirus disease 2019(COVID-19) has globally infected over 20 million people causing over 0.7million deaths [1]. Individuals with COVID19 have had a wide scope of symptoms reported – going from mellow manifestations to serious illness. Respiratory problems like shortness of breath or difficulty in breathing is one of them. Elder people having lung disease can possess serious complications from COVID-19 illness as they appear to be at higher risk [2]. Some common human coronaviruses that infect the public around the world are 229E, HKU1, OC43, and NL63*. Before debilitating individuals, viruses like 2019-nCoV, SARS-CoV, and MERS-CoV infect animals and evolve to human coronaviruses [3]. Persons having respiratory problems can expose anyone (who is in close contact with them) to infective beads. Surroundings of a tainted individual can cause contact transmission as droplets carrying virus may arrive on his adjacent surfaces [4]. To curb certain respiratory viral ailments, including COVID-19, wearing a clinical mask is very necessary. The public should be aware of whether to put on the mask for source control or aversion of COVID-19. Potential points of interest of the utilization of masks lie in reducing vulnerability of risk from a noxious individual during the "pre-symptomatic" period and stigmatization of discrete persons putting on masks to restrain the spread of virus. WHO stresses on prioritizing medical masks and respirators for health care assistants [4] Therefore, face mask detection has become a crucial task in present global society? Face mask detection involves detecting the location of the face and then determining whether it has a mask on it or not. The issue is approximately cognate to general object detection to detect the classes of objects. Face identification categorically deals with distinguishing a specific group of entities i.e., Face. It has numerous applications, such as autonomous driving, education, surveillance, and so on [5]. This paper presents a simplified approach to serve the above purpose using the basic Machine Learning (ML) packages such as TensorFlow, Keras, OpenCV and Scikit-Learn

1.1 RELEVANCE

In recent years, Image processing which deals with extracting useful information from a digital image plays a unique role in the advent of technological advance- mints. It focusses on two tasks: Improvement of pictorial information for human interpretation Processing of image data for storage, transmission and representation for autonomous machine perception. Also people have started to use image cap- Turing devices never as before with the advent of smartphones and closed circuit television.

II. RELATED WORK

1. Covid-19 Face Mask Detection Using TensorFlow, Keras and OpenCV

Arjya Das; Mohammad Wasif Ansari; Rohini Basak

This paper presents a simplified approach to achieve this purpose using some basic Machine Learning packages like TensorFlow, Keras, OpenCV and Scikit-Learn. The proposed method detects the face from the image correctly and then identifies if it has a mask on it or not. As a surveillance task performer, it can also detect a face along with a mask in motion. The method attains accuracy up to 95.77% and 94.58% respectively on two different datasets. We explore optimized values of parameters using the Sequential Convolutional Neural Network model to detect the presence of masks correctly without causing over-fitting.

2. An Automated System to Limit COVID-19 Using Facial Mask Detection in Smart City Network

Mohammad Marufur Rahman; Md. Motaleb Hossen Manik; Md. Milon Islam; Saifuddin Mahmud; Jong-Hoon Kim Published in: 2015 International Conference on Computer Communication and Informatics (ICCCI In this paper, we propose a system that restrict the growth of COVID-19 by finding out people who are not wearing any facial mask in a smart city network where all the public places are monitored with Closed-Circuit Television (CCTV) cameras. While a person without a mask is detected, the corresponding authority is informed through the city network. A deep learning architecture is trained on a dataset that consists of images of people with and without masks collected from various sources. The trained architecture achieved 98.7% accuracy on distinguishing people with and without a facial mask for previously unseen test data. It is hoped that our study would be a useful tool to reduce the spread of this communicable disease for many countries in the world.

3. Face Mask Detection Using MobileNetV2 in The Era of COVID-19 Pandemic

Samuel Ady Sanjaya; Suryo Adi Rakhmawan Published in: 2018 4th International Conference on Wireless and Telematics (ICWT) This paper introduces face mask detection that can be used by the authorities to make mitigation, evaluation, prevention, and action planning against COVID-19. The face mask recognition in this study is developed with a machine learning algorithm through the image classification method: MobileNetV2. The steps for building the model are collecting the data, pre-processing, splitting the data, testing the model, and implementing the model. The built model can detect people who are wearing a face mask and not wearing it at an accuracy of 96,85 percent. After the model was implemented in 25 cities from various sources of image, the percentage of people wearing face masks in the cities has a strong correlation to the vigilance index of COVID-19 which is 0,62.

4. The Face Mask Detection for Preventing the Spread of COVID-19 at Politeknik Negeri Batam

Susanto Susanto; Febri Alwan Putra; Riska Analia; Ika Karlina Laila Nur Suciningtyas N. John; Okonigene Robert Published in: 2017 International Conference on Computational Science and Computational Intelligence (CSCI) This paper aims to develop the face mask detector which is able to detect any kinds of face mask. In order to detect the face mask, a YOLO V4 deep learning has been chosen as the mask detection algorithm. The experimental results have been done in real-time application and the device has been installed at Politeknik Negeri Batam. From the experimental results, this device is able to detect the people who wear or do not wear the face mask accurately even if they are moving to various position

III. PROPOSED METHOD

A.   System Design
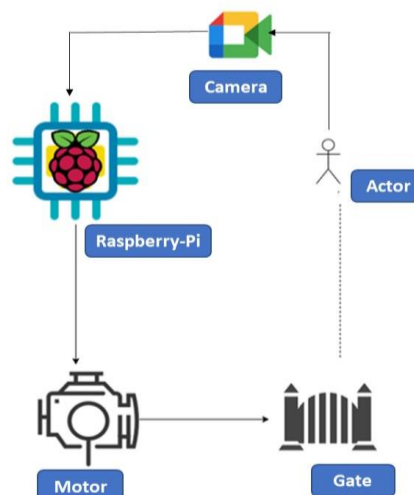
B.   Implementation

●   We will develop a system to detect where people are wearing masks or not. We also check the body temperature of a person to avoid covid-19 spread.

●   We proposed a system in the form of a gatekeeper. We will mount gatekeeper in offices, colleges, function halls etc. where people can meet each other.

●   We will use machine learning algorithms to classify where people are wearing masks or not. To detect face masks, we searched many datasets on Kaggle site.

●   We will use a temperature sensor to det

●   we allow those people who are wearing masks and body temperature should be low. This all system based on raspberry pi

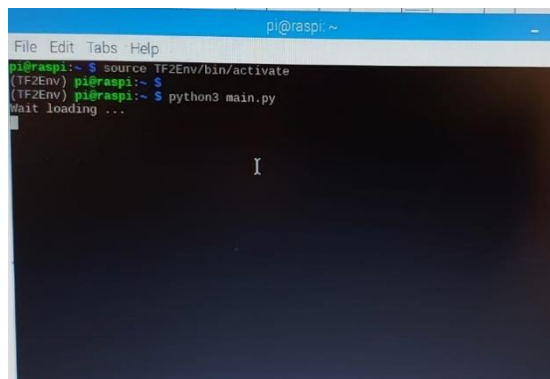●   which allow to implement all function
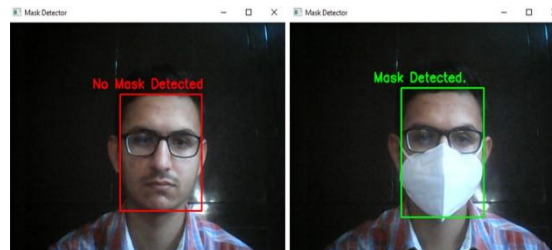
RESULTS

Fig: Camera Scanning Window

Fig 6.2: Output Window

V. CONCLUSION

We are implementing a system for face mask detection using Rpi and image processing approaches. OpenCV gave us better result for classification with high accuracy

VI. REFERENCES

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