

A RESEARCH PAPER ON SOCIAL DISTANCING WITH MASK AND TEMPERATURE DETECTION AND REPORTING SYSTEM

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ABSTRACT

In situations like today's, world is suffering from pandemic and other deadly diseases that spread through physical contact or touch. The spreading of these diseases come along with the symptoms and health problems. We intend to develop a touch less or basically contactless check-up system. This system is supposed to calculate the person's temperature and checking whether the person is wearing a mask. The supposedly developed system is meant for reducing the risk of face-to-face contact. The system will work essentially by conforming the crucial details and send the report to the associated acquaintance. The report will be delivered through mail or SMS. Temperature measurement can be one part of the assessment to determine if a person has an elevated temperature potentially caused by a COVID-19 infection. One method to measure a person's surface temperature is the use of "no-touch" or non-contact temperature assessment devices, such as thermal imaging systems (also known as thermal imaging cameras or infrared tele-thermographic systems) or non-contact infrared thermometers and to detect mask without human contact using AI.

Keywords: Artificial Intelligence, Social Distancing, Mask, Temperature, Covid-19.

I. INTRODUCTION

Since last few months the spread of novel Coronavirus disease flu-like respiratory disease has created crisis to global health that has created very bad impact on human life and the way we use to live earlier and the routine we use to follow. In December-19 the spread of Covid-19 has led the world into crisis i.e., financial and health crisis. This Pandemic took lives of lakh till date and many more counting. A novel coronavirus is person-to-person contact transmission. Disease is of two types i.e., Symptomatic and Asymptomatic. This means even the person is not showing the symptoms they might be infected with coronavirus. Common symptoms of the disease are fever, tiredness, sore throat, nasal congestion, loss of taste and smell. At the moment, WHO recommends that people should wear mask to avoid the risk of virus transmission and also recommends that a social distance of at least 2m be maintained between individual to prevent person-to-person spread of disease. Many Public service providers require customer to wear mask so they made a condition that if the person wears the mask, then only, he will be allowed to enter the premise or he won't be allowed to enter. For this purpose, face mask detections and checking body temperature has become crucial as a task to help global security.

II. LITERATURE REVIEW

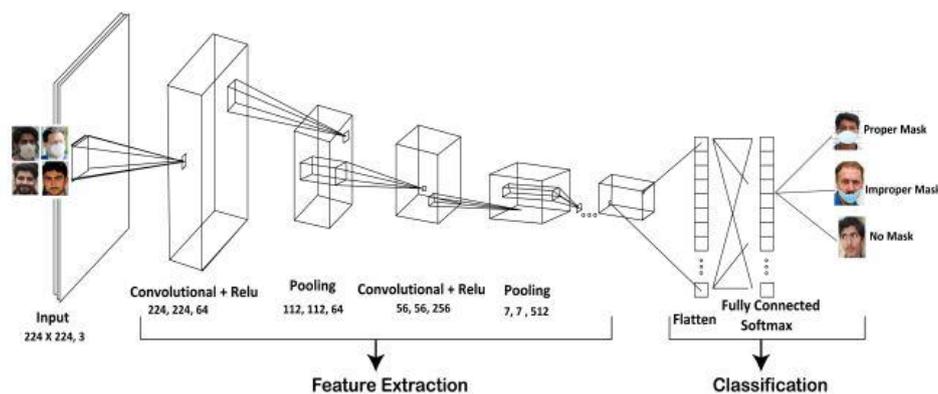


Figure 1: Architecture of Convolutional Neural Network (CNN) model.

For Social distancing with mask and Temperature detection reporting system we used various structures, methods and algorithms. Every management application uses different kind of technologies to secure the application and to make it better for users. We have used some following components here,

a. Deep Learning based safe social distancing and face mask detection

According to the report of Shashi Yadav people can use the deep learning algorithms to maintain social distancing and mask detection in public places to avoid the spread of Covid-19. This system requires higher computational power to work in places but also It is not able to find the infected person among the crowd so our proposed system will be able to find the infected person.

b. Automatic Facial Mask Detection using deep learning

Mask Detection using deep learning by Smaranjit Ghose stated that they can give alert to people who are not wearing masks and temperature can be checked manually and precautions can be taken. This system uses the manual temperature detection which can increase the risk of infection for the person who is checking the temperature.

III. SOCIAL DISTANCING AND FACE MASK DETECTION

The spread of novel coronavirus disease has created a most crucial health crisis across the world. Millions of people were affected because of the spread of the virus. Covid alert system is understood as the process of overcoming and preventing spread of virus. At many public places it is mandatory for people to wear mask otherwise they won't be allowed to enter. Similarly, body temperature is checked as a precautionary measure. Instead of manually checking these parameters it is a better to do this automatically using a system. The system is a way to control further spread of Covid-19. In order to stop the spread of covid-19 it is necessary to check whether masks are worn. Many people use mask in wrong way so it is necessary to check. In the same way it is necessary to check the body temperature of people. The system will help to detect infected people. It is hard to keep a watch on people to check if they are maintaining distance and taking precautions. Educational institutes, offices, malls can make use of the system to detect infected people. Our work comes very close to the work described in. The cited work looks at identifying people with full face or partial occlusion. The paper categorizes people with hand over their faces or occluded with objects. This approach is unsuitable for our scenario which requires to essentially detect faces that have their mouths covered with mask like objects such as scarves, mufflers, handkerchiefs etc.

Euclidean Distance Formula

The Euclidean distance formula says:

$$d = \sqrt{[(x_{22} - x_{11})^2 + (y_{22} - y_{11})^2]}$$

where,

- (x_{11}, y_{11}) are the coordinates of one point.
- (x_{22}, y_{22}) are the coordinates of the other point.
- d is the distance between (x_{11}, y_{11}) and (x_{22}, y_{22}) .

IV. EXAMPLES

This System can be used in following areas:

- Institutions as Schools and colleges are reopening.
- Corporate Offices.
- Public Places like malls, theatres which are also reopening.

V. APPLICATIONS

Social distancing and face mask detection is artificial intelligence-based system which is very useful now a days. As we all know about the Covid-19 disease, so there is a need that everyone needs to wear mask and this system help to detect that the mask is present or not.

VI. CONCLUSION

The system developed "Contactless Temperature Check-up and Mask Detection" shows new innovative, intelligent idea of allowing access to the people entering the certain premises while maintaining the Social

Distancing. The main objective to achieve behind building this system was to maintain the physical contact to minimum and minimizing the risk of spreading of the infections. While developing the system, it was recognized that this system "Contactless Temperature Check-up and Mask Detection" will be applicable to the scale of small to medium sizes like a start-up office, a housing society or a classroom etc. This system will help in checking the temperature of bearing person and checking whether that person is wearing a mask or not followed by generating the report for the same and notifying through mail or SMS while also providing voice instructions and help otherwise.

VII. REFERENCES

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