



# COVID-19 FACE MASK DETECTION & FACE RECOGNITION

<sup>1</sup>Aryan Soma, <sup>2</sup>Harsh Nagare, <sup>3</sup>Pratik Veer, <sup>4</sup>Pritam Doiphode, <sup>5</sup>Prof. Arvind Sangle

<sup>1</sup> Student, <sup>2</sup> Student, <sup>3</sup> Student, <sup>4</sup> Student, <sup>5</sup> Professor  
Electronics and Telecommunications Department

MCT's Rajiv Gandhi Institute of Technology, Mumbai, India.

**Abstract:** COVID-19 pandemic has rapidly affected our day-to-day life disrupting the world trade and movements. Wearing a protective face mask has become a new normal. In the near future, many public service providers will ask the customers to wear masks correctly to avail of their services. Therefore, face mask detection has become a crucial task to help global society. 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.

Keywords :

OpenCV = Open Computer Vision

CNN= Convolutional Neural Network

## 1.0 INTRODUCTION

Facial recognition is a technique for identifying a person based on specific features of their face by comparing stored patterns of each human face in a group of individuals. Facial recognition is a simple and natural way to recognize and authenticate people. Facial recognition is ingrained in people's daily life and interactions. Security and personal authentication are very important in every business and organization. Therefore, automatic facial recognition using computers or devices for round-the-clock and even remote identity verification is gaining popularity in today's society. With the horizon still brim-full, effective ways to contain the COVID-19 pandemic require close attention to reduce negatively impacted community health and worldwide economy. Many approaches are advised by WHO to manage the infection rate and prevent depleting the limited medical resources in the absence of effective antivirals and inadequate medical resources. Wearing a mask is one of the non-pharmaceutical interventions that can be utilized to reduce the principal source of SARS-CoV2 droplets ejected by an infected person. Regardless of debates over medical resources and mask varieties, all countries require public use of masks that cover the nose and mouth. There is a clear need for user-friendly technology that can protect assets and protect privacy without revealing the identity to large amounts of data. A PIN is required to withdraw money from an ATM. A password is required to access the computer. Dozens of other codes are required to access the Internet. There are reliable biometric methods for personal identification, such as fingerprint analysis and retinal or iris scans, but these methods require the cooperation of participants. On the other hand, person recognition systems based on frontal image and facial contour analysis are often effective without the cooperation and knowledge of the participants

## 2.0 LITERATURE SURVEY

- The research paper “The Face Mask Detection Technology for Image Analysis in the Covid-19 Surveillance System, 2020” & The author of this research paper is G. K. Jakir Hussain, K. S. Tamilselvan, R. Tamilanban and M. Vinoth Saravanan, & The outcome is the proposed system to classify face mask detection using COVID-19 precaution both in images and videos using convolution neural network.
- The research paper “In Proceedings of the 7th International Conference Confluence 2017 on Cloud Computing, Data Science and Engineering. 2017” & The author of this research paper is Dang, K.; Sharma, S., & The outcome is the proposed system to classify face mask detection using COVID-19 precaution both in images and videos using convolution neural network.
- The research paper “Facial Recognition System for People with and without Face Mask in Times of the COVID-19 Pandemic, 2021” & The author of this research paper is Jonathan S. Talahua, Jorge Buele, & The outcome is the Review and comparison of face detection algorithms.
- The research paper “The Face Mask Detection Technology for Image Analysis in the Covid-19 Surveillance System, 2020” & The author of this research paper is G. K. Jakir Hussain, K. S. Tamilselvan, R. Tamilanban and M. Vinoth Saravanan, & The outcome is also proposed to investigate new extraction architectures that can be compared with MobileNet V2

## 3.0 PROPOSED APPROACH

### A. Block Diagram

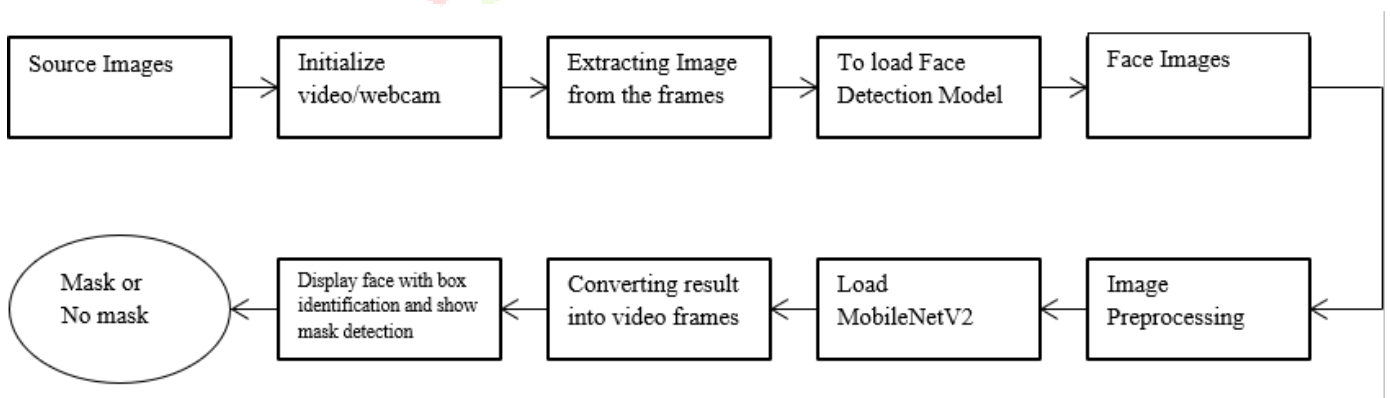
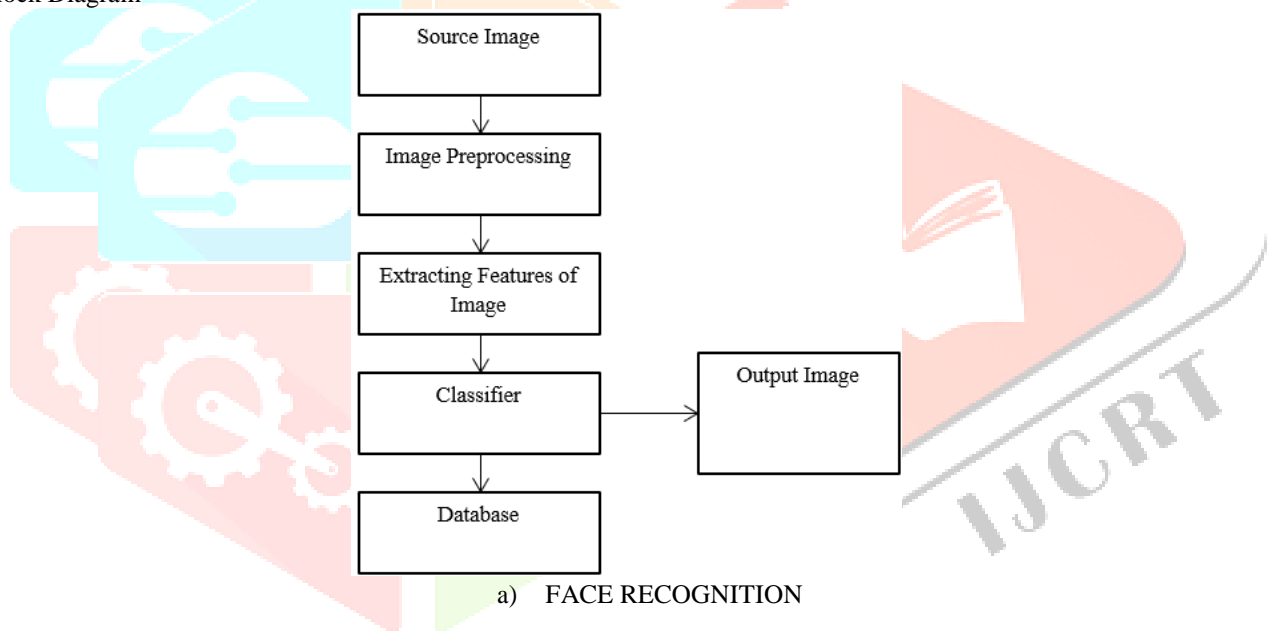


Fig 1 : Block Diagram

## B. Our Proposed Method

### Face masks detection & Face Recognition:-

System layout The main requirement for imposing this challenge the usage of python programming language together with Deep learning, Machine learning, Computer imaginative and prescient and additionally with python libraries.

The structure includes Mobile Net because the backbone, it is able to be used for excessive and coffee computation scenarios. We are the usage of CNN Algorithm in our proposed system.

1. Implementation: We have 4 modules Datasets Collecting : We acquire no of information units with face masks and with out masks. we are able to get excessive accuracy relies upon on amassing the quantity of photographs .
2. Datasets Extracting: We can extract the functions the usage of cellular internet v2 of masks and no masks units
3. Models Training: We will teach the the version the usage of open cv, keras (python library).
4. Facemask Detection: We can locate Pre processing photograph and additionally locate through stay video . If human beings put on masks, it's going to allow them, if now no longer then it's going to warn them put on masks to save you them from virus transmission.
5. Collecting photographs IDs Extracting particular functions, classifying them and storing in PNG documents Matching functions of an enter photograph to the functions withinside the stored PNG documents and expect identification
6. Facemask Detection: We can locate Pre processing photograph and additionally locate thru stay video . If human beings put on masks, it's going to allow them, if now no longer then it's going to ask to put on masks to save you them from virus transmission.

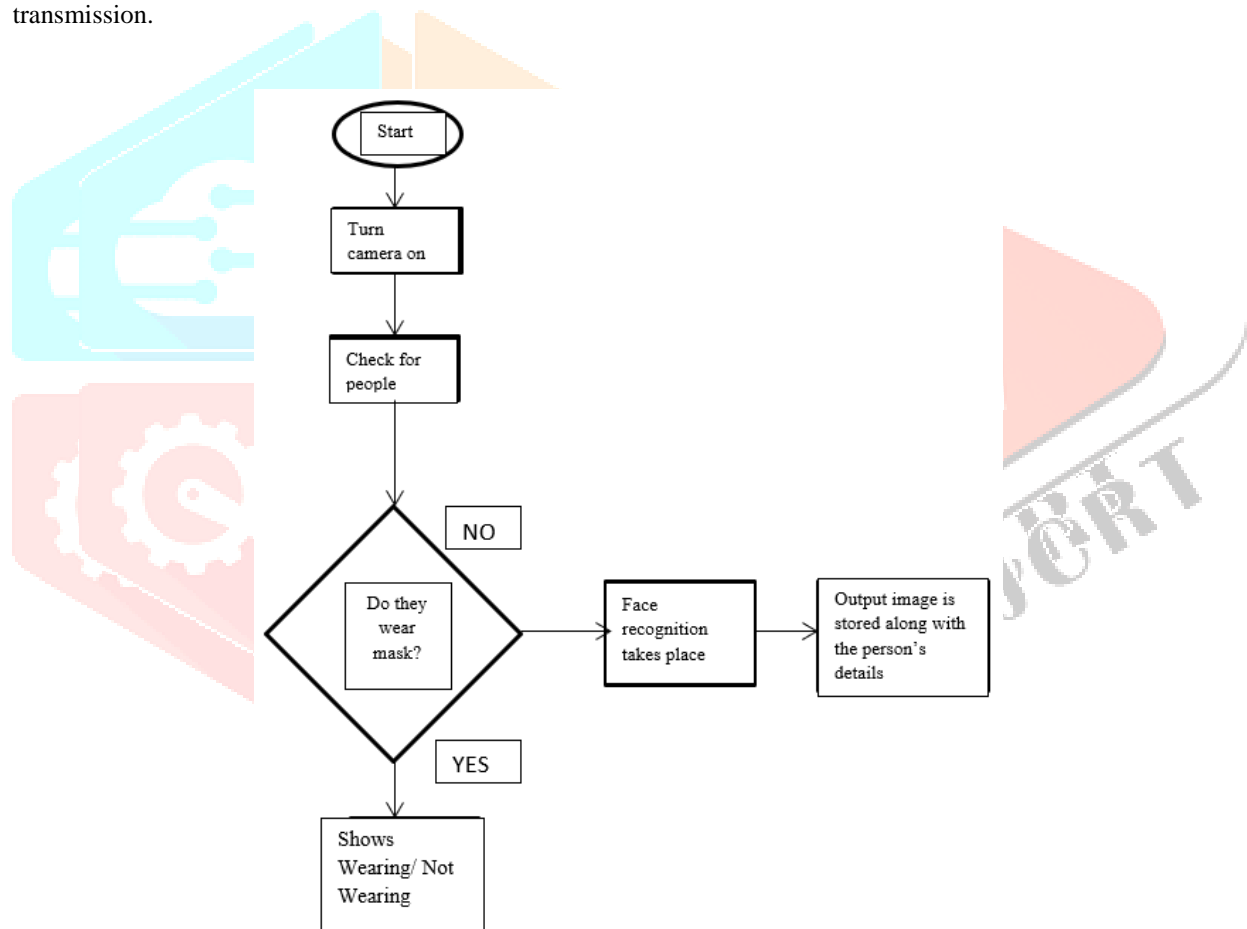


FIG: 2 FACE MASK DETECTION & FACE RECOGNITION FLOWCHART

### 4.0 RESULT AND DISCUSSION

We utilized a dataset of over 2000 mask and unmasked photos to train the models for Face Mask Detection and 40+ images for face recognition in this research. This research proposes using a sequential Convolutional Neural Network to identify and recognize human faces, both with and without masks. Experiments show that the suggested CNN achieves a high level of accuracy. It can accurately recognize both monochrome and colored images. Firstly, it identifies the face mask over face & if they are not wearing the mask their face is been recognized and stored in the desired file with the name & number.

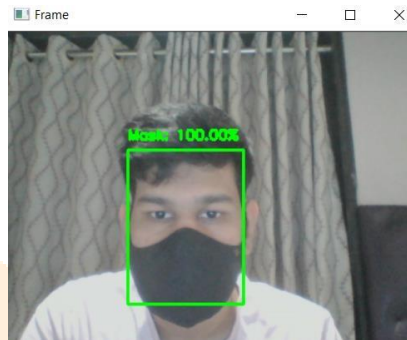


Fig 3 : MASK DETECTION; YES

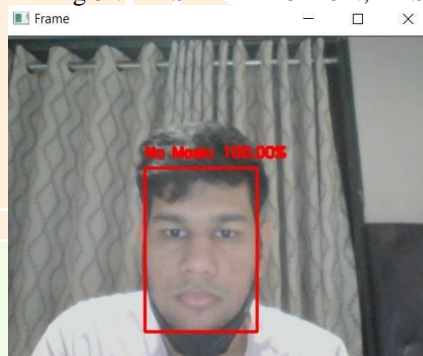


Fig 4 : MASK DETECTION: NO

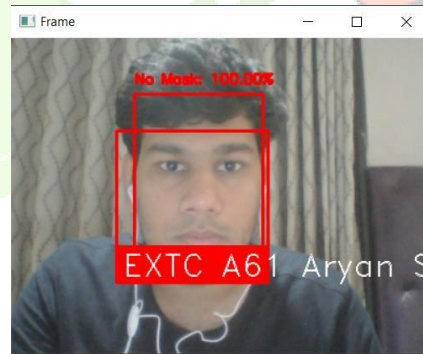


Fig 5 : FACE RECOGNITION

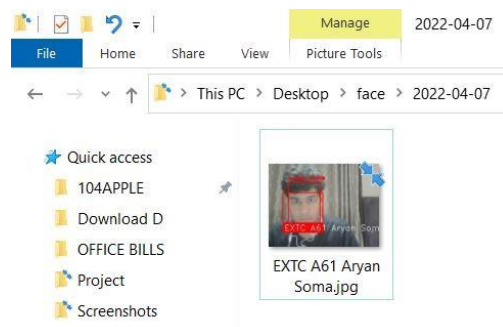


Fig 6 : STORED OUTPUT

## 5.0 APPLICATION

- A. Face Recognition systems assist regulate access to personal devices, households, automobiles and other locations to address this limitation.
- B. With Face Recognition-controlled access in place, you can be certain that only you or someone you designate will have access to your personal device (and perhaps your financial information).
- C. Unauthorized entry to your personal device, home, automobile, or workplace may be practically eliminated with a well-designed Face Recognition access control system.
- D. No, none of your Web screenshots may pose a security risk in this situation
- E. In School, Colleges & Offices to protect with students and employees with this system
- F. Eventually, it is used in traffic signals, Government Quarters and other controlled rooms

## 6.0 CONCLUSION AND FUTURE SCOPE

Face Recognition has a bright future ahead of it because it can be used for nearly everything. This technology can also be used to verify passports and visas. The same method can also be used to verify a driver's licence. Technology can be utilised to improve surveillance and security in the defence ministry, airports, and other key locations. It can also be implemented in bank lockers and vaults for access control verification and authentication of authentic users.

## 7.0 ACKNOWLEDGEMENT

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