

Face Mask Detection

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Abstract- In the face of the COVID-19 pandemic, the World Health Organization (WHO) declared the use of face mask as a mandatory so in this project our goal is to develop such system which can detect a person even if he/she is wearing the mask or not. In order to avoid the spread of COVID-19.

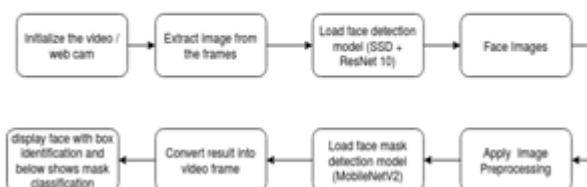
I. INTRODUCTION

The In recent decades, facial recognition has become the object of research worldwide. In addition, with the advancement of technology and the rapid development of artificial intelligence, very significant advances have been made. For this reason, public and private companies use facial recognition systems to identify and control the access of people in airports, schools, offices, and other places. On the other hand, with the spread of the COVID-19 pandemic, government entities have established several biosafety regulations to limit infections. Among them is the mandatory use of face masks in public places, as they have been shown to be effective in protecting users and those around them.

As the spread of the virus occurs through physical contact, conventional recognition systems (such as fingerprints) or typing a password on a keyboard become insecure. Thus, facial recognition systems are the best option, as they do not require physical interaction as in other cases. However, the use of the face mask within these systems has represented a great challenge for artificial vision, because at the time of facial recognition, half of the face is covered and several essential data are lost. This clearly denotes the need to create algorithms that recognize a person when they are wearing a face mask. This has made it necessary to implement new strategies to achieve robustness in the current systems.

II. SOFTWARE DESIGN

Face Mask detection flow from webcam



The figure shows the actual design of the architecture and how system works. Face mask detection flow from webcam. Firstly we need to setup capturing devices to gather input for which we initialize the webcam. Then from that we take stream of video input and we extract frames to do analysis. After that system load that extracted frames to face mask detection module for analysis. To analysis of correct data we apply detection algorithm to selected frames from starting video. To predict the analysis from the help of applied algorithm. And it displays face with box identification and shows analysis that the person is wear a mask or not.

III. SCOPE

The work opens interesting future directions for researchers. Firstly, the proposed technique can be integrated into any high-resolution video surveillance devices and not limited to mask detection only. Secondly, the model can be extended to detect facial landmarks with a facemask for biometric purposes.

IV. FUTURESCOPE

We can create an own algorithm that directly searches for a face with and without a mask should be considered. This avoids first using the Open CV face detector and then classifying faces with and without mask. This will further reduce the processing time and make the model more robust. In addition, it is proposed that in the future, a comparative study of the models used for the transfer of learning can be carried out in order to determine the best model and network trained in unfavorable evaluation conditions. Once the final models have been trained, they can be compressed and deployed on low-cost embedded devices such as Raspberry Pi or mobile devices.

V. CONCLUSION

This prototype system allows for the facial recognition of people with and without a mask, and could be used as a low computational consumption proposal for personnel access control. The two models of this system are tested with images, thus achieving better precision and optimization for each model. The face of someone found in the database is successfully classified to provide the name tag

and probability of success. The face with or without mask is detected using the face mask detection module which is implemented in this system & the results are shown.

REFERENCES

- [1] <https://ieeexplore.ieee.org/document/9342585>
- [2] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223067/>
- [3] <https://www.mdpi.com/2071-1050/13/12/6900/htm>
- [4] <https://www.scitepress.org/Papers/2021/104831/104831.pdf>
- [5] https://drive.google.com/drive/folders/1IPwsC30wNAc74_GTXuEWX_F8m2n-ZBCH