

Summer Internship Programme @Ajay Kumar Garg
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Face Mask Detector

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Team

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Objective / Aim

The project aims at developing a minimalist application that detects whether or not a person is wearing a mask.

The application inputs a live camera feed and outputs the corresponding boolean i.e the mask is on or the mask is off along with the accuracy or potential of correct prediction.

Scope of the Project

In this pandemic time our project is dedicated to all the workplaces whether it be arcades, small shops or large public centres anywhere that foresee public gathering.

This project aims to identify people not wearing masks such that these people are forbidden to enter any such area. In this way the possibility of spreading the disease is reduced to a certain threshold.

Technology Stack

1. **Image Processing:** This project will utilize python's image processing library i.e OpenCV to determine the face in live feed and extract the ROI (Region Of Interest) using famous feature detection algorithms that are Haar Cascade algorithm and Viola Jones algorithm.
2. **Computer Vision:** This project sees the use of Convolutional Neural Networks (CNNs) within it to train, tune and test the classifier and it's parameters and hyperparameters on the dataset already retrieved. The model that will be used is lightweight MobileNetV2 currently STate Of the Art (STOA) in visual recognition particularly object detection.

Use Case

1. **Public Centre:** People wearing masks detected by public cameras can be allowed to enter certain places at this pandemic time. For example : At metro stations, public vehicles; only those wearing masks are allowed to enter.
2. **Home Safeguard:** Using the camera at door feature and automation in technology with the help of this app integrated the door unlocks, only when someone wearing a mask approaches the doorstep.

Dependencies

The current dependencies include the dataset of people with and without masks and access to software technology.

Source: <https://github.com/X-zhangyang/Real-World-Masked-Face-Dataset>

The future dependencies include hardware integration.

Advantages and Disadvantages

1. To detect people with masks at areas like local buses, airports, metro etc.
2. People belonging to office staff or workers at hospital can also be monitored.

The project aims to minimize the caveats but the few that prevails are:

1. Integration of current application with new hardware.
2. Automation of sending alert messages.
3. Multi Channel recognition system.