Project Name: Face Mask Detection using CNN

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Objective/Aim: To identify the person on image/video stream wearing face mask with the help of computer vision and deep learning algorithm by using keras framework with tensorflow as a backend.

Need and Relevance:

The system can be used in the following places to identify people with or without masks:

- Offices (Manufacturers, retail, other SMEs and corporate giants)
- Hospitals/healthcare organizations
- Airports and railway stations
- Sports venues
- Entertainment and hospitality industry
- Densely populated areas

Analyzing the current scenario, government and private organizations want to make sure that everyone working or

visiting public or private places is wearing masks throughout the day.The face mask detection platform can quickly identify the person with a mask, using cameras and analytics.

Significance :

- The system is easy to implement in any existing organizational system.
- The system can be used easily with any camera or hardware like surveillance cameras.
- The system restricts access for those not wearing the masks and notifies the authorities.

Workflow:

- Gathering the images dataset (i.e, with mask and without mask).
- Data preprocessing.
- Building a convolution neural network using sequential API of keras.
- Train the face mask detection classifier on image data using keras and tensorflow as a backend.
- Evaluate the model to see the loss and accuracy in

graphical form.
- Use the live webcam video stream to detect the face.
- Extracting the region of interest of the face. - Engage trained Face Mask Detection model to the face identified and determine if the person is wearing Mask or Not.
- Throw a Warning Message in terms of Pop Up window to highlight that Access Denied if the person has not worn the face mask.
- Trigger an Email to the concerned person/authority alerting them if the person is not wearing the mask.

Expected Outcome:

At the end of this project we'll be able to detect whether a person is wearing a mask or not and if some person doesn't wear a mask then an alert window will pop up and an email will be sent to the authorities.

Facilities Required:

- Python 3

- Tensorflow 2.3
- Keras

- Windows(7/8/10)

- Webcam

- Jupyter Notebook