# COVID-19 FACE MASK DETECTOR USING PYTHON AND DEEP LEARNING  PROJECT

MEMBERS:
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## MOTIVATION

Some measures have to be taken to mitigate the spread of COVID-19. Even though most of them are following norms, some are not following them due to their irresponsibility. And wearing a mask frequently or for a long time can cause irritation that is caused because the mask traps dirt and oil in pores. So, some people tend to remove their masks in public places like shopping malls and stores, which may become the primary cause of spreading coronavirus. As it is challenging for the guard or workers or officers to detect them in public places, we would like to make a face mask detector which can make their task easier and stop the spread of covid.
The project's primary aim is to detect the presence of a face mask on human faces on live streaming video as well as on images.

## PROJECT DETAILS

First we will train our model and then use it for detections.
Dataset has two categories of images- with_mask and without_mask
**Data Preprocessing:** Initializing the initial number of epochs to train for, batch size etc. Then load all the images from the face mask detection dataset and convert them into numpy arrays. These arrays are used to make Deep Learning model .
**Training:**Training a model (using Keras/TensorFlow) on this dataset, and then serializing the face mask detector to disk Deployment.
Training has four steps: Input will be sent to MobileNet(Convolution), then we will do max pooling and falten it and create a fully connected layer and we will get the output.
Plot accuracy and matrix by using matplotlib and run the model and check for accuracy
Once the mask detector is trained, we can then move on to make a face detection model using cv2.dnn etc, and load the mask detector model to that.
**OUTPUT:** Classifying each face as with_mask or without_mask along with percentage

**LIBRARIES USED:**
TensorFlow,keras, sklearn, numpy, opencv.python-cv2, matplotlib

**TWO-WEEK PLAN:**
DAY 1-3   : Learning new libraries
DAY 4      : Preparing Dataset
DAY 5-6   :Data Preprocessing
DAY 7-8   :Training the model
DAY 9-10 :Run and view accuracy
DAY 11-12:Face Detector Model
DAY 13    :Using/Testing Model

**PERSONAL LEARNING GOALS:**
open cv , TensorFlow, keras

Reference: https://www.researchgate.net/publication/344173985_Face_Mask_Detector