

# **Project Title: Face Mask Detection**

## **Group members:**

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## **Methodology:**

Here in our project, we will use pictures of different people as the dataset. We use here two types of images are with face mask pictures and without the facemask pictures. Here the full dataset has 1376 pictures. In the dataset 690 pictures are with mask and 686 pictures are without the mask. We set label dictionary in code for with mask label 0 and without mask label 1. For our project, we need to do some preprocessing in our dataset. The images in our dataset are of different colors and sizes. So for convenience, we will take all the pictures in the same color and size. We will set all pictures color gray and size 100\*100. In our project, we have committed 80% of the dataset as the preparation information and the leftover 20% as the testing information, which makes the split proportion 0.8:0.2 of a train to test set. Out of the preparation information, we have utilized 20% as an approval informational index. In general, 64% of the dataset is utilized for preparing, 16% for approval, and 20% for testing.

We will use Keras along with Tensorflow to train our model. The first part of the training includes storing all labels of the images in a Numpy array and the corresponding images are also reshaped for the base model. Image augmentation will increases our dataset with images with a whole new perspective. Before inputting, we will perform the following image augmentations randomly: rotations up to 20 degrees, zooming in and out up to 15%, width or height shift up to 20%, up to 15 degrees shear angle in the counterclockwise direction, flip inputs horizontally and points outside the boundaries of the inputs are filled from the nearest available pixel of the input.

In convolutional neural network, data will pass two convolutional layers. Then data will get into the flatten convolution layer then it will be connected with a dense layer that was 50 neuron length. Then finally it will be connected with another dense layer which was the output layer. This output layer was 2 neuron length. The result will show here that with a mask and without a mask. Data will be divided categorically here.

Here we can try to find out loss, accuracy, validation loss, and validation accuracy for training data. After getting the result we will show the training loss and validation loss graph.

Here we are going to input one image in cascade classifier then crop the image accurately by  $100 \times 100$ . Then it will be passed into CNN. It will give two probabilities that with a mask and without a mask.