**Face mask detection using ML**

A year 2020 had paused human lives for much longer time. It was a much-needed break which has still lasted for many countries. Corona virus a.k.a Covid-19 hit in India around Dec-2019. A country wide shutdown was announced by the government to contain the virus and stop it from spreading. This made mandatory for everyone to wear masks whenever someone stepped out of the house. The government made strict rules for wearing the masks and fine a citizen if it is not wore properly. This is where a sustainable idea was built FACE MASK DETECTION USING MACHINE LEARNING.

We came up with a solution of detecting the masks at public places using the CCTV cameras. We have proposed that embedding our software with the CCTV cameras can detect the person’s mask easily and in an efficient way. Here, we have tried to train the model with the pre-processed dataset. The technology is Python and its libraries. The external libraries for image classification which has been used here is KERAS and TENSORFLOW pre-processing image and machine learning libraries. This helped us in generating image and convert the images into the array format. Further, the converted data was used to train the model using, sklearn.model\_selection with importing train\_test\_split method. During the start, our test size was only 20% of the dataset to be used for training purpose. This number went high, and the model got trained approximately 50%-80% on its own with 60% of accuracy. Using the previous learnings, the model increases the detection accuracy and tries to learn on its own from the past learnings. Using the pyplot library, the graph was plotted on how much model was trained when the initial dataset was imported. This processed the accuracy of the model based on the data set available.

At the time of the output, we have 2 files which gets generated. One is the model file and the other is the graph plot which gets developed based on the model learning. The model file can further be integrated with the CCTV cameras using the OPEN CV (Computer Vision) tool. Once the model is fully trained and embedded with the cameras following results comes up:



The green line defines “Mask has been put on correctly”, and the red line defines” Please wear your mask properly.”

In future, if a person is at the public place and not wearing the mask properly, a mobile notification can be sent out to the person who is not wearing the mask properly.