AI-based Face Mask Detector using Convolutional Neural Networks (CNN)

Project Aim

- To build automated Face Mask Detection system to check presence and absence of mask

In consideration with Post COVID-19

Abstract:

In order to protect ourselves from the COVID-19 Pandemic, we tend to wear a face mask. It becomes increasingly necessary to check if the people in the crowd wear face masks in most public gatherings such as Malls, Theatres, Parks. The development of an AI solution to detect if the person is wearing a face mask and allow their entry would help the society. A Face Mask detection system can be built using the Deep Learning technique called as Convolutional Neural Networks (CNN).

Essential Tools

Language: Python 3.7

Libraries:

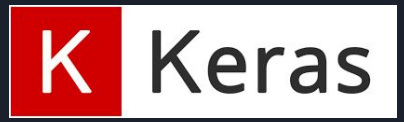
1. **OpenCV** *(Image Detection & Recognition)*
2. **Numpy** *(Image processing)*
3. **Pandas** *(data processing)*

Haar Cascade Classifier *(.xml file)*

Libraries & Frameworks

- **Matplotlib**
  Version 3.2.2

- **Keras**
  Version 2.3.0



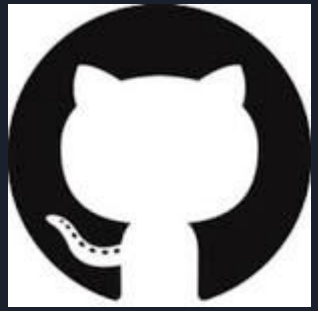
- **Scikit-Learn**
  Version 0.23

Dataset

with masks: 690
without masks: 686

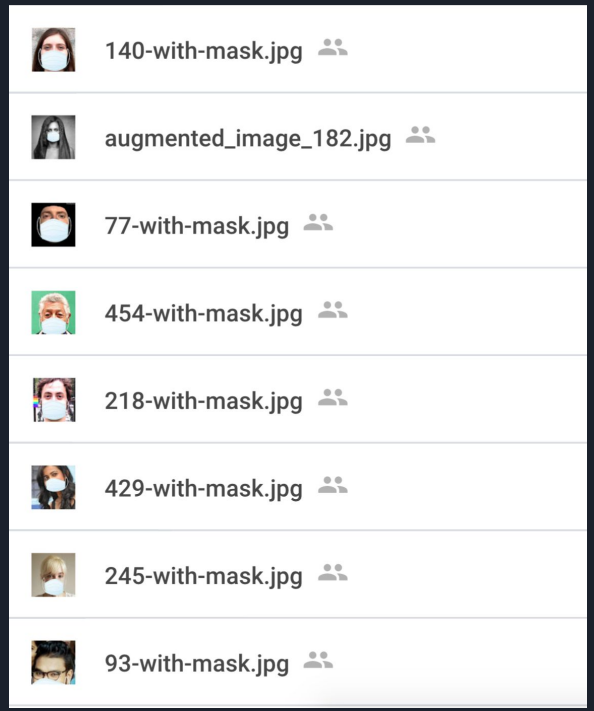
Total images: 1376

Link: bit.ly/Face-mask-dataset

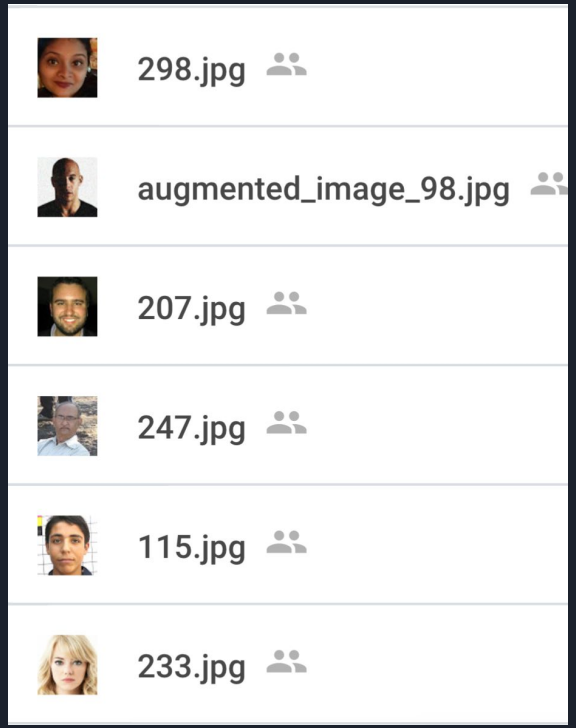


GitHub

with masks

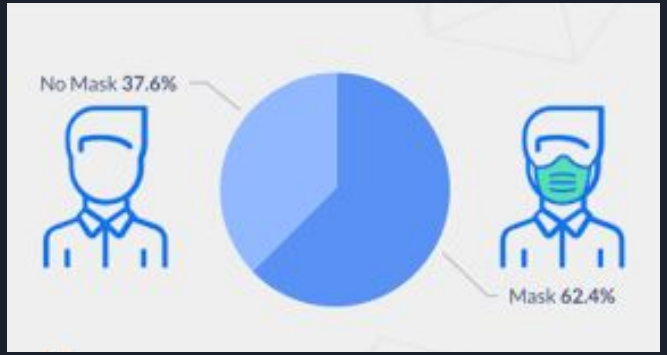


without masks



Steps involved

- Data Preprocessing
- Training CNN Model
- Mask Detection



CNN architectures

- VGG Net
- ResNet
- Dense Net
- Inception Net
- Xception Net

Thank You