Face Mask Detection

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Introduction:

The Covid 19 pandemic is causing a worldwide health crisis. Wearing a face mask in public places and wherever else is the most effective safety gear

A project is a web application based on the Django framework
It uses machine learning to teach a system to be able to detect a face mask

Tools:

```
Python
Pandas
NumPy
Seaborn

CNN
Keras
```

TensorFlo
w
+Django
+ html
+ CSS
+ JavaScript

Data:

resours:
4095 images

image quality:
different quality
close Up face only

split data:
Training -> 3276 images
Validation -> 655 images
Testing ->164 images
sorted by each class label





Workflow:

Data pre_processing
Baseline
CNN
TensorFlow
MobileNet_V2
Simple NN
Results

CNN
Experiment 1

1- AveragePooling2D
2- Different size of filters:
(224, 224)
3- Flatten
4- Optimizer: Adam
5- Color: gray, black

Experiment 2
Dropout 0,5 only 5%

Experiment 3
1- Dense try 128
2- Regularize

Experiment 4
Image Data Generator
rotation range=20,
zoom range=0.15,
width_shift_range=0.2,
height_shift_range=0.2,
shear range=0.15,

Baseline:

Number of photo: 2500 images
Accuracy: 95%
Validation: 98%

The Solution is to increase The number of photo

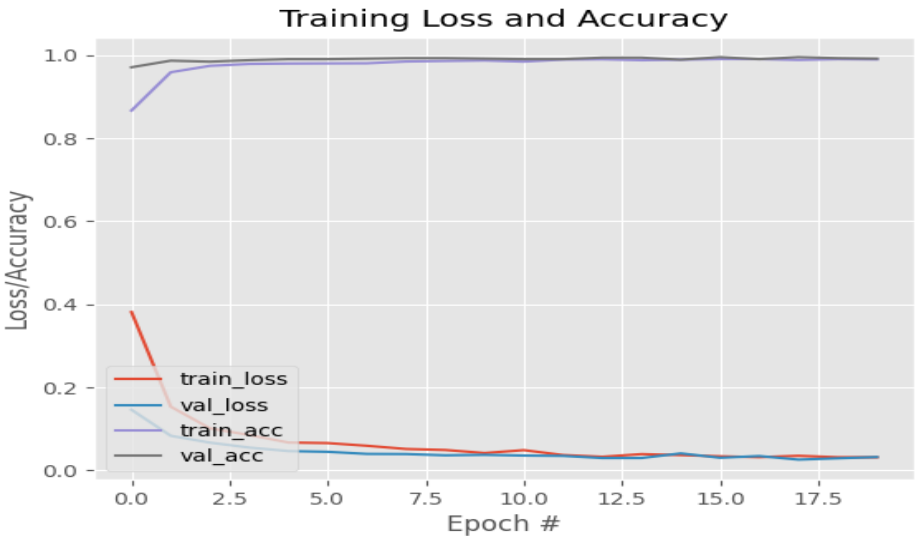
classification report:

	precision	recall	f1-score	support
with mask	0.98	1.00	0.99	433
without mask	1.00	0.98	0.99	386
accuracy	--	--	**0.99**	819
macro avg	0.99	0.99	0.99	819
weighted avg	0.99	0.99	0.99	819

Transfer Learning Model :

Number of photo : 4095 images

Model	**Training**	**Validation**
MobileNet_V2	0.99%	0.99%



Results:

- User
- Face Detector web application
- trained model
- Face mask Detector