SGSITS Presents
C-36143

INDEX

ORGANISED AT SMART INDIA HACKATHON AICTCE

TEAM MENTOR
SHEKHAR SHARMA SIR
SHUBHAM SHRIVASTAVA SIR

PRESENTED BY:-
ASHISH DAREKAR

AI - Based
FACE MASK
DETECTION
FOR DEFENSE

Upload an image or video to detect whether you or someone else
is wearing a mask or not.

IMAGE   VIDEO

As the pandemic went on, scientific consensus shifted to be strongly in favor of masks, and many states and cities mandated their use in public. And while masks are certainly not perfect— [data suggest](#) that they've helped curtail the spread [not](#) just of COVID-19, but other diseases, too.

Face mask detection refers to **detect whether a person is wearing a mask or not**. In fact, the problem is reverse engineering of face detection where the face is detected using different machine learning algorithms for the purpose of security, authentication and surveillance.

What is the need of face mask detection?

The Face Mask Detection System can be used at office premises to detect if employees are maintaining safety standards at work. It monitors employees without masks and sends them a reminder to wear a mask.

Face Detection Algo.
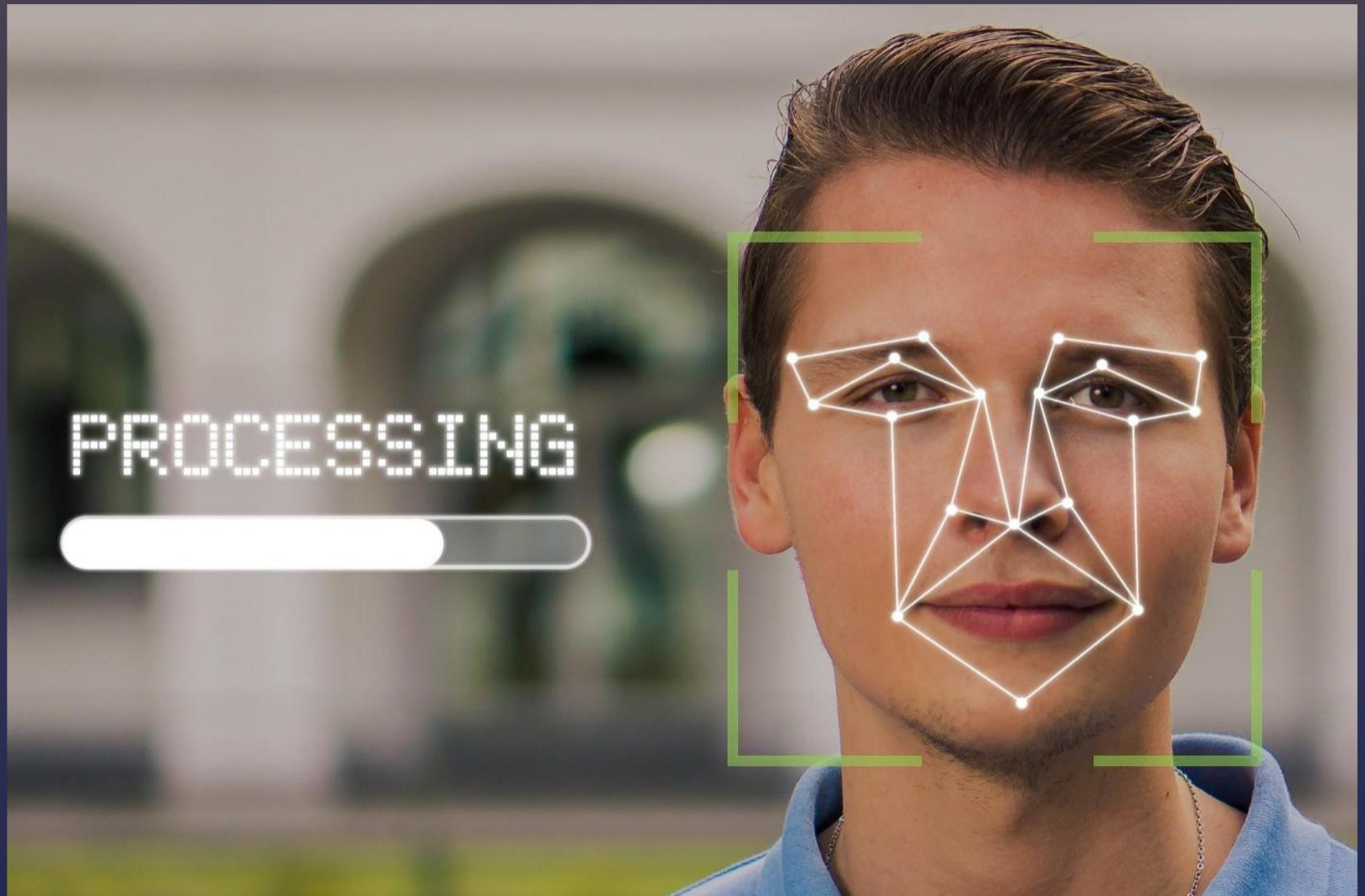
How face is detected?

Face detection algorithms typically start by searching for human eyes — one of the easiest features to detect. The algorithm might then attempt to detect eyebrows, the mouth, nose, nostrils and the iris. The methods use in face detection can be knowledge-base, feature-base, template matching or appearance-based.
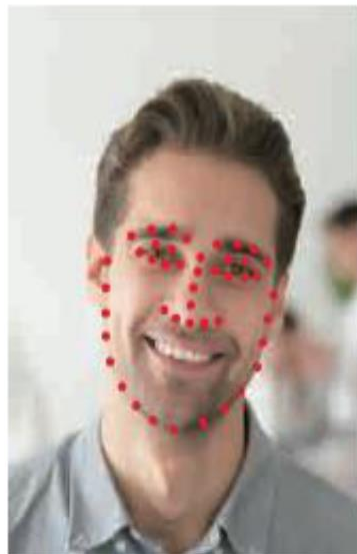
1 Face Detection

First, we need to apply face detection to compute the bounding box location of the face in the image.
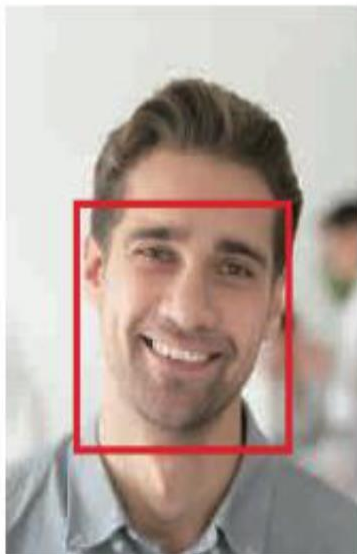
2 Facial Landmarks Detection

Apply the facial landmarks, allowing the system to localize the eyes, nose, mouth, etc.

3 Mask Add-on

Get advantage of deep learning technology. The mask will be automatically applied to the faces that the mask is based on the facial landmarks to resize, rotate, and replace automatically.

4 Mask Dataset Created

Repeat this process for all the input images, thereby creating our artificial face mask dataset.

Reverse Face Detection Algo.

1

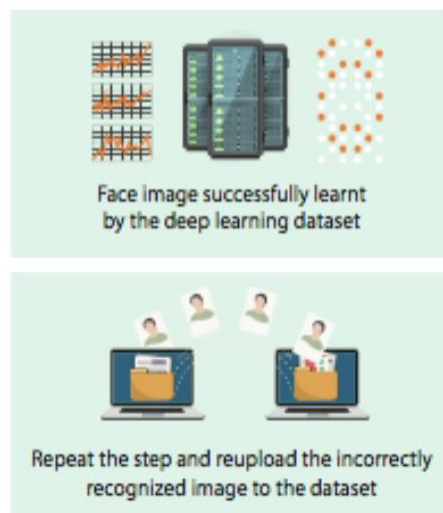### Train a face mask detection with mass images

The first step is to input over 200,000 masked face photos and 1,000,000 of the standard face images into an in-depth learning dataset. Usually, the mask recognition deviation rate will be just 5 -10% after the first round comprehensive learning training.

Input over 200,000 masked face photos and 1,000,000 of the standard face images into an in-depth learning dataset

Image Recognized

Incorrectly Recognized
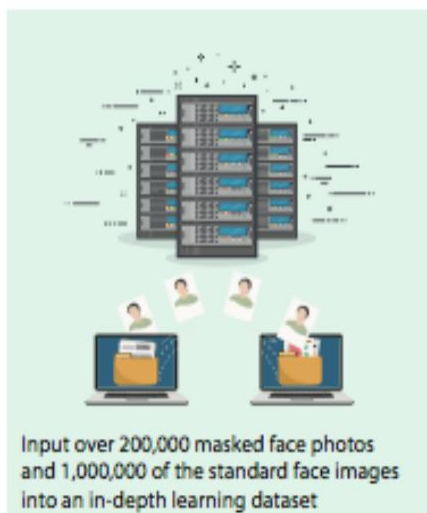
2

Re-train with the rejected image

To raise the mask recognition deviation rate, repeat step one; this time, only upload incorrectly recognized photos into the deep learning network until the mask recognition accuracy reaches at least 99.8% in the lab environment.

Face image successfully learnt by the deep learning dataset

Repeat the step and reupload the incorrectly recognized image to the dataset

3

Image differentiation

Once the face mask detector is well-trained, we can then move on to loading the mask detector, starting its face detection function, and classifying the image as "With mask" or "Without a mask". With the field application, the lowest acceptable standard will be at least 98% accuracy under 10,000 field test.

Mask

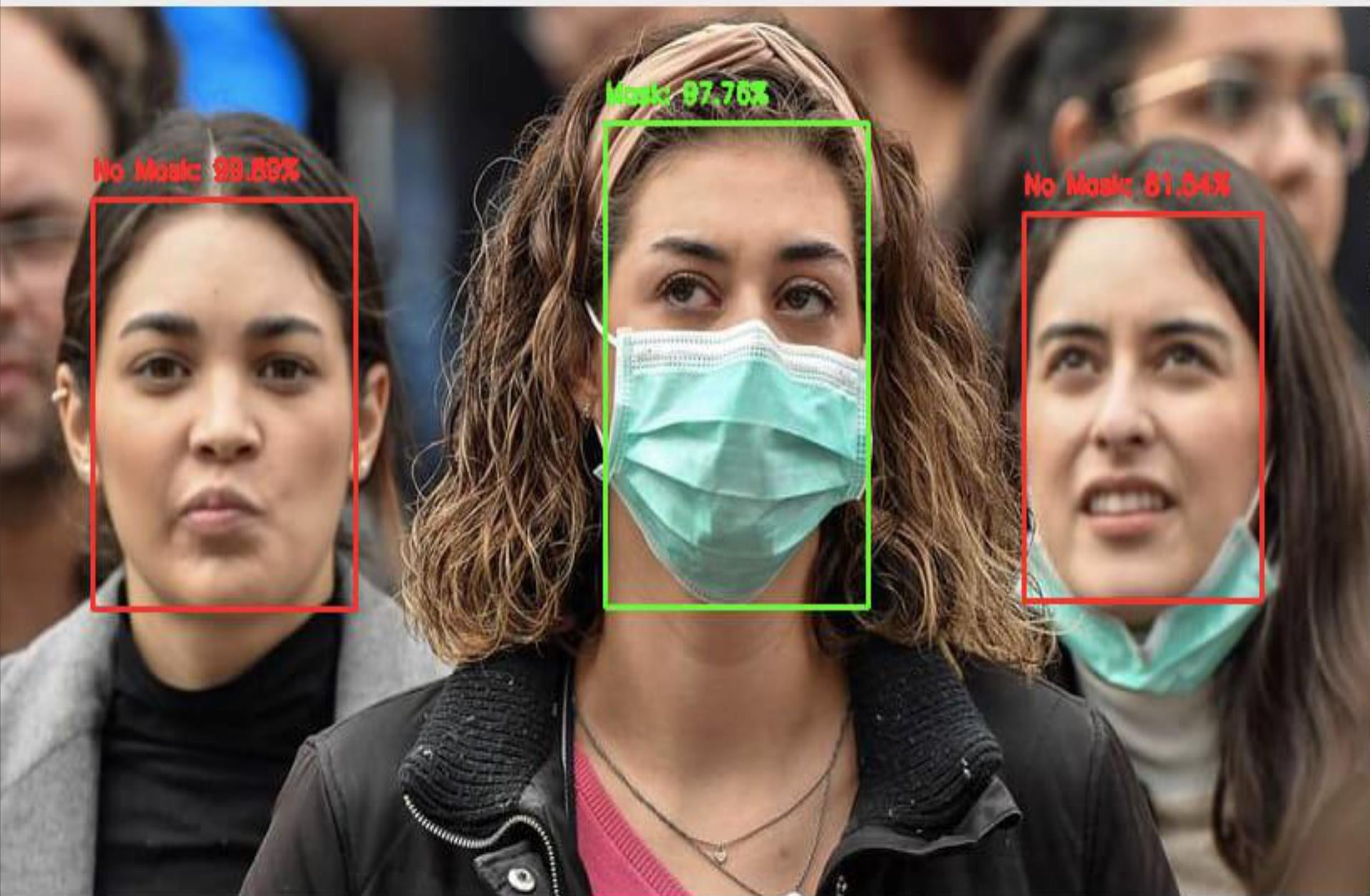**No Mask**
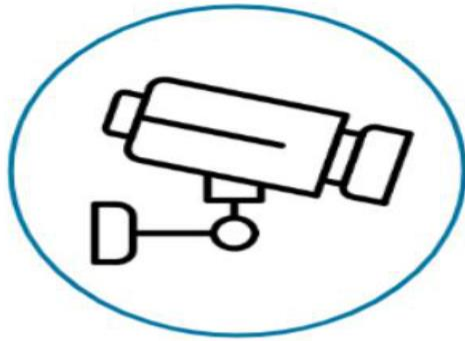
Use any camera
to analyze faces

Detect faces with
and without masks

Get notifications for
new detections

Face Mask
mandatory to enter

Thank you!
for wearing a mask and helping
in keeping everyone safe!

Remind visitors to
wear a mask

Thank visitors for
wearing a mask

#SIH Senior
Software Edition

GRAND FINALE 2022

August 25-26

SMART INDIA HACKATHON 2022

SIH

Participation

Certificate

This Certificate is awarded to

ASHISH DAREKAR

for participating in Smart India Hackathon, 2022

Sh. K Sanjay Murthy
Secretary, Higher Education,
Ministry of Education

Prof. Anil D. Sahasrabudhe
Chairman, AICTE
Ministry of Education

Dr. Abhay Jere
Chief Innovation Officer,
Ministry of Education's Innovation Cell

Dr. Anand Deshpande
Chairman and MD,
Persistent Systems

Ministry of Education
Government of India

MoE's INNOVATION CELL
(GOVERNMENT OF INDIA)

Persistent

Azadi Ka Amrit Mahotsav

Broadcast Partner

CHANDIGARH GROUP OF COLLEGES

aws

Partner