**Documentation**

**On**

**Mask Detection Based Access**

**Control System for**

**Shopping Malls**

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**1.Introduction** :

**A.** **Overview**: The usage of face mask by the general public to impede the spread of the Viruses is highly essential. Wearing face mask limits the spread of virus through droplets, such as saliva or mucus. Automatic entry and access control systems based on face mask detection are of immense help at several places such as workplaces, railway stations, shopping malls. These systems help in restricting the entry of persons not wearing a mask to a facility without manual intervention.

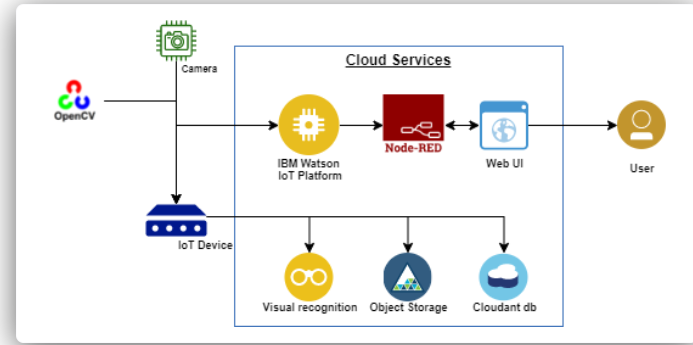
**B. Purpose**: The purpose of doing this project is how much the value of mask should be known by everyone and to stop the spread of various diseases and viruses. But considering the places such as shopping malls there having a large crowds and we can use this devices there.

**2.Literature survey :**

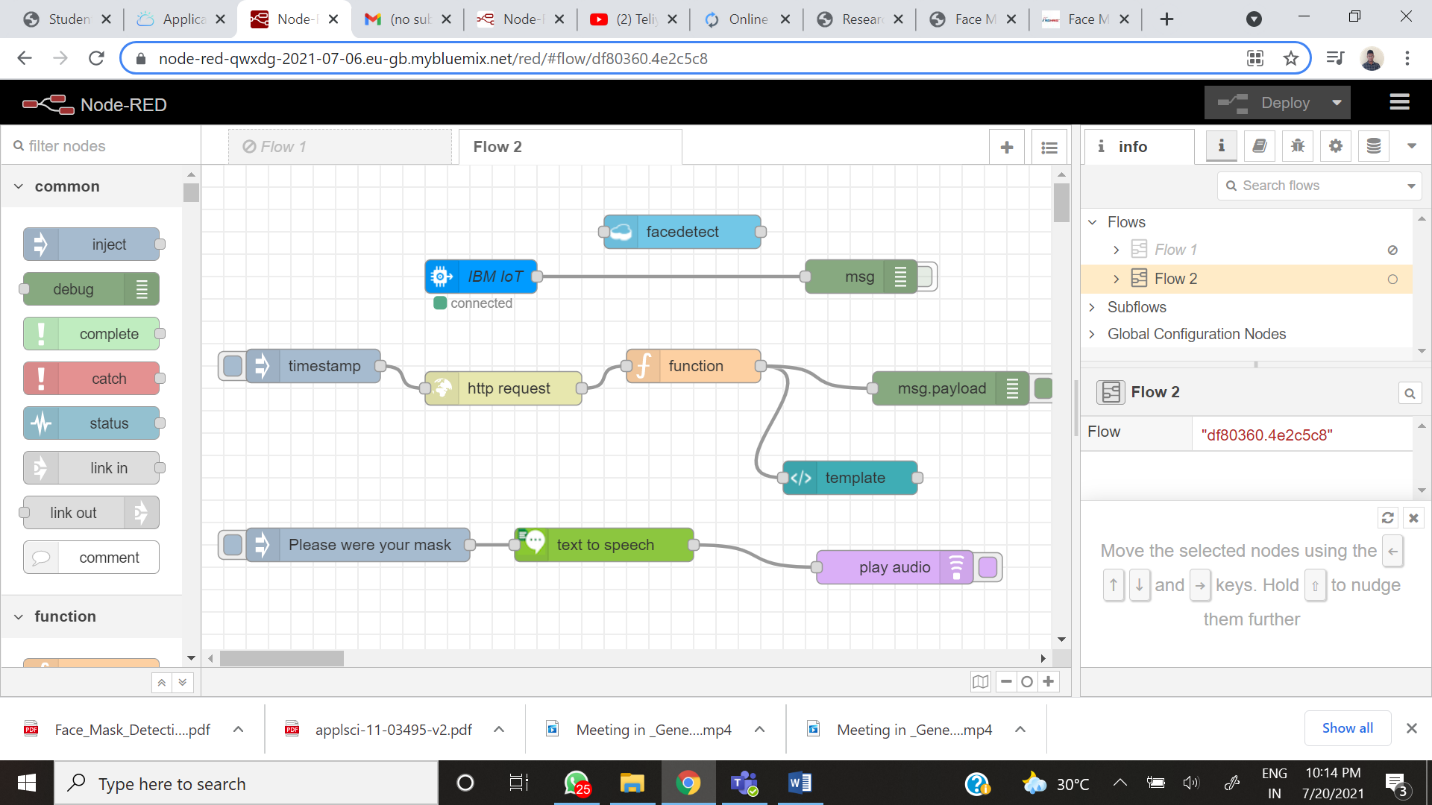
1. **Existing problem** : There are many people in the public places such as shopping malls and in that many of them don’t use the masks in this type of pandemic times. We doesn’t know if anyone have the infectious diseases so usage of mask in the places are need to be implemented.
2. **Proposed solution** : We construct the Mask detection system that detects wheather the person wore the mask or not. In this construction we use open cv python code that used for the face detection and it stores the data in the IBM cloud as a bucket images and if person not wore the mask it just gives the message as mask is not detected.

**3.Theoretical analysis**

1. **Block diagram**:

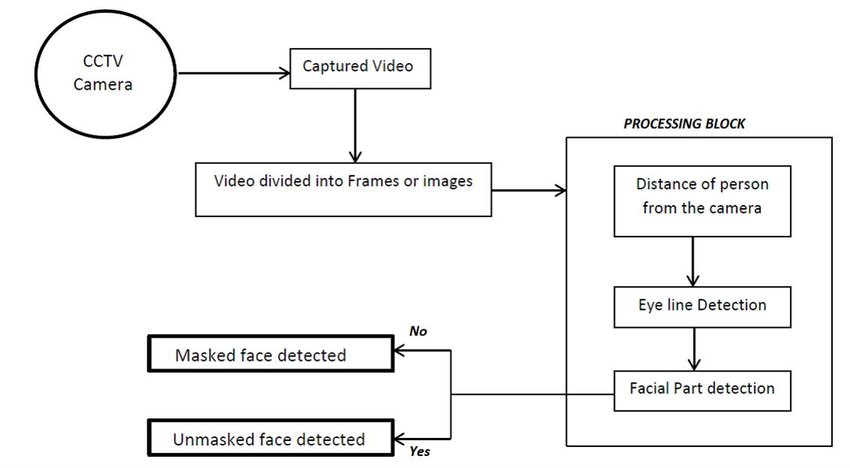


1. **Hardware/ software design :**

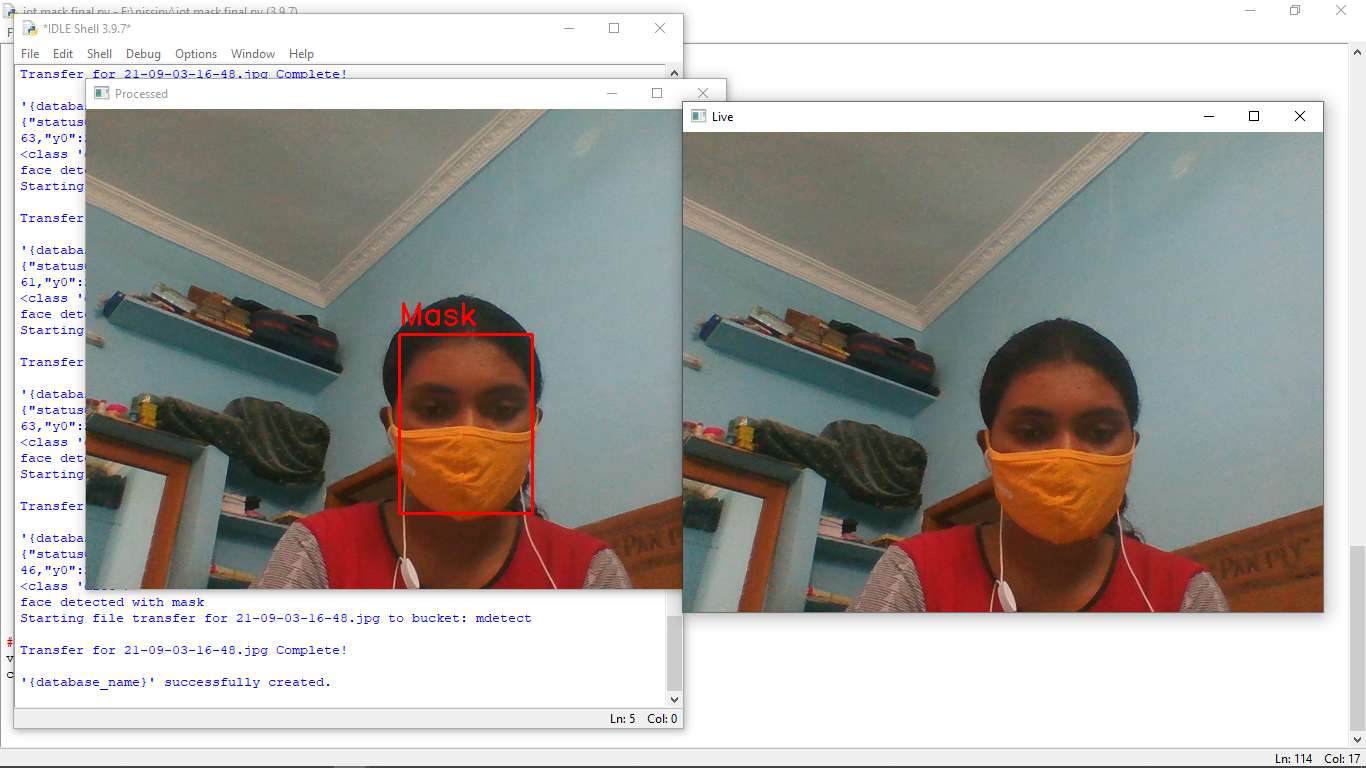
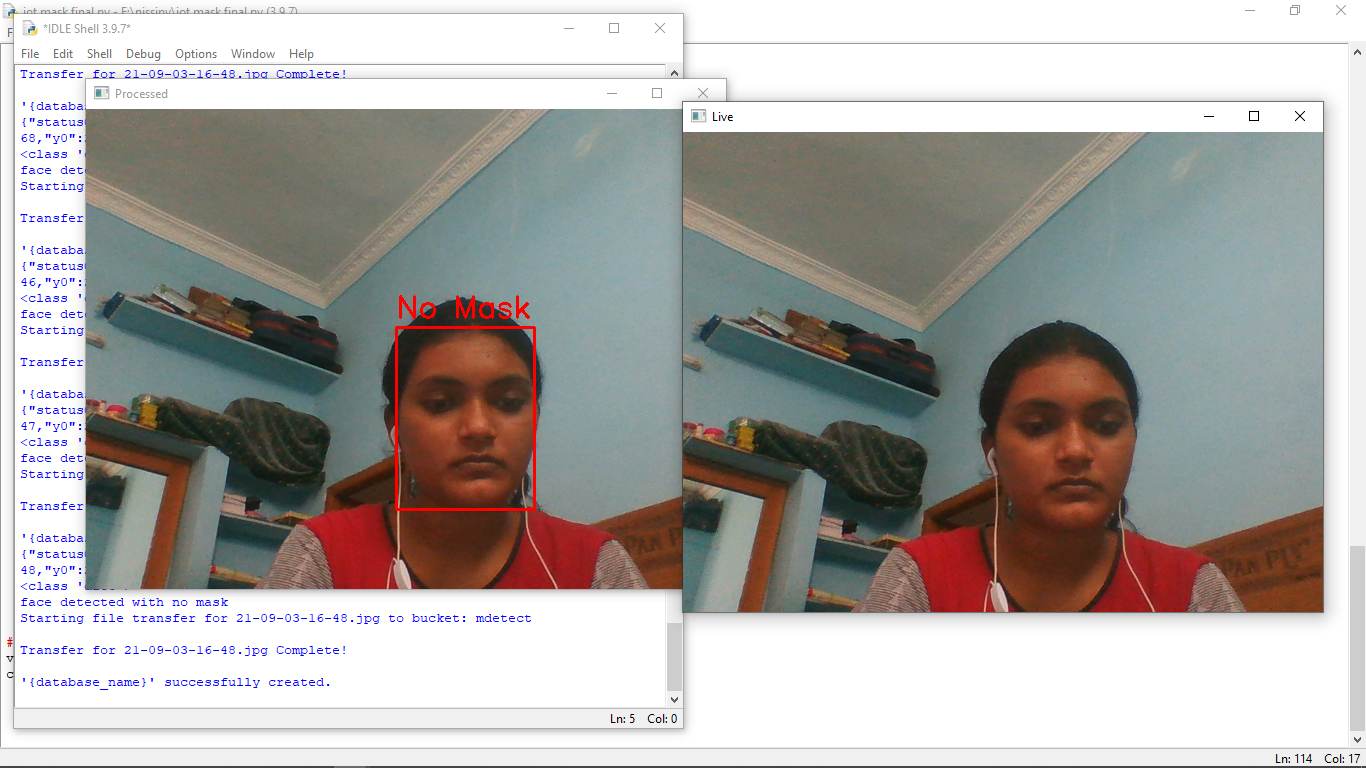
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**4.Experimental investigations** : When we construct this device it detects wheather the person is detected with the mask or not. If the person doesn’t wore the mask it says with the voice command as Please wear your mask and by using the python code it shows the person who not wore the mask on the display.

**5.Flow chart :**



**6.Result :**



**7.Advantages and disadvantages :**

**Advantages:**

1. Manual Monitoring is very difficult for officers to check whether the peoples are wearing mask or not. So in our technique, We are using web cam to detect peoples faces and to prevent from virus transmission.
2. It has fast and high accuracy
3. This system can be implemented in ATMs, Banks etc
4. We can keep peoples safe from our technique.
5. It provides buzzer sound to wear mask.

**Disadvantages:**

1. Implementation is expensive
2. More equipment may be required for large area
3. If there are more people may be the detection of mask becomes some difficult.

**8.Applications :**

**Airports:**

The Face Mask Detection System can be used at airports to detect travelers without masks. Face data of travelers can be captured in the system at the entrance. If a traveler is found to be without a face mask, their picture is sent to the airport authorities so that they could take quick action. If the person’s face is already stored, like the face of an Airport worker, it can send the alert to the worker’s phone directly.

**Hospitals:**

Using Face Mask Detection System, Hospitals can monitor if their staff is wearing masks during their shift or not. If any health worker is found without a mask, they will receive a notification with a reminder to wear a mask. Also, if quarantine people who are required to wear a mask, the system can keep an eye and detect if the mask is present or not and send notification automatically or report to the authorities.

**9.Conclusion :** By the development of face mask detection we can detect if the person is wearing a face mask and allow their entry would be of great help to the society. The accuracy of the model will be achieved and the optimization of the model is a continuous process and So we are building a highly accurate solution. We can prevent peoples from Virus Transmission through this System.

**10.Future scope** : This device can be used in all places in the future and helps us to stop the spreading of infectious diseases.

**11.Bibliography:**

[**https://www.leewayhertz.com/face-mask-detection-system/**](https://www.leewayhertz.com/face-mask-detection-system/)

**12.Appendix :**

1. **Source code :**

import datetime

import requests

import cv2

import ibm\_boto3

from ibm\_botocore.client import Config, ClientError

import json

import ibmiotf.application

import ibmiotf.device

import random

import time

import pygame

from ibm\_watson import TextToSpeechV1

from ibm\_cloud\_sdk\_core.authenticators import IAMAuthenticator

from cloudant.client import Cloudant

from cloudant.error import CloudantException

from cloudant.result import Result, ResultByKey

authenticator = IAMAuthenticator('9ZB88wntxIMv73M5XeoFhp6ETPtmKPOrBItiHi9Fx77B')

text\_to\_speech = TextToSpeechV1(

authenticator=authenticator

)

text\_to\_speech.set\_service\_url('https://api.eu-gb.text-to-speech.watson.cloud.ibm.com/instances/43c04d30-8f8e-4fa7-9c4d-f5895c3a4590')

#Provide your IBM Watson Device Credentials

organization = "7x37hm"

deviceType = "facedetect"

deviceId = "1001"

authMethod = "token"

authToken = "1234567890"

url = "https://face-mask-detection.p.rapidapi.com/FaceMaskDetection"

# Constants for IBM COS values

COS\_ENDPOINT = "https://s3.jp-tok.cloud-object-storage.appdomain.cloud" # Current list avaiable at https://control.cloud-object-storage.cloud.ibm.com/v2/endpoints

COS\_API\_KEY\_ID = "QgMp-B0GKTnFu3FkdmGeo681oR1UA-RUdTidTkisG5a-" # eg "W00YixxxxxxxxxxMB-odB-2ySfTrFBIQQWanc--P3byk"

COS\_AUTH\_ENDPOINT = "https://iam.cloud.ibm.com/identity/token"

COS\_INSTANCE\_CRN = "crn:v1:bluemix:public:cloud-object-storage:global:a/cfdf24503963447ba9432271b7cbd1df:eec1510a-7347-40be-bdff-746117c6639e::"

client = Cloudant("apikey-v2-1t8pu8xkov65lsjznpkb1mbe1f0mb3v0g1slyih3sd7d", "bdff9d8bf839712fd47c65cb06ce00e1", url="https://apikey-v2-1t8pu8xkov65lsjznpkb1mbe1f0mb3v0g1slyih3sd7d:bdff9d8bf839712fd47c65cb06ce00e1@bd453ab0-a5bd-4358-b64d-83ca7948d553-bluemix.cloudantnosqldb.appdomain.cloud")

client.connect()

database\_name = "facedetect"

# Create resource

cos = ibm\_boto3.resource("s3",

ibm\_api\_key\_id=COS\_API\_KEY\_ID,

ibm\_service\_instance\_id=COS\_INSTANCE\_CRN,

config=Config(signature\_version="oauth"),

endpoint\_url=COS\_ENDPOINT

)

bucket = "mdetect"

def multi\_part\_upload(bucket\_name, item\_name, file\_path):

try:

print("Starting file transfer for {0} to bucket: {1}\n".format(item\_name, bucket\_name))

# set 5 MB chunks

part\_size = 1024 \* 1024 \* 5

# set threadhold to 15 MB

file\_threshold = 1024 \* 1024 \* 15

# set the transfer threshold and chunk size

transfer\_config = ibm\_boto3.s3.transfer.TransferConfig(

multipart\_threshold=file\_threshold,

multipart\_chunksize=part\_size

)

# the upload\_fileobj method will automatically execute a multi-part upload

# in 5 MB chunks for all files over 15 MB

with open(file\_path, "rb") as file\_data:

cos.Object(bucket\_name, item\_name).upload\_fileobj(

Fileobj=file\_data,

Config=transfer\_config

)

print("Transfer for {0} Complete!\n".format(item\_name))

except ClientError as be:

print("CLIENT ERROR: {0}\n".format(be))

except Exception as e:

print("Unable to complete multi-part upload: {0}".format(e))

def playfile():

## with open(filename, 'wb') as audio\_file:

## audio\_file.write(

## text\_to\_speech.synthesize(

## text,

## voice='en-US\_AllisonV3Voice',

## accept='audio/mp3').get\_result().content)

pygame.mixer.init()

pygame.mixer.music.load(filename)

pygame.mixer.music.play()

video\_capture = cv2.VideoCapture(0)

while True:

# Grab a single frame of video

ret, frame = video\_capture.read()

# Display the resulting image

cv2.imshow('Live', frame)

picname=datetime.datetime.now().strftime("%y-%m-%d-%H-%M")

picname=picname+".jpg"

pic=datetime.datetime.now().strftime("%y-%m-%d-%H-%M")

cv2.imwrite(picname,frame)

my\_database = client.create\_database(database\_name)

multi\_part\_upload(bucket, picname,pic+".jpg")

payload="linkfile=https://mdetect.s3.jp-tok.cloud-object-storage.appdomain.cloud/"+picname

if my\_database.exists():

print("'{database\_name}' successfully created.")

json\_document = {

"link":"https://mdetect.s3.jp-tok.cloud-object-storage.appdomain.cloud/"+picname

}

time.sleep(1)

#print data

def myOnPublishCallback():

print ("Published data to IBM Watson")

headers = {

'content-type': "application/x-www-form-urlencoded",

'x-rapidapi-key': "92bc4dfae7mshf453994a97ab7c0p168e9fjsn8fe751cd72a8",

'x-rapidapi-host': "face-mask-detection.p.rapidapi.com"

}

response = requests.request("POST", url, data=payload, headers=headers)

print(response.text)

a=json.loads(response.text)

x0=a["data"][0]["x0"]

y0=a["data"][0]["y0"]

x1=a["data"][0]["x1"]

y1=a["data"][0]["y1"]

print(type(a))

if(a["data"][0]["masked"]==0):

print("face detected with no mask")

text='Please wear the mask to enter inside'

filename='new6.mp3'

playfile()

while not(pygame.mixer.music.get\_busy()):

pygame.mixer.quit()

pygame.mixer.music.stop()

time.sleep(2)

os.rmdir("F:/nissipy/new6.mp3")

time.sleep(2)

img=cv2.putText(frame,'No Mask', (x0,(y0-10)), cv2.FONT\_HERSHEY\_SIMPLEX, 1, (0, 0, 255), 2)

img=cv2.rectangle(img,(x0,y0),(x1,y1), (0, 0, 255), 2)

elif(a["data"][0]["masked"]==1):

print("face detected with mask")

text='Hello, you can enter inside'

filename='new5.mp3'

playfile()

while not(pygame.mixer.music.get\_busy()):

pygame.mixer.quit()

pygame.mixer.music.stop()

time.sleep(2)

os.rmdir("F:/nissipy/new5.mp3")

time.sleep(2)

img=cv2.putText(frame,'Mask', (x0,(y0-10)), cv2.FONT\_HERSHEY\_SIMPLEX, 1, (0, 0, 255), 2)

img=cv2.rectangle(img,(x0,y0),(x1,y1), (0, 0, 255), 2)

cv2.imshow('Processed',img)

# Hit 'q' on the keyboard to quit!

if cv2.waitKey(1) & 0xFF == ord('q'):

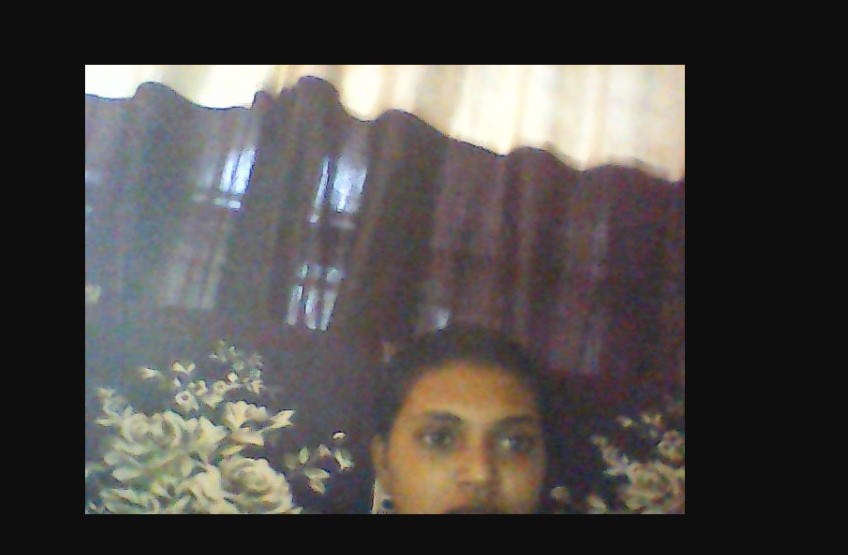
break

# Release handle to the webcam

video\_capture.release()

cv2.destroyAllWindows()

1. **Ui interface :**

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**Team members :**

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