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FACE MASK DETECTION USING MACHINE LEARNING

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ABSTRACT

The purpose of the project "Face Mask Detection Using Machine Learning" is to create a tool that identifies the image of a human that can calculate the probability that he/she wearing a mask or not. Due to COVID, wearing a face mask is must in order to stay safe. As the country starts going through various stages of reopening, face masks have become an important element of our daily lives to stay safe. Wearing face masks will be required in order to socialize or conduct business. So, this application utilizes a camera to detect if a person is wearing a mask or not.

1. INTRODUCTION

1.1 OBJECTIVE:

The year 2020 has shown mankind some mindboggling series of events amongst which the COVID19 pandemic is the most life- changing event which has startled the world since the year began. Affecting the health and lives of masses, COVID19 has called for strict measures to be followed in order to prevent the spread of disease. From the very basic hygiene standards to the treatments in the hospitals, people are doing all they can for their own and the society's safety; face masks are one of the personal protective equipment. People wear face masks once they step out of their homes and authorities strictly ensure that people are wearing face masks while they are in groups and public places.

To monitor that people are following this basic safety principle, a strategy should be developed. A face mask detector system can be implemented to check this. Face mask detection means to identify whether a person is wearing a mask or not. The first step to recognize the presence of a mask on the face is to detect the face, which makes the strategy divided into two parts: to detect faces and to detect masks on those faces. Face detection is one of the applications of object detection and can be used in many areas like security, biometrics, law enforcement and more.

There are many detector systems developed around the world and being implemented. However, all this science needs optimization; a better, more precise detector, because the world cannot afford any more increase in corona cases.

2. SYSTEM ANALYSIS

2.1 Introduction

The trend of wearing face masks in public is rising due to the COVID- 19 corona virus epidemic all over the world. Before Covid-19, People used to wear masks to protect their health from air pollution. While other people are self-conscious about their looks, they hide their emotions in the public to hide their faces.

More than five million cases were infected by COVID- 19 in less than 6 months across 188 countries. The virus spreads through close contact and in crowded and overcrowded areas. We can tackle and predict new diseases by the help of new Technologies such as artificial intelligence, Iot, Big data, and Machine learning.

People are forced by laws to wear face masks in public in many countries. These rules and laws were developed as an action to the exponential growth in cases and deaths in many areas. However, the process of monitoring large groups of people is becoming more difficult in public

areas. So we will create a automation process for detecting the faces.

Here we introduce a facemask detection model that is based on computer vision and deep learning. The proposed model can be integrated with Surveillance Cameras to impede the COVID-19 transmission by allowing the detection of people who are wearing masks not wearing face masks. The model is integration between deep learning and classical machine learning techniques with Open cv, Tensor flow and Keras.

2.2 EXISTING SYSTEM:

The year 2020 has shown mankind some mind-boggling series of events amongst which the COVID-19 pandemic is the most life-changing event which has startled the world since the year began. Affecting the health and lives of masses, COVID-19 has called for strict measures to be followed in order to prevent the spread of disease. From the very basic hygiene standards to the treatments in the hospitals, people are doing all they can for their own and the society's safety; face masks are one of the personal protective equipment. People wear face masks once they step out of their homes and authorities strictly ensure that people are wearing face masks while they are in groups and public places.

2.3 PROPOSED SYSTEM:

To overcome the drawbacks of the existing system, the proposed system has been evolved. This projects aim is to monitor that people are following the basic safety principles. This is done by developing a face mask detector system.

3. SOFTWARE DESCRIPTION

3.1 CODE EDITORS:

3.1.1 PyCharm

PyCharm is an integrated development environment (IDE) used In computer programming, specifically for the Python language. It is developed by the Czech company JetBrains (formerly known as IntelliJ). It provides code analysis, a graphical debugger, an integrated unit tester, integration with version control systems (VCSes), and supports web development with Django as well as data science with Anaconda
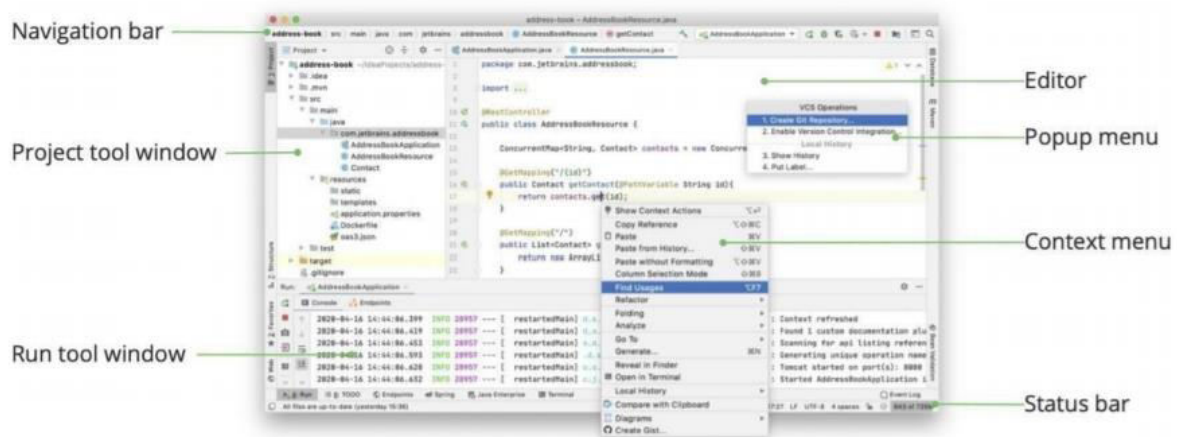
• Coding assistance and analysis, with code completion, syntax and error highlighting, linter integration, and quick fixes

• Project and code navigation: specialized project views, file structure views and quick jumping between files, classes, methods and usages

• Python refactoring: includes rename, extract method,introduce variable, introduce constant, pull up, push down and others

• Support for web frameworks: Django, web2py and Flask[professional edition only]
• Integrated Python debugger
• Integrated unit testing, with line-by-line code coverage
• Google App Engine Python development
• Version control integration: unified user interface for Mercurial, Git, Subversion, Perforce and CVS with change lists and merge
• Support for scientific tools like matplotlib, numpy and scipy[professional edition only]

3.1.2 Notepad ++

Notepad++ is a free (as in "free speech" and also as in "free beer") source code editor and Notepad replacement that supports several languages. Running in the MS Windows environment, its use is governed by GNU General Public License. Based on the powerful editing component Scintilla, Notepad++ is written in C++ and uses pure Win32 API and STL which ensures a higher execution speed and smaller program size. By optimizing as many routines as possible without losing user friendliness, Notepad++ is trying to reduce the world carbon dioxide emissions. When using less CPU power, the PC can throttle down and reduce power consumption, resulting in a greener environment.

3.1.3 Jupyter

The Jupyter Notebook is an open-source web application that allows you to create and share documents that contain live code, equations, visualizations and narrative text. Uses include: data cleaning and transformation, numerical simulation, statistical modelling, data visualization, machine learning, and much more. Notebook documents contains the inputs and outputs of a interactive session as well as additional text that accompanies the code but is not meant for execution. In this way, notebook files can serve as a complete computational record of a session, interleaving executable code with explanatory text, mathematics, and rich representations of resulting objects. These documents are internally JSON files and are saved with the .ipynb extension. Since JSON is a plain text format, they can be version- controlled and shared with colleagues.

3.2 DEVELOPMENT TOOLS AND TECHNOLOGIES:

4.2.1 PYTHON:

Python is an interpreter, interactive, object-oriented programming language. It incorporates modules, exceptions, dynamic typing, very high level dynamic data types, and classes. Python combines remarkable power with very clear syntax. It has interfaces to many system calls and libraries, as well as to various window systems, and is extensible in C or C++. It is also usable as an extension language for applications that need a programmable interface. Finally, Python is portable: it runs on many Unix variants, on the Mac, and on Windows 2000 and later. When he began implementing Python, Guido van Rossum was also reading the published scripts from "Monty Python's Flying Circus", a BBC comedy series from the 1970s.

4. PROJECT DESCRIPTION

4.1 PROBLEM DEFINITION:

Due to the COVID-19 pandemic, our daily habits have suddenly changed. Gatherings are forbidden and, even when it is possible to leave the home for health or work reasons, it is necessary to wear a face mask to reduce the possibility of contagion. In this context, it is crucial to detect violations by people who do not wear a face mask. ace Mask detection has turned up to be an astonishing problem in the domain of image processing and computer vision. Face detection has various use

cases ranging from face recognition to capturing facial motions, where the latter calls for the face to be revealed with very high precision.

4.2 PROJECT OVERVIEW:

To access the application authentication is provided. The user have username and password. User is two types, one admin and student. After login, it enters into different type of module, at the time of login it is decide. If the user is admin it logon into admin module, otherwise it logon into the student module. Admin can have the control over the student module. Admin can see the fee status and take the no due form of a particular student if the due is cleared. A student can also view the fee status and take his/her no- due form. They both can change their passwords.
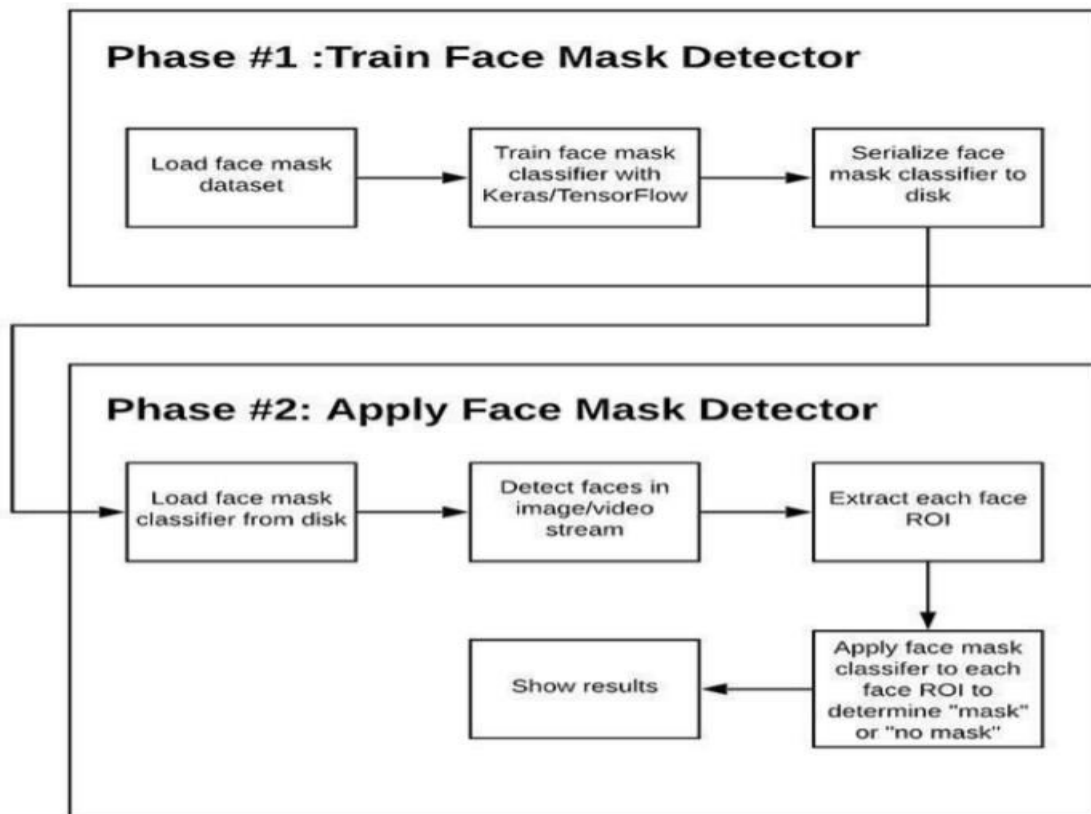
4.3   ARCHITECTURE:

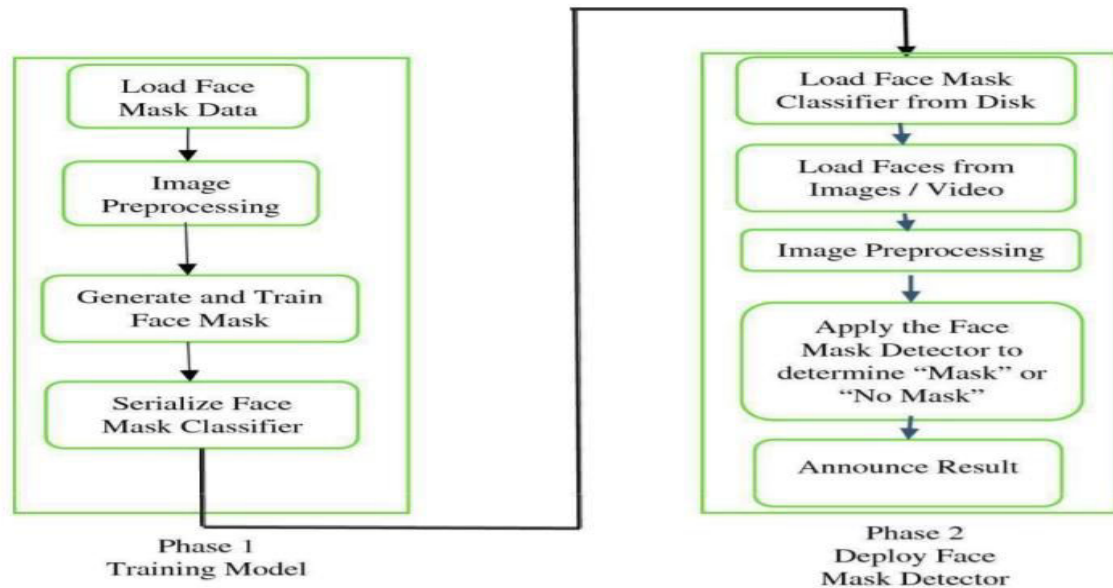

Figure 4.1.1- Architecture

4.4 DATA FLOW DIAGRAMS:

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Figure 5.4.1.1- Flow Diagram

5. SCREEN SHOTS
TRAINING MODULE:

Figure: 5.1-TRAINING MODULE
DETECTION MODULE:

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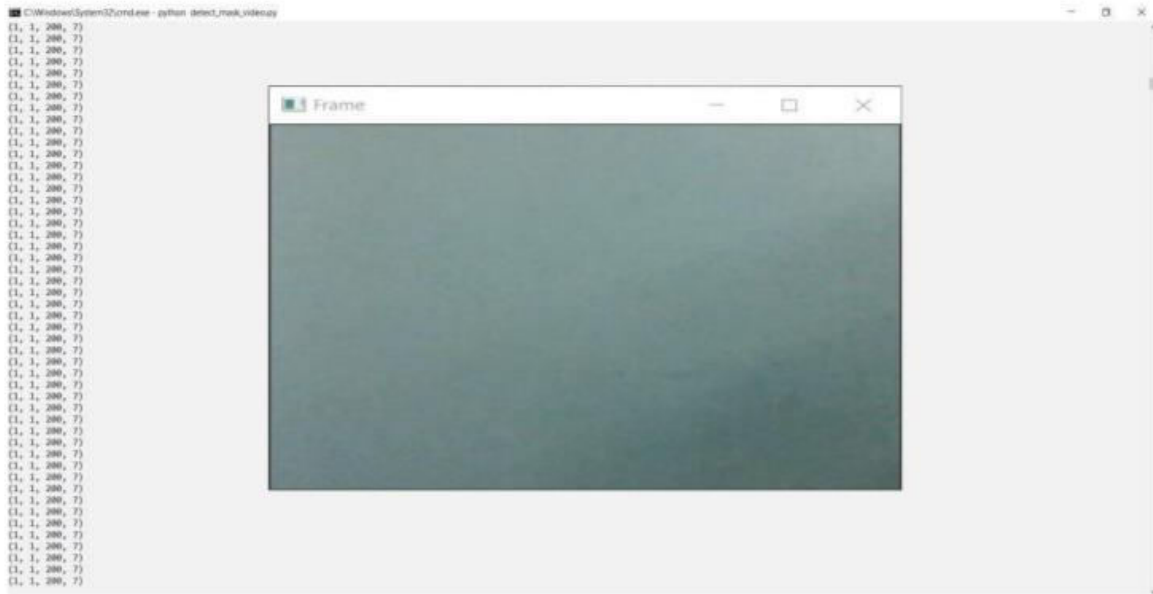www.ijiemr.com
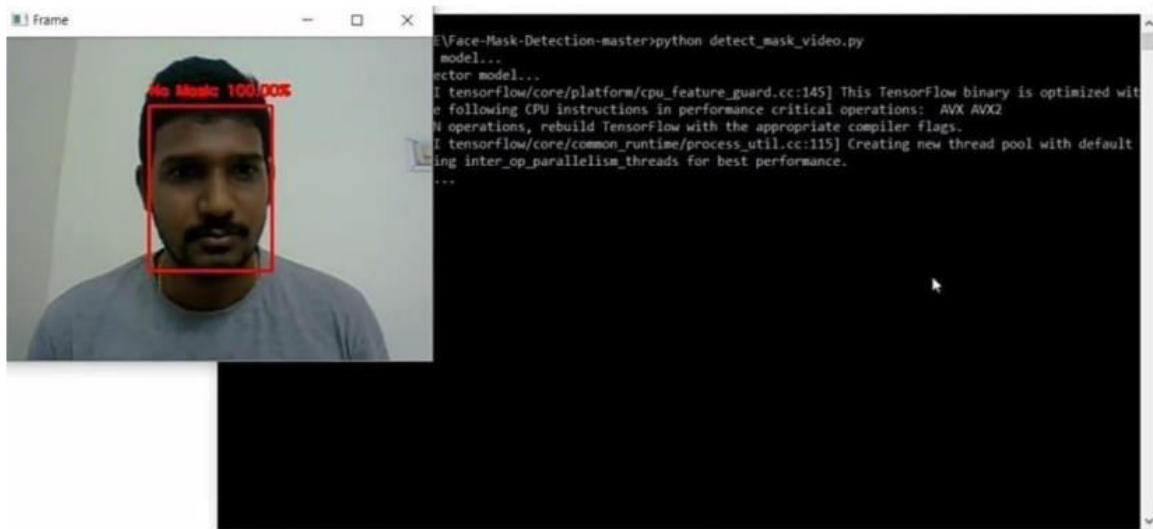
Figure :5.2 DETECTION MODULE
REAL TIME TESTING

Figure 59.3 NO MASK OUTPUT

CONCLUSION

The experimental analysis shows that the proposed method can be successfully exploited for face mask violation detection. It is a real time software application which can be deployed in smart cc tv surveillance, public areas like airports,malls,.etc where mask is necessary. Only the software it can be extensible to work along with other IOT devices to deny permit or closing doors at corporate office Moreover, we highlight that it is working also on device with limited computational capability and it is able to process in real time images and video streams, making our proposal applicable in the real world. Taking in to account above mentioned details, we can make the conclusion that the Mask detection project works in real time and be

very useful in present situation. This application is build using python, python IDLE.

REFERENCES

[1] https://blog.keras.io/keras-as-a-simplified-interface-to-tensorflow-tutorial.html

[2] https://www.tensorflow.org/overview

[3] https://www.datacamp.com/community/tutorials/tensorflow-tutorial

[4] https://www.python.org/

[5] https://ieeexplore.ieee.org/document/9216386

[6] https://iopscience.iop.org/article/10.1088/1757-899X/1070/1/012061/meta