DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

MINI PROJECT SYNOPSIS

Title of the Project: Face Mask Detection.

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Abstract: COVID-19 pandemic has rapidly affected our day-to-day life disrupting the world trade and movements. Wearing a protective face mask has become a new normal. In the near future, many public service providers will ask the customers to wear masks correctly to avail of their services. Therefore, face mask detection has become a crucial task to help global society. This paper presents a simplified approach to achieve this purpose using some basic Machine Learning packages like TensorFlow, Keras, OpenCV and Scikit-Learn. The proposed method detects the face from the image correctly and then identifies if it has a mask on it or not.

Introduction: According to the World Health Organization (WHO)'s official Situation Report – 205, coronavirus disease 2019 (COVID-19) has globally infected over 20 million people causing over 0.7million deaths. Individuals with COVID-19 have had a wide scope of symptoms reported – going from mellow manifestations to serious illness. Respiratory problems like shortness of breath or difficulty in breathing is one of them. Elder people having lung disease can possess serious complications from COVID-19 illness as they appear to be at higher risk. Some common human coronaviruses that infect public around the world are 229E, HKU1, OC43, and NL63. Before debilitating individuals, viruses like 2019-nCoV, SARS-CoV, and MERS-CoV infect animals and evolve to human coronaviruses. Persons having respiratory problems can expose anyone (who is in close contact with them) to infective beads. Surroundings of a tainted individual can cause contact transmission as droplets carrying virus may withal arrive on his adjacent surfaces.

To curb certain respiratory viral ailments, including COVID-19, wearing a clinical mask is very necessary. The public should be aware of whether to put on the mask for source control or aversion of COVID-19. Potential points of interest of the utilization of masks lie in reducing vulnerability of risk from a noxious individual during the "pre-symptomatic" period and stigmatization of discrete persons putting on masks to restraint the spread of virus. WHO stresses on prioritizing medical masks and respirators for health care assistants. Therefore, face mask detection has become a crucial task in present global society.

Face mask detection involves in detecting the location of the face and then determining whether it has a mask on it or not. The issue is proximately cognate to general object detection to detect the classes of objects. Face identification categorically deals with distinguishing a specific group of entities i.e. Face. It has numerous applications, such as autonomous driving, education, surveillance, and so on. This paper presents a simplified approach to serve the above purpose using the basic Machine Learning (ML) packages such as TensorFlow, Keras, OpenCV and Scikit-Learn.

Main Objectives:

- To Identify people who had covered the faces with mask properly.
- To stop the spreading of COVID-19 disease.
- To make sure people are following correct rules and precautions of COVID-19.
- To make life easier with the help of computer programming.

Scope of The project:

As time passes worldwide, the COVID-19 pandemic poses greater challenges for humans. Over the past two years, leaders in biometric systems, such as FLIR Systems, Zkteco, among others, have launched proposals for updated access control and temperature detection. They also highlight the products previously launched by the companies SenseTime, Telpo, and Herta. All of this is focused mainly on temperature control in airports and high-traffic places, with which the development of easy recognition systems has been relegated.

As previously mentioned, the regular use of face masks has directly affected facial recognition systems. This has altered the usual development of activities and delayed innovation processes. For example, Apple's Face ID is designed to identify users based on the mouth, nose, and eyes, which must be fully visible. In the same way, other important companies worldwide, such as Go from Amazon and Walmart's "Store of the Future", are affected, as they use this technology to interact with their customers.

This project is used to detect wheather the people is wearing mask or not in a crowded area because it is impossible for a human to check wheather everyone is wearing mask in an overcrowded area so to overcome this difficulty we are developing and implementing this project in our real life.

Existing System:

We are using a laptop based on configuration of Intel i5 9th gen processor, 8GB of RAM.

For programming part we are using python as a programming language and also we are using packages like ,TensorFlow, openCVV and sikitlearn and as a data base software we are using Microsoft SQL.

For collecting dataset, we are using this website: https://www.kaggle.com/

Proposed System: