

Face Mask Detection Using Tensor Flow, KERAS, and OPEN CV

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Abstract: For face mask identification; this journal examines the use of Python programming with Deep Learning, TensorFlow, Keras, and Open CV. The classifier uses the MobileNetV2 architecture as a foundation to do real-time mask detection. This system can be used in real-time applications which require face-mask detection for safety purpose due to the outbreak of coronavirus pandemic. The system's method is set up in such a way that it uses a video camera to capture people's images and apply detecting algorithms. After the successful implementation of face mask detection with a video camera that helps in the detection of people wearing and not wearing a face mask. Using the visualization algorithms, it is possible to show the detection percentage of calculation in various ways.

I. INTRODUCTION

This journal presents finger movement gesture detection on our computer's window using a camera & handling the whole system by just moving one finger. Using finger detection methods for instant camera access and user-friendly user interface makes it more easily accessible. The system is used to implement motion tracking mouse, a signature input device, and an application selector. This system reduces the use of any physical mouse which saves time and reduces efforts. Python programming language is utilized for empowering the AI virtual mouse structure, what's more, OpenCV that can't avoid being that the library for versatile PC vision is utilized at ranges the AI virtual mouse framework. Inside the projected AI virtual mouse utilizing hand signal, the model purposes the python Media-pipe bunch for the journey for the hands and for pursue of the tip of the hands, what is more, Numpy, Autopy, and PyAuto GUI packs were utilized for propelling the screen of the PC for performing verbalizations limits like left click, right snap, and examining limits. There the projected model shows in a perfect world high accuracy level, and in this way the projected model can work respectably in clear application with the use of a cycle or where as not the utilization of PC GPU.

II. BACK GROUND STUDY

Artificial Intelligence (AI) is the simulation of human intelligence processes by machines, typically computer systems. AI includes subsets like machine learning, where algorithms learn from data to make predictions or decisions, and deep learning, which uses neural networks to learn complex patterns from large datasets. ML algorithms are trained using large datasets, allowing them to identify patterns, relationships, and insights that can be used to solve problems or make predictions in various domains.

OpenCV, short for Open-Source Computer Vision Library, is an open-source library extensively used for computer vision and image processing tasks. OpenCV provides a comprehensive set of tools and algorithms, making it suitable for both academic research and industrial applications.

Keras is an open-source neural network library written in Python, designed to facilitate the creation and experimentation of deep learning models with ease. It provides a high-level API that simplifies the process of building and training neural networks, making it accessible to both beginners and experienced practitioners.

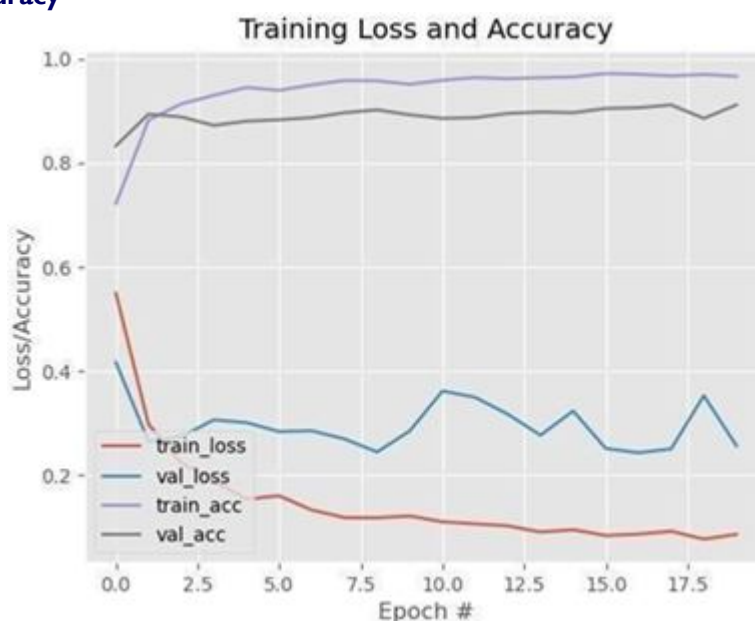
TensorFlow is an open-source machine learning framework developed by Google, designed to enable the creation of scalable and efficient deep learning models. It provides a comprehensive ecosystem of tools and libraries for building and deploying machine learning applications across various platforms.

III. SYSTEM DESIGN



IV. PROCESSING

Training loss and Accuracy



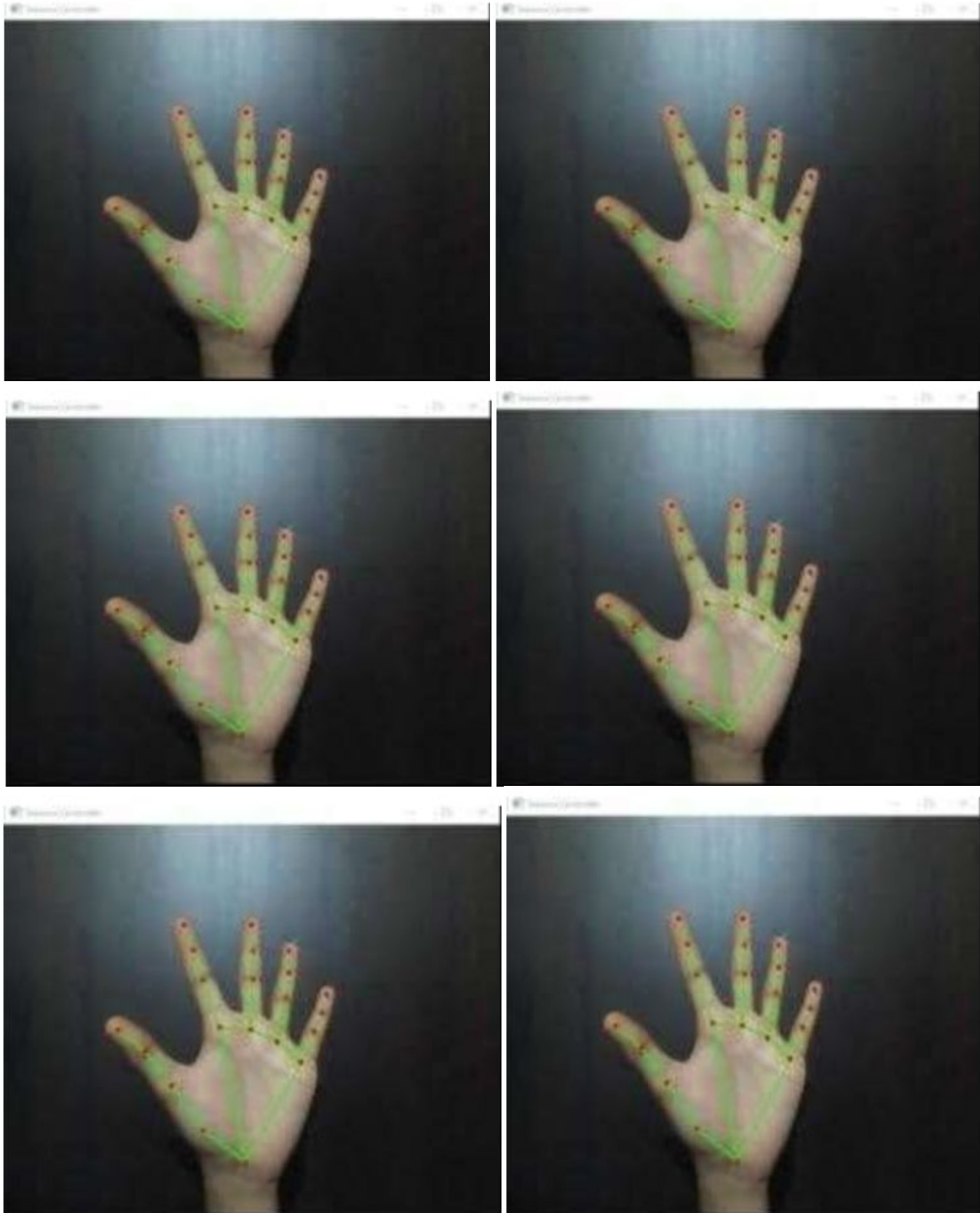
Datasets Used:

This dataset contains totally 1376 images of people, in which 690 images contain of people who are wearing masks and 686 images contains of people who are not wearing masks. This dataset created by captured standard images of faces and put on facial landmarks. These facial landmarks allow us to locate facial characteristics of a people like jawline, mouth, eyes, nose etc; this used a way to create a dataset by including a mask on a non-masked person artificially.

Data Augmentation

To train our model, we need massive number of data is needed to execute training effectively. Because of a smaller number of datasets, we may not get the expected results. Here, we used data augmentation methods to solve this problem. To increase number of data, we generated many number of versions like rotation, shifting, flipping top to bottom, zooming into the picture etc, By doing all such things we can get 4-5 extra images of each picture. So that we can increase our datasets.

V. SCREEN SHOTS





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