Face Detection and Recognition using OpenCV and Python

Abstract –

This research paper gives an ideal way of detecting and recognizing human face using OpenCV, and python which is part of deep learning. This report contains the ways in which deep learning an important part of computer science field can be used to determine the face using several libraries in OpenCV along with python. This report will contain a proposed system which will help in the detecting the human face in real time. This implementation can be used at various platforms in machines and smartphones, and several software applications.

Introduction –

Face recognition is the technique in which the identity of a human being can be identified using one's individual face. Such kind of systems can be used in photos, videos, or in real time machines. The objective of this article is to provide a simpler and easy method in machine technology. With the help of such a technology one can easily detect the face by the help of dataset in similar matching appearance of a person. The method in which with the help of python and OpenCV in deep learning is the most efficient way to detect the face of the person. This method is useful in many fields such as the military, for security, schools, colleges and universities, airlines, banking, online web applications, gaming etc. this system uses powerful python algorithm through which the detection and recognition of face is very easy and efficient.

Motivation –

The most useful area in which face recognition is important is the biometrics that is used for authentication process which makes the work mor easier. Face recognition is one of the widely used technologies or systems in which it has the potential to perform tasks such as to have records provided in by the dataset in many areas such as the school and colleges attendance systems, it can also be helpful in catching the thieves or the terrorist, can be helpful in the security of common people and the much-needed security areas in the country. Face recognition can be used by the government to verify the voters list, find missing persons, find the population or census, immigration process, also provide security over internet scams protecting Ecommerce and highly used in the medicine and healthcare range. This brings in a very high demand or a real time face recognition system for several uses for the people and government.

Problem Statement -

The main aim or objective of this paper is to provide or develop a system that will use the camera of the computer or the system that would detect and recognize the person's face or the face of the individual using the tool in OpenCV called as the Open Face and python programming language in deep learning domain.

Methodologies –

The concept of OpenCV was put forth by Gary Bradski which had the ability to perform on multi-level framework. OpenCV has a number of significant abilities as well as utilities which appears from the outset. The OpenCV helps in recognizing the frontal face of the person and also creates XML documents for several areas such as the parts of the body. Deep learning evolved lately in the process of the recognition systems. Hence deep learning along with the face recognition together work as the deep metric learning systems. In short deep learning in face detection and recognition will broadly work on two areas the first one being accepting the solidary input image or any other relevant picture and the second being giving the best outputs or the results of the image of the picture. We would be using dlib facial recognition framework that would be the easy way to organize the face evaluation. The two main significant libraries used in the system are dlib and face recognition. Python being a very powerful programming languages and one of the programming languages that are being used all over the world has proven to give

best results in the face recognition and detection systems. Together face recognition and detection becomes very easy and fruitful with the help of the python programming language and OpenCV.

Advantages and Disadvantages –

The advantages of the face recognition system include faster processing, automation of the identity, breach of privacy, massive data storage, best results, enhanced security, real time face recognition of students in schools and colleges, employees at corporate offices, smartphone unlock and many more in day to day life.

Few disadvantages in this system include the costing, or the funding, very good cameras of high definition are required, poor image quality may limit the effectiveness of this system, size of the image will matter because it becomes difficult to recognize the face in small images, Face angles can limit the face recognition reliability, massive storage is required for this system to work effectively.

Conclusions –

Face recognition systems are currently associated with many top technological companies and industries making the work of face recognition easier. The use of python programming and OpenCV makes it an easier and handy tool or system which can be made by anyone according to their requirement. The proposed system discussed in this project will be helpful for many as it is user friendly and cost_

efficient system. Hence by the use of python and OpenCV the face recognition system can be designed for various purposes.

References –

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