

REAL TIME FACE DETECTION TO IDENTIFY CRIMINALS AND MISSING PEOPLE

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Abstract: Since, there is extremely less information and utilization of Facial Recognition System for security observation in India. This system proposes a framework which will utilize Facial Recognition to track or look through an objective individual from a continuous video feed, similar to a images from a reconnaissance framework. Right off the bat, the system is furnished with a Live Video film of the zone that must be examined. At that point it is given an information, informational collection of pictures of a focused on individual for instance, a missing individual, criminal, and so on. When the info is given the system will remove a predefined set of facial attributes from the Input Dataset and make a preparation module which will help in looking through the individual from the ongoing video film. In the event that a match is discovered, the system will distinguish and check the individual.

Likewise one of the principle goals of this undertaking is to build up the previously mentioned framework related to the current Surveillance framework for example to make it good with the as of now introduced reconnaissance cameras in order keep the expenses and bother of running it at least. The utilizations of this proposed system can be in Government Organizations like Police, Military, Municipal Corporations, Large Companies, and so on for following individuals.

Keywords: Raspberry Pi Camera v2, Facial Detection, Facial Recognition, Real Time Video, People Tracking, Criminal Identification

Introduction-

I. Project Idea-

To recognize person faces with dataset to live video, as to catch criminals, or the missing person in real time.

II. Purpose and Scope of Document-

Since, there is extremely less information and utilization of Facial Recognition System for security observation in India. This system proposes a framework which will utilize Facial Recognition to track or look through an objective individual from a continuous video feed, similar to a images from a reconnaissance framework. Right off the bat, the system is furnished with a Live Video film of the zone that must be examined. At that point it is given information, informational collection of pictures of a focused on individual for instance, a missing individual, criminal, and so on. When the info is given the system will remove a predefined set of facial attributes from the Input Dataset and make a preparation module which will help in looking through the individual from the ongoing video film. In the event that a match is discovered, the system will distinguish and check the individual.

III. Overview of responsibilities of Developer-

Developers have to translate the functional requirements of the software into a specification for detailed design. They may provide instructions that enable computer programmers to create the code for the software or they may write the code themselves. Developers prepare detailed documentation for software programs. Documentation provides a description of the functions and operation of the software that team members can refer to if they need to modify or upgrade the program. Software development is a complex process that is broken into a number of stages. Developers collaborate with other members of the team to ensure that programs are completed on time and within budget. They establish schedules and monitor progress against key dates. Developers may also monitor costs against project budgets and prepare reports for team leaders.

Related Work-

Jyoti S. Bedre, Shubhangi Sapkal has stated that Many Algorithms for implementation of face recognition are popular in face recognition all having respective advantages and disadvantages. Some improves the efficiency of face recognition, under varying illumination and expression conditions for face images. Feature representation and classification are two key steps for face recognition. Authors have presented novel techniques for face recognition. In this paper, they presented an overview of face recognition techniques and its applications.

Human face recognition is currently a very active research area in computer vision and pattern recognition with focus on ways to perform robust biometric identification. Many commercial applications of face recognition are also available such as criminal identification, security system, image and film processing. Accurate localization and tracking facial features are important in applications such as vision-based human machine interaction, face-based human identification, animation, entertainment, etc. However, automatic face recognition based on 2-D still images is a challenging task because of the problems such as variability in

the appearance of a face image as it changes due to expression, occlusion, illumination, pose, aging etc. Research in this area has been conducted for more than 30 years; as a result, the current status of face recognition technology is well advanced. The reason for popularity of face recognition is that it can be applied in a wide range of fields, such as identity authentication, access control and so on.

Apoorva.P ,Impana.H.C ,Siri.S.L, Varshitha.M.R, Ramesh.B has been proposed that, Face recognition which is a combination of machine learning and the biometric techniques which holds the qualities of not only high precision but also the reliability. For automatically detecting the human's face from the databases this system can be used. In recent years open computer vision has been widely used in different kinds of applications such as surveillance camera, robotics etc. This technology is used for authentication, validation, authorization, and identification. In developed countries, the government creates a datasets which is helpful for recognize the human face which compares the suspicious act with trained dataset and information stored in database. Face identification is defined in three steps face detection, feature extraction, face recognition. Camera configuration is very important to track moving persons and recognize them precisely. Facial feature points encode critical information about face shape. Precise location and facial feature points tracing are important. Each feature point is usually detected and traced by performing a local search for the better matching position. There are very less researches on face recognition using edge-based detection. The edges are not only carrying valuable data about face but are also simple to process. The Viola Jones method builds a classifier by selecting a few significant features using AdaBoost. Viola jones method successfully merges more composite classifiers in cascade structure which exponentially increases speed of detector by focusing on the favorable features of the face.

K. Bharath S Reddy, Onkar Loke, Shantanu Jani, Kanchan Dabre Dept. Of Computer Engineering Universal College Of Engineering Kaman,Vasai, India has stated that Since 10 years or so confront acknowledgment took an extraordinary development in PC inquire about field and furthermore shaped a standout amongst the best use of picture examination and comprehension. Face acknowledgment innovation measures and matches the striking attributes of a man for the motivations behind recognizable proof or confirmation, utilizing one of a kind facial qualities as it were. Facial acknowledgment is an innovation which has risen as a striking response to address many present day requirements for recognizable proof and the check of personality claims. It unites the guarantee of the more well-known usefulness of visual reconnaissance in the biometric frameworks. Face checking biometric innovation is amazingly flexible and this can be seen by its colossal capability of its current and forthcoming applications. Facial sweep is a viable biometric property/pointer. Different other biometric pointers are utilized for various types of ID applications because of their varieties like exactness, cost, and detecting ability. Face acknowledgment resembles each other PC application depends on particular calculations. Whichever calculation utilized right off the bat recognizes facial highlights by separating points of interest, or highlights, from a picture of the subject's face. For instance, a calculation may investigate the position, measure, state of the eyes, nose, cheekbones and jaw. These highlights are then used to look for different pictures with required coordinating highlights. Alternate counts have a fundamental display of face pictures and a short time later pack the face data, simply saving the data in the photo that is used for going up against affirmation, the required picture, and the face data is then differentiated and the face data. The main framework depended on a format coordinating strategy connected to an arrangement of one of a kind facial highlights, giving a kind of packed face portrayal.

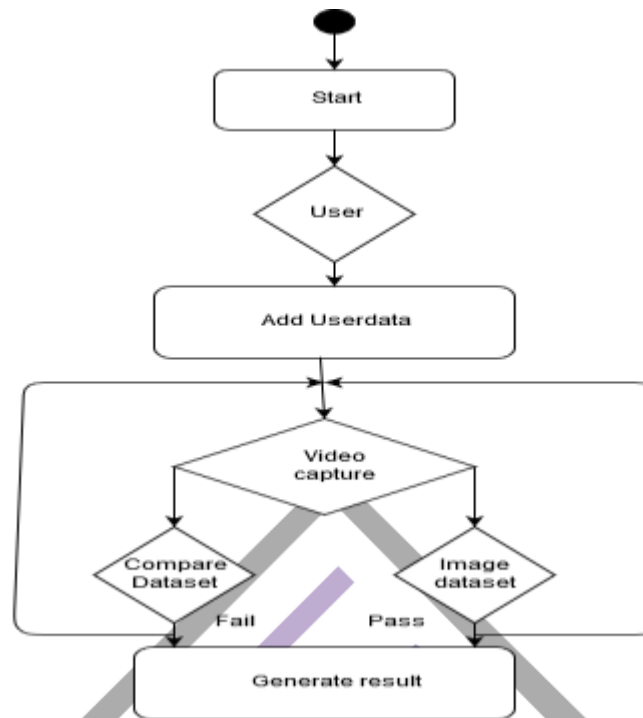
Methodologies of Problem solving and efficiency issues-

The single problem can be solved by different solutions. This considers the performance parameters for each approach. Thus considers the efficiency issues.

Outcome-

It elaborates face recognition applications by using the concept of image processing techniques. The system will outcome with following results as, detect the criminal or, the missing person and as well place where it is detected in real time. Already dataset of person faces is stored in the database which is then evaluated with the supporting algorithms defined. This is a unique approach in which the evidences are aggregated and confined into a single result.

The proposed application is scalable and can be extended to other domain generated evidences for the ranking face detection .The experimental results showed the effectiveness of the proposed system, the scalability of recognition algorithm as well as some regularity in the application activities.

Methodology-

Interface Requirements: An interface requirement is a system requirement that involves an interaction with another system. The format of the interface requirement is such that it includes a reference (pointer) to the specific location in the definition document that defines the interface. **Performance Requirements:** Examples are speed of response, throughput, execution time and storage capacity. The service levels comprising performance requirements are often based on supporting end-user tasks. Like most quality attributes, performance requirements are key elements when designing and testing the product.

Software quality attributes such as availability [related to Reliability], modifiability [includes portability, reusability, scalability], performance, security, testability and usability [includes self-adaptability and user adaptability]

Tools and Technologies Used-

Raspberry Pi Camera v2: The Raspberry Pi Camera v2 is the new official camera board released by the Raspberry Pi Foundation. The Raspberry Pi Camera Module v2 is a high quality 8 megapixel Sony IMX219 imagesensor custom designed add-on board for Raspberry Pi, featuring a fixed focus lens. It'scapable of 3280 x 2464 pixel static images, and also supports 1080p30, 720p60 and640x480p90 video. It attaches to Pi by way of one of the small sockets on the board upper surface and uses thededicated CSI interface, designed especially for interfacing to cameras.

Python: Python is an interpreted, object-oriented programming language similar to PERL that has gained popularity because of its clear syntax and readability. Python is said to be relatively easy to learn and portable, meaning its statements can be interpreted in a number of operating systems, including UNIX-based systems, Mac OS, MS-DOS, OS/2, and various versions of Microsoft Windows 98. The source code is freely available and open for modification and reuse. Python has a significant number of users. A notable feature of Python is its indenting of source statements to make the code easier to read. Python offers dynamic data type, ready-made class, and interfaces to many system calls and libraries. It can be extended, using the C or C++ language.



Conclusion-

It has been certainly made out from the result and analysis that the proposed work has provided a better implementation of the current algorithms with integration of the modified work. The proposed system of tracking people in live video is just small part of the much larger picture. Compared to legacy systems, assay of facial expressions can help expedite a lot of manual labor that goes into the respective area of work, unnecessarily. Similar approach can be used to further develop system which detect crimes, identify mood of people, security systems, etc. Live Subject tracking, Facial Recognition and Analysis is a much deeper subject which provides immense research opportunities and also development for the greater good of the society.

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