**Project Name: Face Detection and Face Recognition in Images and videos**

**Research Paper Summaries**

Design a system in which recognize human characters in e-comics by using CBIR system and EBGM recognition for identifying characters indexing **[1]**. They achieve a well performance CBIR system that is give 75% to 90% correct results and that recognize the characters of large volume of comic pages for easiness of comic readers. Briefly, it is inconvenient for comic readers to perform a scene search on large volume of comic pages. With the emergence of e-comics, computers could be designed to achieve the search task by comic characters indexing. For this characters indexing, a content-based image retrieval (**CBIR**) system developed for the sake of comic reader in which several detection & recognition algorithms implemented on training data set. Elastic Bunch Graph Matching (**EBGM**) recognition used in comic for identifying character. In addition, the CBIR system deployed also designed in such a way that, if being used continuously, the performance of recognition human characters will be enhanced.

Design the system that’s perform ‘ Real Time Face Detection ’ in which it recognize the face of suspect or criminal in real time and inform to its nearby police headquarters, secondly Sketch for Match - CBIR' using sketches **[2]**. By using Eigen-face detection algorithm, In this algorithm we manage 3 different things to extract the pixels of the face so as to calculate and store it in database. First, it identifies the pixels in a particular face region, plot it apparently using graphics and manage the neighboring pixels to configure the pixels accurately. To extract from a particular region two algorithms are used precisely i.e. Harr-cascade classification and edge detection algorithm. We developing system in which we enhance the technology of CCTV cameras in which it provides an alert system for the security forces (police departments) in real time through which they can spontaneously take action for that. We are proposing efficient sketch base software through which we can easily retrieve the picture of suspected person from the eyewitness.

In this, we research Weber's Local Descriptor (WLD) for sexual orientation acknowledgment to design biometric system to judge sexual orientation **[3]**. WLD is a surface descriptor that performs superior to anything other comparative descriptors yet it is all encompassing because of it is extremely development. WLD as a local descriptor results in much improvement in recognition accuracy for gender recognition problem. From WLD we will acquire the critical properties of face pictures. Here an approach for building up a programmed framework to characterize sexual orientation from a facial picture utilizing Neural Network Classifier displayed. The huge highlights are permitted to sustain as contribution to the neural system. The tests are performed on given database and the exactness of the framework is processed for the database. They achieve a gender recognition based system that produce good results as complicated systems.

In this, we design a face recognize system by using LBP (Local Binary Pattern) technique and LBP histogram and texture information **[4]**. Face detection and recognition are still a very difficult challenge. In this, a novel approach is presented to face recognition, which considers both shape, and texture information to represent the face. The face area is first, divided into small regions from which Local Binary Pattern (LBP) histograms are extracted and concatenated into a single, spatially enhanced feature histogram efficiently representing the face image. Extensive experimental research proves the superiority of the proposed method in respect of its simplicity and efficiency in very fast feature extraction. They achieved that experimental results clearly show that facial images can be seen as a composition of micro patterns such as flat areas, spots, lines and edges which can be well described by LBP.

Design a generic pipeline for a face recognition system capable of creating or cleaning datasets when videos or images come from a ﬁnite set of identities **[5]**. In this, we proposed and achieved a generic pipeline for face recognition systems capable of creating, cleaning and recognizing faces. We proposed a semi-supervised solution based on a CNN model with center loss that speeds-up the faces labeling process in a video composed of a ﬁnite set of identities. With this pipeline, we showed that cleaning a dataset is a fully automatable process and improves the performance of the system. Attention must be paid to the characteristics of the videos used for training the recognition model: videos with low pose variability can lead to poor recognition performance. In the future, we will work in creating a large-scale faces dataset from videos, exploiting the proposed data set creation pipeline.

Design the system for car in which functions perform by human face recognition **[6]**. A vehicle key is the only way to start the car or to provide ignition to the engine. The face recognition based car ignition system literally replaces the car ignition by replacing the key with specific user face. While dealing with the topic the objective arises, is the achievement of luxurious features and the safety concern, which can be achieved by means of the automotive electronics. In this paper, we are proposing facial recognition system by embedding face detection and face tracking system algorithm found in MATLAB with use of Raspberry pi B. The option of facial recognition and detection have been taken into consideration just because it is widely used in the interactive user interface and plays a crucial role in computer vision. Mainly the use of Haar-like feature has been used to detect and recognize the face of the authenticated user to achieve the secure environment for ignition. There is a strong need for robust and efficient face detection algorithm. The main objective of car ignition in secure environment is associated with the face of an individual.

Design the system in which random keypad implement for ATM security **[7]**. Authenticating user is the important aspect in ATM security. Password is most important thing to provide security in any system password having two very first is text way and second is graphical way. We proposing both security feature text base word and graphical password graphical password include face recognition for detect the face but it is second process. The first process is text password, which include random number. We design this system to minimize the shoulder surfing attack with the help of random keypad and face recognition method. It works as ATM system this type of keypad more powerful as compare to normal keypad. They achieved the system that will be used in ATM machine for strong password.

Design the system in which histogram implemented at various scale for face detection **[8]**. Various methods or experiments can be used for face recognition and detection however two of the main include an experiment that evaluates the impact of facial landmark localization in the face recognition performance and the second experiment evaluates the impact of extracting the HOG features from a regular grid and at multiple scales. The Histogram of Oriented Gradients significantly outperform other existing methods like edge and gradient based descriptors. We study the influence of each stage of the computation on performance, concluding that fine-scale gradients, fine orientation binning, relatively coarse spatial binning, and high quality local contrast normalization in overlapping descriptor blocks are all important for good results. Comparative experiments show that though HOG is simple feature descriptor, the proposed HOG feature achieves amazing results with much lower computational time.

In this, we Design the image-based face detection and recognition system **[9]**. Face recognition from image or video is a popular topic in biometrics research. Many public places usually have surveillance cameras for video capture and these cameras have their significant value for security purpose. It is widely acknowledged that the face recognition have played an important role in surveillance system as it does not need the object’s cooperation. The actual advantages of face-based identification over other biometrics are uniqueness and acceptance. As human face is a dynamic object having high degree of variability in its appearance, that makes face detection a difficult problem in computer vision. In this field, accuracy and speed of identification is a main issue. The goal of this paper is to evaluate various face detection and recognition methods, provide complete solution for image based face detection and recognition with higher accuracy, better response rate as an initial step for video surveillance. Solution is proposed based on performed tests on various face rich databases in terms of subjects, pose, emotions, race and light.

In this report, design the system for ATM credit card security from unauthorized person via face recognition of cardholder and the study of different facial recognition techniques is presented **[10]**. The different techniques such as Linear Binary Pattern, Eigen faces, Fisher faces is explained. The comparative study of various techniques mentioned above is presented in this report. Fisher faces have been chosen because it recognizes face faster compared to other two techniques. The proposed system provides high level of security, which includes OTP generation and facial recognition. The applications of the system is identified and presented. The proposed system provides more application and security compared to regular system. They want to achieve the better security purpose of Bank account holder for cash withdraw via ATM machine.

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