AUTOMATIC ATTENDANCE MARKING SYSTEM USING FACIAL RECOGNITION

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ABSTRACT

Facial recognition is one of the most important sub systems in digital image processing. Human face is an important biometric object in image and video databases of surveillance systems. Detecting and locating human faces and facial features in an image and pose can vary significantly from frame to frame. MATLAB vision toolbox will be utilized to detect the face from input and it uses DRLBP algorithm. Multiple user faces are detected and recognised with the data base trained multiple texture based features.The appearance features are extracted from detected face part which describes changes of face such as furrows and wrinkles.An automated system for human face recognition in real time background for a college to mark the attendance of their employees and students. The major steps in this system are detecting the faces and recognizing them. After these, the comparison of detected faces can be done by crosschecking with the database of student's faces. The issue of fake attendance and proxies can be solved by this approach.

Keyword: - *Face detection, DRLBP feature extraction, Database creation, identification process, NN classification, crosschecked result.*

1.INTRODUCTION

The attendance maintaining system is difficult process if it is done manually. The smart and automated attendance system for managing the attendance can be implemented using the various ways of biometrics. Face recognition is one of them. By using this system, the issue of fake attendance and proxies can be solved. The major steps in this system are detecting the faces and recognizing them. After these, the comparison of detected faces can be done by crosschecking with the database of student's faces.The identification of objects in an image probably start with image processing techniques such as noise removal, followed by (low-level) feature extraction to locate lines, regions and possibly areas with certain textures. The clever bit is to interpret collections of these shapes as single objects, e.g. cars on a road, boxes on a conveyor belt or cancerous cells on a microscope slide. A major drawback in AI problem is that an object can appear very different when viewed from different angles or under different lighting. Another drawback is deciding what features belong to what object and which are background or shadows etc. The human visual system performs these tasks mostly unconsciously but a computer requires skilful programming and lots of processing power to approach human performance. An image is usually interpreted as a two-dimensional array of brightness values, and is most familiarly represented by such patterns as those of a photographic print, slide, television screen, or movie screen. An image can be processed optically or digitally with a computer. Development time in printmaking. Another point operation is Procedure for Paper Submission.

2. PROPOSED SYSTEM

Our proposed system working principle is based on the DRLBP(Dominant Rotate Local Binary Pattern) algorithm and the following methods.

2.1 Drlbp Algorithm

Our proposed system working principle is based on the DRLBP algorithm. This algorithm is advanced with the local binary pattern.
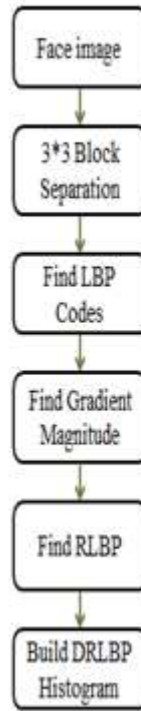

Figure 1.1 DRLBP Process Flow

The DRLBP process flow shown in figure 1.1.

1. Each pixel in an image can be considered by 3x3 matrix.
2. Center hood pixel value is taken as Threshold value.
3. If the neighbor hood pixel value is greater than the threshold value then it is considered as 1.
4. Else if it is less than the threshold value ,then it is considered as 0.

2.2 Data base creation

The block diagram of a data base creation in attendance marking system is shown in figure 2.1.
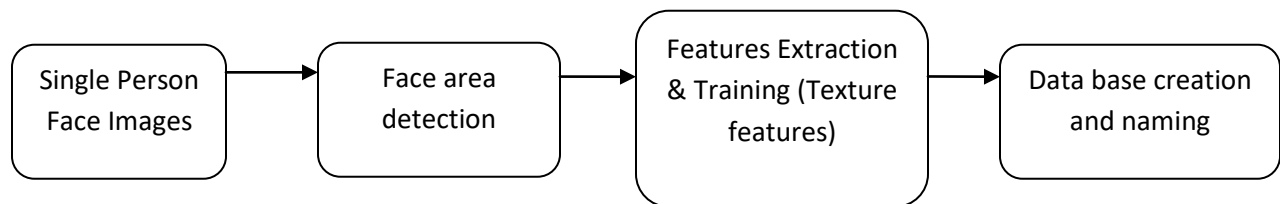

Figure 2.1 Elements of data base creation

Elements of data base creation are
- Person images

- Face area detection
- Features extraction
- Data base creation and naming

2.2.1 Person images

The first process of data base creation is person images. The images are given to using camera. For a single person to give more than five images. The camera using to give the images in real time.

2.2.2 Face area detection

Face detection is a process to extract face regions from input image which has normalized intensity and uniform in size. The appearance features are extracted detected face part which describes changes of face such as furrows and wrinkles (skin texture).In this system model, the face detection process is based on haar like features along with viola jones method.

2.2.3 Features extraction

feature extraction starts from an initial set of measured data and builds derived values (features) intended to be informative and non-redundant, facilitating the subsequent learning and generalization steps, and in some cases leading to better human interpretations. Feature extraction is related to dimensionality reduction.

When the input data to an algorithm is too large to be processed and it is suspected to be redundant (e.g. the same measurement in both feet and meters, or the repetitiveness of images presented as pixels), then it can be transformed into a reduced set of features (also named a feature vector). Determining a subset of the initial features is called feature selection. The selected features are expected to contain the relevant information from the input data, so that the desired task can be performed by using this reduced representation instead of the complete initial data.

2.2.4 Data base creation and naming

A facial recognition database is a collection of images. A facial recognition system is a computer application capable of identifying or verifying a person from a digital image or a video frame from a video source. It is typically used in security systems and can be compared to other biometrics such as fingerprint or eye iris recognition systems. Recently, it has also become popular as a commercial identification and marketing tool.

Data base creation is nothing but the above cropped images extracted images and drlbp applied values are stored. The details saved by person name or person id number.

2.3 Attendance marking system

2.3.1 Block diagram

The block diagram showing all the processing steps in automatic face detection and attendance marking is shown in figure 2.2.
There are some elements of identification process

1. Person images
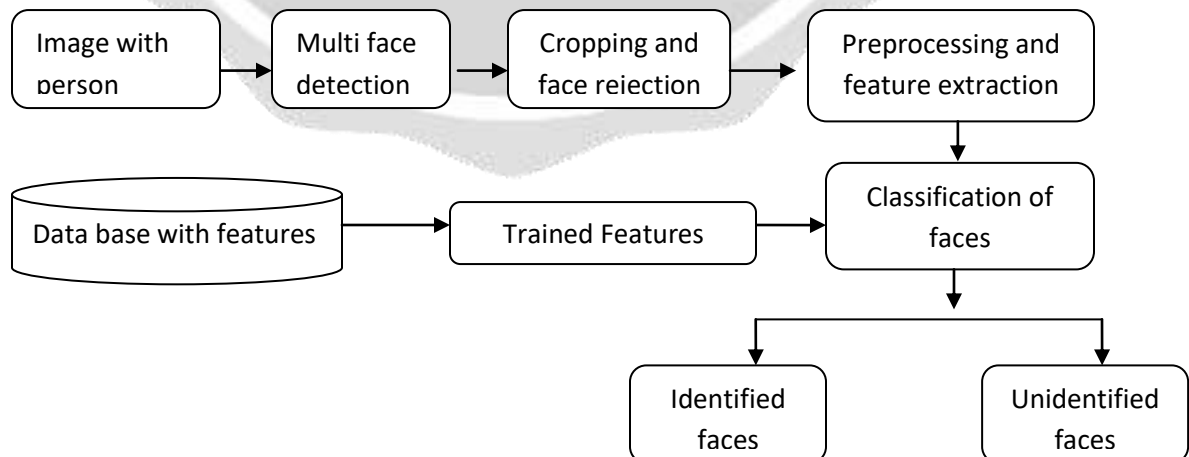2. Face area detection
3. Feature extraction
4. Classifier

Figure 2.2 Elements of data base creation

2.4 NN Classifier

It is a technique in digital image processing for finding first nearest similar object from stored templates. Here, It uses Euclidean Distance as a kernel function for finding the relation between the two different kind of features. LDP descriptor will be applied to extracted the Face region for analyzing texture to describe its characteristics. Along with this, DRLBP based texture features are combined to match with the face samples which are already stored as templates. Finally, Based on the face recognition results, the attendance for each detected person will be maintained automatically**.**

3.SIMULATED RESULT AND DISCUSSION

In real time, video will be captured and it will be passed through the executable library to detect the face region from the image and the detected image will be extracted with features and compared with the data base images which are all already extracted with the same features and finally output will be displayed as present or absent to the respective mail address. The overall detected parts will be used to creating the patterns for extracting the features and load up with data base along with name of the particular person. The extraction images are shown in figure 3.1.
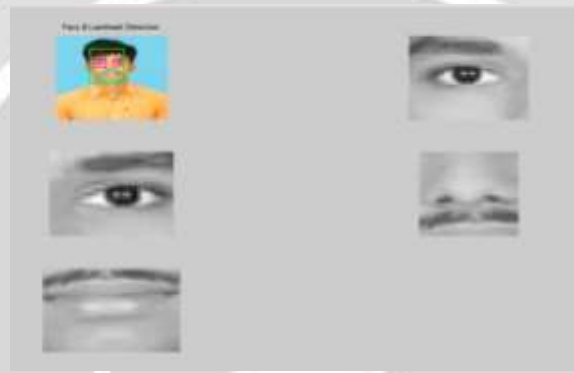
Figure 3.1 Extraction images

Drlbp pattern graph indicates the compressed values of the features like weight value, decimal value of the each intensities of the image. The pattern graph is shown in figure 3.2.
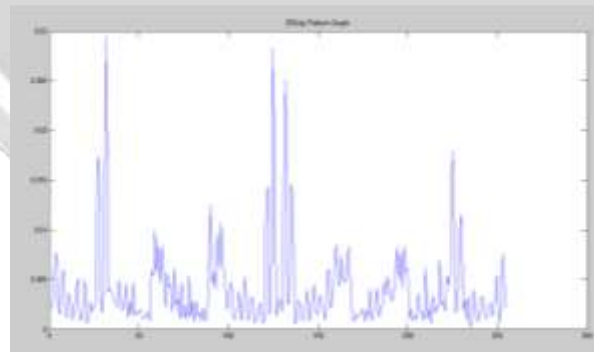
Figure 3.2 DRLBP pattern graph

3.1.Final result handover

Finally cross checked image results will be mailed to the respective mail address. If the person is in the data base, it will be marked as present along with name at detection from entry camera. Similarly ,it will be marked as absent along with name at detection from exit camera. The final result handover is shown in figure 3.3.
The rectangular boxes are represent as
      1.Respective mail address.
      2.List of presented persons.

3.Detection of their images.

Figure 3.3 Final result handover

4.CONCLUSION

The project presented the robust human face recognition system based on dominant rotate local binary pattern and local binary pattern for automatic attendance system. The dominant rotate local binary pattern was used for different object texture and edge contour feature extraction process. A local binary pattern was used to extract the features from face regions to discriminate the illumination changes. This is the secure for today's scenario and facial recognition system. It is very useful for school and colleges. It will be automatically manage the attendance.

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