



FACE RECOGNITION BASED SYSTEM FOR ESTIMATION OF RESOURCES IN SCHOOL

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Abstract—Face recognition is a innovation has numerous pertinent areas. However, this technology can be classified into face recognition, gender determination and face classification. In this project we use this image processing technique to identify the number of students present and for whom the resources are spent through comparing their already registered image with the one captured at the delivery point and thus updating the amount of resources spent for that particular day thereby decreasing any misuse. This framework uses face recognition techniques to recognize the understudies who receive the resources on a particular day and based on this recognition the amount of resources spent per day can be estimated. The number of students who obtained food on a particular day will be sent to the higher officials, using which the higher officials can estimate the amount of resource spent and hence any scope of misusing the resources by the intermediate person can be minimized drastically. In this system, we

make use of Principle Component Analysis (PCA) algorithm, to detect and recognize the students.

I.INTRODUCTION

The Mid-day Meal Scheme is a school meal program started by the Government of India with an aim to increase the nutritional status of school-age children nationwide. This program provides free lunches on working days for children in primary classes in government, government aided, local body and schools

run by the ministry of labor. Serving 130,000,000 children in over 1,266,000 schools and Education Guarantee Scheme centers, it is the largest such program in the world. Mid-day meals scheme deals with providing free meals to students in all public schools. This means providing food to millions of students and it involves lot of funds from the government side. Over the decades, the government is heavily criticized for illegal selling of the resources

in the black market and creating false attendance for students. Thereby we have proposed this project, which will help the government in keeping track of the resources spent, and the number of students benefitted each day. Keeping track of the resources spent is very important in all schools especially in the Mid-day meals scheme to make sure that the resources reach the students properly. In most schools, the resources spent for students are maintained manually in registers by the schools itself, this allows the one who is in-charge of distributing the resources to sell the resources to others without the knowledge of higher authorities. The staff makes the note the entries of students, which are then manually logged in to a computer for future analysis. This method also makes it difficult to track the attendance of individual students in a large environment. In this paper, we present the design and use of face identification and recognition algorithms to automatically identify students benefiting from the mid-day meals scheme in schools and mark the entries of students by recognizing their faces.

The Face recognition system is as ancient as PC vision, both on account of the hypothetical enthusiasm from intellectual researchers and handy

significance of the point. In spite of the way that different strategies of recognition can be more precise, face detection has dependably remains a noteworthy focal point of studies due to its non-invasive nature. Face recognition innovation is step by step creating to all inclusive biometric arrangement since it requires essentially zero exertion from the client conclusion whereas compared with other biometric choices. The face identification framework can be utilized in areas or systems like attendance management system and human resource management system, guest management systems, authorization systems and access control systems. Face detection and recognition can be achieved by using various algorithms, and one of the important and efficient algorithm is the Principle Component Analysis algorithm.

The Principal Component Analysis (PCA) stands as one of the foremost demonstrated method that have been utilized in picture recognition and compression. The PCA is an explanatory strategy beneath the wide title of picture analysis. The principle point of the PCA calculation is to limit or diminish the huge dimensionality of the information space (observed variables) to the little inherent dimensionality of feature space (independent variables), which are required

to portray the information financially. Since PCA is a classical technique which can do something in the linear domain, applications having linear models are suitable, such as signal processing, image processing, system and control theory, communications, etc.

In this proposed system make use of Principle component Analysis (PCA) algorithm in order to detect and recognize the faces of the students.

II. BACKGROUND AND RELATED WORKS

The initial effort to make use of face discovery started within the early 1960's with the assistance of pseudo-computerized frameworks. points were formed on photos to find the considerable highlights. The face is detected based on the following features such as eyes, ears, and skin color. At that point based on these marks separations and proportions were computed employing a common reference point and compared to reference information. Within the early 1970's Glodstein et al. proposed and implemented system for identifying face using 21 features such as hair color and lip thickness. This demonstrated indeed harder to computerize due to subjective

nature of numerous of the estimations still made totally by hand. Fisher and Elschlagerb approaches to degree distinctive pieces of the face and mapped them all onto worldwide layout, which was found that these highlights don't contain sufficient special information to represent face of the human..

Another strategy is the Connectionist approach, which works by characterizing the human face utilizing a mix of both gesture ranges and a set of recognizing markers. This is normally implemented using 2-dimensional pattern recognition and neural net standards. Normally, this technique requires a expansive number of training dataset to accomplish good accuracy, in this manner for that reason it has however to be executed on a huge scale. The first completely computerized framework to be created utilized exceptionally large pattern recognition. It compares the faces to a generic face model of expected features and creates a series of patters for an image relative to this model. This approach is primarily factual and depends on histograms and the gray scale value.

III.EXISTING SYSTEM

A. Manual Record Maintenance

In the existing system, in schools where the Mid-day meals are provided, the resources spent for a particular student are maintained as manual records. The amount of resources spent for a particular day is recorded in registers by the faculty in-charge. Hence these details about the resources are stored as manual records it is not feasible for the higher officials to keep track whether the beneficial or the resources reach the students properly. Since these details about the resources spent are maintained as manual records, it is very much easy and feasible for the person in-charge to easily misuse the resources. Also it storing the data in manual records is a tedious job and it would require large amount of space to store these records. Since these records are updated manually, there are chances for errors while updating the records.

B. Disadvantages of Existing System

- Updating records manually is a tedious job.
- Changes to vital data can be made easily.
- Difficult to store data as it requires more space and involves a lot of paper work.
- Person in-charge can easily misuse the resources as it is infeasible for the higher officials to check the manual

records regularly.

IV. PROPOSED SYSTEM

A. System Overview

In this project we use this image processing technique to identify the number of students present and for whom the resources are spent through comparing their already registered image with the one captured at the delivery point and thus updating the amount of resources spent for that particular day thereby decreasing any misuse. Initially all the student faces are captured and are loaded into the database during the start of the academic year. Then we a camera fixed near the delivery point, and every time the students comes to receive the food at the delivery point the database is updated with the student's name and time. Then these details about the students who had the Mid-day meals for a particular day will be mailed to the higher officials, through an automated mailing system. This system make use of Principle component Analysis (PCA) algorithm in order to detect and recognize the faces of the students. Thus by using this system we can ensure that the benefits reach the student properly.

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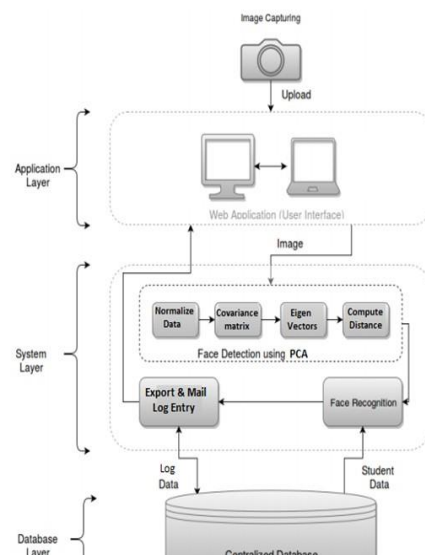
B. Advantages of PCA Algorithm

- Memory requirement is less.
- Computational complexity is reduced.
- Good performance in face detection.
- Less execution time

C. Proposed System Advantages

- Compared with the existing method the accuracy of the proposed method is increased.
- Updating the details of the students who obtained the Mid-day meals of the students can be done easily.
- It facilitates the higher officials, to keep track of the amount of resources spent on a particular day.
- This system reduce the scope of misusing the resources by the intermediate person or the person in-charge of distributing the resources

D. Proposed System Architecture



- Registration
- Student and Teacher Verification
- Face Image and Individual ID
- Face Detection and Recognition Module
- Data base Updation
- Log Entry and Mailing

Registration:

The first module in this system is Registration. In this module, a registration form is provided wherein the respective user are required to fill in their details. This system supports three types of users

- Admin
- Teacher
- Student

In the first step, all the users are provided with the same registration form. They will fill in their details like name, email-id, Phone number, password, type of user and these details will be updated in the database.

Student and Teacher Verification:

Once the user has registered using the registration form, the user is needed to be approved by the Admin as a valid student or teacher. In-order to verify users, the Admin logs into the system and verifies the appropriate and valid users. Once the Admin verifies, these users can log into the system. Only a verified student's face can be added to the database.

Face Image and Individual ID

The faces of the students in the school are captured using a NIR Camera

Module. Using NIR over normal camera will enhance the details on the face, which will help during face recognition. Each Face image is given a unique Individual ID and categorized. Then images are loaded into the database. Once the student face is update, whenever students come before the system again, he/she will be identified by the system.

Face Detection and Extract:

At to begin with, open CAM_CB() is called to open the camera for picture capture. Next the frontal face is separated from the video outline by calling the method ExtractFace().The ExtractFace() procedure utilized the OpenCv HaarCascade strategy to stack the haar cascade_ frontalface_alt_tree.xml as the classifier. The proposed algorithm yields a "true" if the locale is likely to show the face, and "false" generally. To find the face in the whole picture a search window is moved over the image and verified with existing data set using classifier. An algorithm is designed effectively and it is identifying faces with different sizes. In order to indentify or detect faces in an image the search procedure is done for more than one time with different scales. Once the face is identified then it is converted into gray scale image.

Face Detection and Recognition:

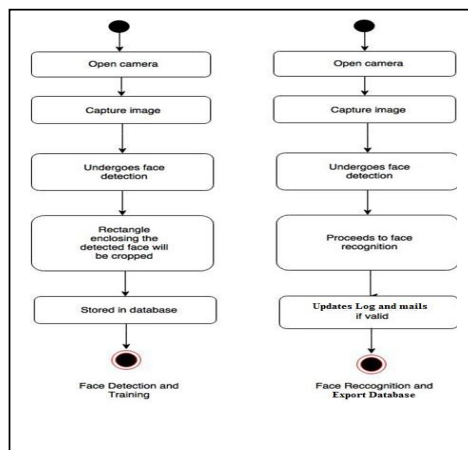


Fig.2. Activity Diagram

When the student stands in front of the camera during lunch his face is detected and then sent to the face recognition module. Then captured image is compared with stored images in the database by algorithm.

After successful comparison if the input picture is matching with the stored images, the system moves to the database Updation module. If not it will send an error message “UN- KNOWN FACE”.

V. CONCLUSION

In this paper we reviewed computerized resource utilization and report generation using PCA Face recognition algorithm. The techniques developed in six stages (Registration, Student and Teacher Verification, Face Image and Individual ID, Face Detection and Recognition Module, Database Updation and Log Entry and Mailing) are summarized and the advantages and disadvantages are discussed. Different phases of PCA Algorithm are discussed. It is useful for researches in image processing and face recognition.

REFERENCES

- 1.V. Shehu and A. Dika, “Using Real Time Computer Algorithms in Automatic Attendance Management Systems.” IEEE, pp. 397 – 402, Jun. 2010.
- 2.K. Susheel Kumar, S. Prasad, V. BhaskarSemwal, and R. C. Tripathi, “Real Time Face Recognition Using AdaBoost Improved Fast PCA Algorithm,” Int. J. Artif. Intell. Appl., vol. 2, no. 3, pp. 45–58, Jul. 2011.
- 3.Prof. P.K Biswas, Digital Image Processing. .

- 4.S. Z. Li and A. K. Jain, Eds., Handbook of face recognition. New York: Springer, 2005.
- 5.N. Mahvish, "Face Detection and Recognition," Few Tutorials, 2014. .
- 6.Anil K Jain, Lin Hong, SharathPankanti, and Ruud Bolle, Biometric Identification. IEEE, 2004.
- 7.N. Tom, Face Detection, Near Infinity - Podcasts, 2007. .
- 8.T. Kanade, Computer recognition of human faces. Basel [etc.]: Birkhäuser, 1977.
- 9.A. L. Rekha and H. K. Chethan, "Automated Attendance System using face Recognition through Video Surveillance," Int. J. Technol. Res. Eng., vol. 1, no. 11, pp. 1327–1330, 2014.
- 10.I. Kim, J. H. Shim, and J. Yang, "Face detection," Face Detect. Proj. EE368 Stanf. Univ.,vol. 28, 2003.
- 11.E. Shervin, "OpenCV Computer Vision," 03-Oct- 2010. .
- 12.T. Matthew and A. Pentland, Eigenfaces for Recognition, vol. 3, Volume 3, Number 1vols. Vision and Modelling Group, The Media Laboratory, MIT: Journal of Cognitive Neuroscience, 1991.
- 13.Y.-Q. Wang, "An Analysis of the Viola-Jones Face Detection Algorithm," Image Process. Line, vol. 4, pp. 128–148, Jun. 2014.
- 14.Y. Freund, R. Schapire, and N. Abe, "A short introduction to boosting," J.-Jpn. Soc. Artif. Intell., vol. 14, no. 771–780, p. 1612, 1999.
- 15.P. Viola and M. J. Jones, "Robust real-time face detection," Int. J. Comput. Vis., vol. 57, no. 2, pp. 137–154, 2004.
- 16.P. Viola and M. J. Jones, "Robust real-time face detection," Int. J. Comput. Vis., vol. 57, no. 2, pp. 137–154, 2004.
- 17.M. Fuzail, H. M. F. Nouman, M. O. Mushtaq, B. Raza, A. Tayyab, and M. W. Talib, "Face Detection System for Attendance of Class' Students."
- 18.Y. Freund and R. E. Schapire, "A desicion-theoretic generalization of on-line learning and an application to boosting," in Computational learning theory, 1995, pp. 23–37.

