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SMART ATTENDANCE SYSTEM USING FACE RECOGNITION

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ABSTRACT

The face is that the identity of somebody. The strategy is to want advantage of this physical feature have seen an honest change since the looks of image processing techniques. The identification of face is in everywhere such as in colleges, school, library industries and so on. Face recognition has become the most productive technologies for computer vision. Face recognition is usually a difficult task in computer vision, illumination, pose, countenance. Face recognition algorithm tracks source objects in live video in which video is capture by camera. In simple words, it is a system application for automatically identifying a private from a motionless image or video frame. This application holds up feature extraction, face detection and recognition algorithms, which automatically detects the face when the person based on algorithm. Face detection and recognition people at different angles is the future generation of recognition system that has an incredibly versatile human verification process. Its application isn't restricted for the protection concerns only but also promptly enlarges the outreach in an exceedingly commercial domain.

Keywords *- Face detection, Face recognition.*

1. INTRODUCTION

The face is that the identity of a personal. the tactic is to require advantage of this physical feature have seen a decent change since the looks of image processing techniques. The attendance is taken in every school, colleges and library. Traditionally professor calls student registered number and record attendance.- In present times, face recognition has become one in every of the best technologies for computer vision. Face recognition is always a difficult task in computer vision, illumination, pose, face expression. Face recognition tracks target objects in live video images produced by video camera. In simple words, it is a system application for automatically identifying a person from a still image or video frame. During this paper we proposed an automatic face recognition system. This application supported face detection, feature extraction and recognition algorithms, which automatically detects the human face when the person before of the camera recognizing him. Face recognition is that the long run generation of recognition system that offers an incredibly versatile human verification process. Its application isn't confined for the protection concerns only but also promptly expands the outreach in an exceedingly very materialistic domain. It'll also act as surveillance

1.1. Contribution to the Paper

In this paper, we present a preliminary study towards a systematic literature review work that aims at identify and recognize the facial pattern of human. Systematic studies are meant to convey a summary of a research area, following a structured methodology with respect to searching and study selection an important a part of a systematic literature review consists of defining the research method adopted to pick out relevant studies that are later wont to extract qualitative results on the subject. within the paper, we design a sensible attendance system for monitoring and storing purpose by the research to date.

1.2. Outline of the Paper

In the paper is organized as follows. Section 2 briefly mentions related work and motivates the necessity for a systematic review. Section 3 describes the research method used. Section 4 presents the Implementation and results obtained during the research phase. Section 5 concludes the paper supported output results.

1.3. Related Work

To the simplest of our knowledge, the foremost recent work focused on reviewing face recognition algorithm, where the main target lies on protection concern. By face recognition algorithm we are able to easily recognize the face with samples. Another recent study focuses on new algorithm and observes that there's a rise in face recognize technique and safety focused architectural proposals.

1.4. Research Method

In this section, we present the research method that will be utilized in the systematic literature review on face recognition by the vector based image processing algorithm that may extend this work within the next subsections, we elaborate on research questions, search strategy, study selection, and validity concerns

2. EXISTING SYSTEM

2.1. "RFID (Radio Frequency Identification) Based recognition system":

In the RFID based existing system, the scholar has to carry a frequency card with them and place the ID on the cardboard reader to record their presence for the day. The system is capable of to attach to RS232 and record the attendance to the saved database. There are possibilities for the fraudulent access may occur. Some are students may make use of other students ID to confirm their presence when the actual student is absent or they even try and misuse it sometimes.

2.2. "Face Based Recognition System":

The face recognition technology are often employed in recording the attendance through a high-resolution photographic camera that detects and recognizes the faces of the scholars and also the machine compares the recognized face with students' face images stored within the database. Once the face of the scholar is matched with the stored image, then the attendance is marked present database for further calculation. If the captured image doesn't match with the scholar face present within the database then this image is stored as a replacement image onto the database. During this system, there are possibilities for the camera to to not capture the image properly or it's going to miss a number of the scholars from capturing.

3. PROPOSED SYSTEM

The task of the proposed system is to capture the face of each student/employee and to store it in the database for their attendance. The face of the student/employee needs to be captured in such a manner that all the feature of the student's/employees face needs to be detected, even at different angles and the posture of the student/employee need to be recognized. There is no need for the teacher to manually take attendance in the class because the system records a video and through further processing steps the faces being recognized and the attendance database is updated. The system takes the attendance automatically recognition obtained by continuous observation. Continuous observation helps in estimating and improving the performance of the attendance. To obtain the attendance, face images of the students present in the class room are captured via video with the help of face recognition algorithm. Through continuous observation and recording the system estimates location of each student for attendance marking. The work is focused on the method to obtain the different weights of each focused seat according to its location. The effectiveness of the picture is also being discussed to enable the faster recognition of the image.

4. IMPLEMENTATION AND RESULT

4.1. Hardware Requirements

The following are the list of hardware components used in the project:

- ESP32 CAM MODULE
- USB TO TTL CONNECTOR
- COMPUTER

In this hardware, we use ESP32 module and we interface camera to recognize face. The program is dumped in controller to detect and recognize face.

4.2. Configuration ESP32 with TTL connector

The ESP32-CAM could be a small size, low power consumption camera module supported ESP32. It comes with an OV2640 camera and provides onboard TF card slot. The ESP32-CAM may be widely utilized in intelligent IoT applications like wireless video monitoring, WiFi image upload, QR identification, and so on. The ESP32 CAM doesn't have a USB connector, so we want to use TTL connector to upload code through U0R AND U0T serial pins in ESP32 cam board.

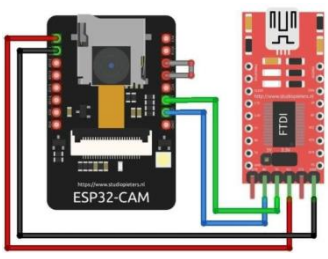

Fig 4.2.1 connection diagram

4.3 Hardware model

Fig 4.3.1 Hardware model

4.4 Software Requirements

- Arduino IDE

4.5 Software Implementation

ESP32 offers an entire and self-contained Wi-Fi networking solution, allowing it to either host the appliance or to dump all Wi-Fi networking functions from another application processor. during this example, the ESP32 is a Wi-Fi adapter, adding wireless internet access to any micro controller based module through the UART interface.

```
rst:0x1 (POWERON_RESET),boot:0x13 (SPI_FAST_FLASH_BOOT)
configsip: 0, SPIWP:0xee
clk_drv:0x00,q_drv:0x00,d_drv:0x00,cs0_drv:0x00,hd_drv:0x00,wp_drv:0x00
mode:DIO, clock div:1
load:0x3fff0018,len:4
load:0x3fff001c,len:1216
ho 0 tail 12 room 4
load:0x40078000,len:9720
ho 0 tail 12 room 4
load:0x40080400,len:6352
entry 0x400806b8

.
WiFi connected
Starting web server on port: '80'
Starting stream server on port: '81'
Camera Ready! Use 'http://192.168.43.19' to connect
```

Fig 4.5.1 Simulation output

4.6 Result

4.6.1 Face detection

Fig 4.6.1 Face Detection

4.6.2 Face Recognition

Fig 4.6.2a

Fig 4.6.2b

4.7.1 Simulation Result

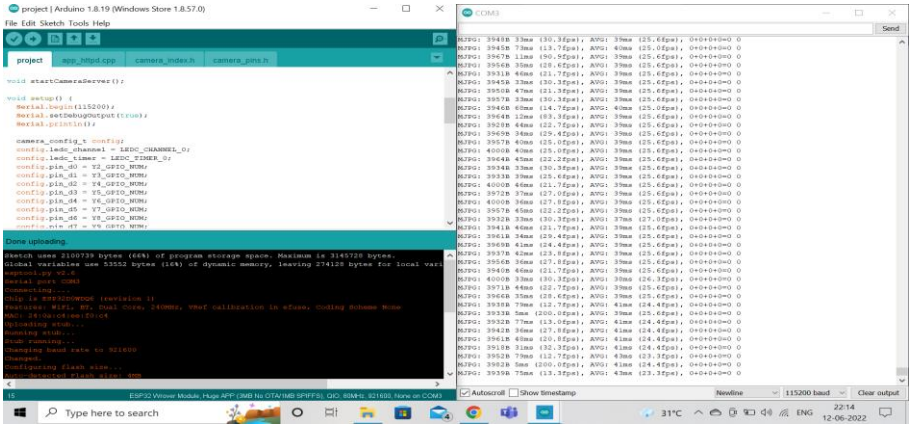

Fig 4.7.2 Simulation output

5. CONCLUSION

Capturing the photographs from camera or cc camera and applying techniques face detection and recognition can decrease the manual work from human and increase the safety safety, taking the choice from this recognition result. Supported this face detection and recognition can utilized in implement numerous application like automatic attendances system supported face recognition, worker attendances, security, safety, police application like finding thief in image that help to catching thief. During this system we've implemented an attendance system for a lecture, section or laboratory by which lecturer or teaching assistant a record student's attendance. It saves time and energy, especially if it's a lecture with huge number of scholars. This attendance system shows the employment of identity verification techniques for the aim of student attendance and for the further process this record of student is utilized in exam related issues.

6. FUTURE SCOPE

Identification software differentiates a face from remainder of the background within the image. The software recognizes these features as nodal points. This method is also effectively utilized in ATM's, identifying duplicate voters, passport and visa verification, license verification, in defense, competitive and other exams, in governments and private sectors.

REFERENCES

[1] N. Sudhakar Reddy, M.V. Sumanth, S. Suresh Babu, "A Counterpart Approach to Attendance and Feedback System using Machine Learning Techniques",Journal of Emerging Technologies and Innovative Research (JETIR), Volume 5, Issue 12, Dec 2018.

[2] Dan Wang, Rong Fu, Zuying Luo, "Classroom Attendance Automanagement Based on Deep Learning",Advances in Social Science, Education and Humanities Research, volume 123,ICESAME 2017.

[3] Akshara Jadhav, Akshay Jadhav, Tushar Ladhe, Krishna Yeolekar, "Automated Attendance System Using Face Recognition", International Research Journal of Engineering and Technology (IRJET), Volume 4, Issue 1, Jan 2017

[4] Prabhavathi, V Tanuja, V Madhu Viswanatham and M Rajashekhara Babu, "A smart technique for attendance system to recognize faces through parallelism", IOP Conf. Series: Materials Science and Engineering 263, 2017.

[5] Prajakta Lad, Sonali More, Simran Parkhe, Priyanka Nikam, Dipalee Chaudhari, " Student Attendance System Using Iris Detection", IJAR-IIE-ISSN(O)-2395-4396, Vol-3 Issue-2 2017.

[6] Samuel Lukas, Aditya Rama Mitra, Ririn Ikana Desanti, Dion Krisnadi, "Student Attendance System in Classroom Using Face Recognition Technique", Conference Paper DOI: 10.1109/ICTC.2016.7763360, Oct 2016.

[7] K.Senthamil Selvi, P.Chitrakala, A.Antony Jenitha, "Face Recognition Based Attendance Marking System", IJCSMC, Vol. 3, Issue. 2, February 2014.

[8] Yohei KAWAGUCHI, Tetsuo SHOJI, Weijane LIN, Koh KAKUSHO, Michihiko MINOH, "Face Recognition-based Lecture Attendance System", Oct 2014.

[9] Shireesha Chintalapati, M.V. Raghunadh, "Automated Attendance Management System Based On Face Recognition Algorithms", IEEE International Conference on Computational Intelligence and Computing Research, 2013.

[10] A. Waingankar, A. Upadhyay, R. Shah, N. Pooniwala and P. Kasambe, "Face Recognition based Attendance Management System using Machine Learning," International Research Journal of Engineering and Techno-logy (IRJET), vol. 5, no. 6, pp. 1979-1985, 2010.

[11] A. Geitgey, "Medium," 24 July 2016. [Online]. Available: https://medium.com/@ageitegy/machine-learning-is-fun-part-4- modern-face-recognition-with-deep-learning.

[12] N. Dalal and B. Triggs, "Histograms of Oriented Gradients for Human Detection," in 5th IEEE Computer Society Conference on Computer Vision and Pattern Recognition, San Diego, CA, USA, 2005.

[13] V. Kazemi and J. Sullivan, "One Millisecond Face Alignment with an Ensemble of Regression Trees," in Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, Long Beach, 2014.

[14] D. Wang, R. Fu and Z. Luo, "Classroom Attendance Automanagement Based on Deep Learning," in of 2nd International Conference on Education, Sports, Arts and Management Engineering, Zhengzhou, 2017.

[15] F. Schroff, D. Kalenichenko and J. Philbin, "FaceNet: A Unified Embedding for Face Recognition and Clustering," in Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, Boston, MA, USA, 2015.

[16] D. KIng, "Dlib c++ Library," 12 February 2017. [Online]. Available: http://blog.dlib.net/2017/02/high-quality-face-recognitionwith-deep.html.