



Survey on Attendance Management System using IOT

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ABSTRACT: Recognition of face may be a crucial domain in unique identification of humans, it's currently being widely utilized in many industrial applications, like video monitoring systems, human computer interaction, and automatic gate control systems and for securing networks. Every university uses some method of attendance to maintain a record of the quantity of students or folks that attended that specific lecture. This Method is developed for taking attendance of people during a classroom which integrates the face recognition technology using local binary patterns histograms (LBPH) algorithm, alongside face detection by Haar feature-based cascades and distance-based clustering. The proposed system records the attendance of the people during a classroom environment autonomously and provides the user with an output as a spreadsheet describing the attendance.

KEYWORDS: Face Detection, Face recognition, Clustering attendance.

I. INTRODUCTION

Every organization has adopted its own methodology for attending Management System. Some continue with the ancient methodology for taking attending manually whereas some have adopted the biometric techniques. The standard methodology makes it troublesome to verify students one-by-one during a massive room setting. Moreover, the manual labour concerned in computing the attending proportion becomes a significant task. The frequency Identification (RFID) helps to determine a massive range of crowd's victimization radio waves. It has high potency and hands-free access management. however, it is discovered that it will be abused. An automatic biometric system would so offer the answer. They embody finger-prints, eye retina, voice, etc. However, every biometric methodology has its own benefits and downsides. The voice recognition technique is conjointly out there to mark the attending mechanically. This system is helpful for folks having problem in victimization hands and alternative biometric traits.

However, this technique is sensitive to background signal. Also, the voice of the person tends to vary with age. The voice recognition system might not accurately determine the person once he/she is full of sore throat or contagion. Thus, this technique isn't reliable. tissue layer scanning uses the distinctive vas pattern of the human eye for verification. This pattern remains constant and isn't suffering from aging still. However, this device is often utilized by just one person at a time. It proves to be time- intense for an oversized crowd. This instrumentality conjointly needs person to be in shut contact with it for authenticating. Since it's open for public, it's vulnerable to be vandalized. Alternately, optical sensors are used for scanning the fingerprints of associate individual. this technique is most



typically utilized in each organization due to its high responsibility. However, the optical sensing element are often used just one at a time that tends to waste a substantial quantity of your time for big crowds. The optical sensing element comes in direct contact with the coed. it's exposed to high risk of obtaining dirty or the broken. The biometric system is economical, reliable and provides a high level of security when put next to the standard authentication ways. However, these systems provide some disadvantage still. Most of the devices are unable to register some little proportion of users, and therefore the performance of the system will deteriorate over time. to beat these disadvantages face recognition primarily based authentication techniques are developed. Face recognition technology uses image process, that could be a thanks to manipulate pictures victimization mathematical functions and by higher dimensional signal process techniques to that the input are often a picture, series of pictures or a video whereas the output is often provided within the type of a picture. These processes are usually digitally performed, however it may be done via optical and analogue devices

II. RELATED WORK

1) Manual Method:

Maintaining the attending is incredibly vital altogether the institutes for checking the performance of students. Each institute has its own methodology in this regard. Some are taking attending manually exploitation the previous paper or file primarily based approach.

•Advantages:

1. This can be way less possible to happen
2. And with regular backup the impact of information loss is cut back.

•Disadvantages:

1. Time overwhelming.
2. Various Paper work needed

2) RFID:

RFID technology that stands for Radio Frequency Identification, is a robust tool in serving to manage students attending throughout the operating college day and conjointly enhance room security. RFID technology has been applied to unravel issues wherever it's necessary to take mechanically record the movements and locations of students in a room of school/university setting.

RFID, that is associate degree automatic identification technology used for retrieving from or storing knowledge on to RFID Tags while not any physical contact. RFID systems have been wide employed in many various application areas, such as: product pursuit through producing and assembly , management of inventory, parking zone access and management, instrumentation pursuit, ID badges and access management, instrumentality pursuit in hospitals, etc. associate degree RFID system primarily contains of RFID Tags, RFID Reader, Middle-ware and a Back-end information.

RFID Tags area unit unambiguously associate degreeed universally known by an identification sequence, ruled by the rubrics of EPC world Tag knowledge commonplace. A tag will either be passively activated by associate degree RFID reader or it will actively transmit RF signals to the reader. associate degree automatic attending system victimisation fingerprint verification technique was planned Fingerprint system will either be minutiae-based, image-based or textured-base systems. In the minutiae-based, this method has little size however it needs giant process power for image sweetening. The image-based system uses raw peel intensity, although this method is plagued by brightness variation, image quality variation, scars and world distortions within the image. In planned wireless iris recognition attending management system. However, checking over seventy students supported their iris pattern is time overwhelming, and principally dearly-won, and for universities this is often not most suitable option.[1]

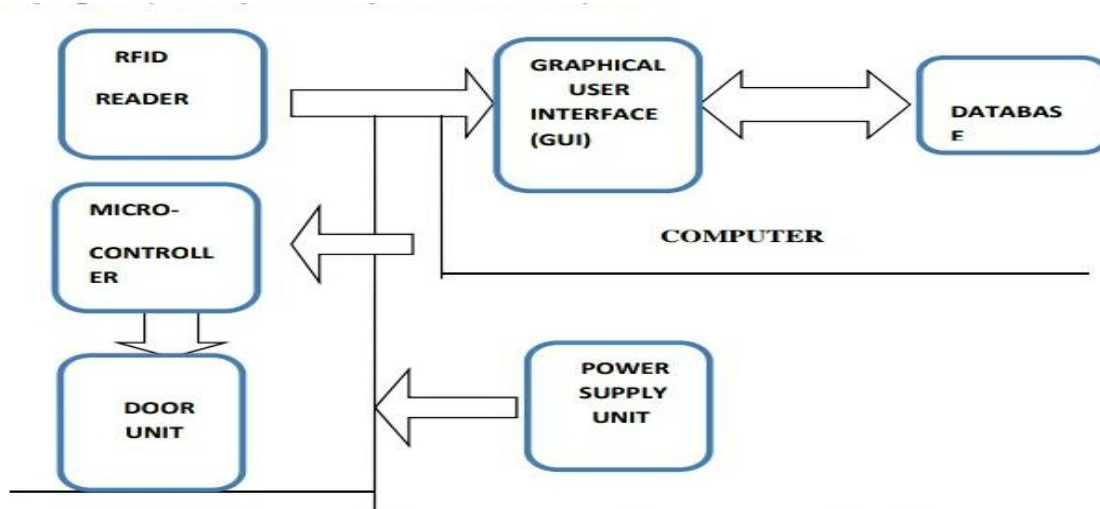


Fig:- 2.1 Block diagram of RFID base technology

•Advantages:

1. It offer location to the reader together with its ID.
2. Tags will reads solely yet as read/write in contrast to barcode.
3. RFID tag and reader mustn't be in LOS to mark the system work.

•Disadvantages:

1. Active RFID is expensive thanks to use of Batteries.
2. RFID devices have to be compelled to be programmed that needed enough quantity of your time.
3. The coverage vary of RFID is restricted that is concerning three meters.

3) Biometric:

In several establishments, and educational organizations, attending could be a important criteria that is used for varied functions. These functions embody record keeping, assessment of students, and promotion of best and consistent attending in category. In developing countries, a minimum share of category attending is needed in most establishments and this policy has not been adhered to, thanks to the assorted challenges the current technique of taking attending presents. This ancient technique involves the employment of sheets of paper or books in taking student attending. This technique might simply allow impersonation and also the attending sheet may well be taken or lost. Taking of attending is time intense and it's troublesome to establish the number of scholars that have created the minimum share and so eligible for communication. Thus, there's a necessity for a system that will eliminate all of those bother spots.[2]

•Advantages:

1. Improved security.
2. Improved client expertise.
3. Can't be forgotten or loss.

•Disadvantages:

1. Atmosphere and usage will have an effect on measurements.
2. System aren't a hundred
3. Needed integration and/or extra hardware.

3) Bluetooth Based:

In this project, attending is being taken exploitation instructors itinerant. Application soft-ware is put in in instructors mobile phone permits it to question student's mobile phone via Bluetooth association and thru transfer of scholar's mobile phone Media Access management (MAC) addresses to the instructor's mobile phone, presence of the scholar will be confirmed. The drawback of this projected system is student's phone is needed for attending, just in case of scholars absent if his mobile is given to his friend then conjointly gift is marked. Therefore, presence of student isn't necessary solely phone ought to be in coverage space.

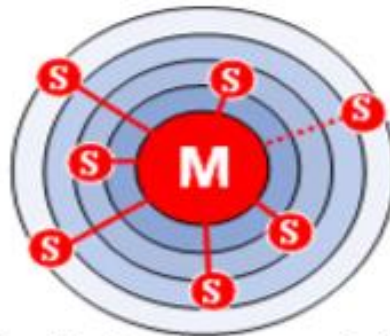


Fig 3 – Tracing Student's Bluetooth (S) by Teacher

•Advantages:

- 1. Wireless transmission of information.
- 2. In depth accessibility and accessibility
- 3. Energy potency.

•Disadvantages:

- 1. Restricted operational vary.
- 2. Will be energy inefficient.
- 3. Double security Vulnerabilities.

III.PROPOSED WORK

Facial Recognition using IOT:

In proposed system the architecture shows a novel technique to mark the attendance. The camera will capture the images and generate the frame and detect the faces of the student after these the face is going to be extracted faces is match with the database.

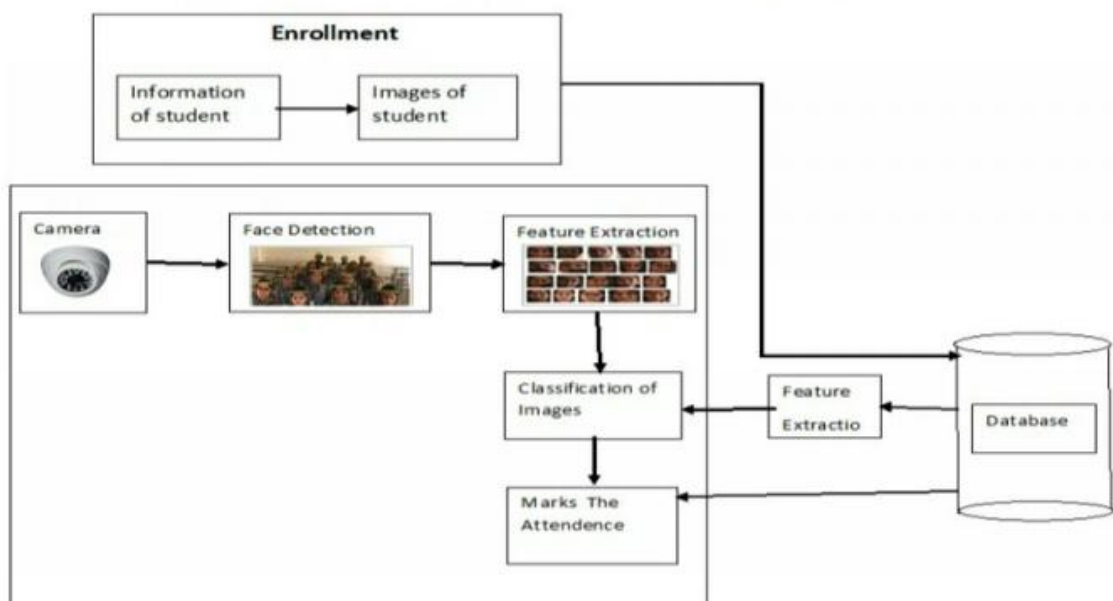


Fig:3.1 System Architecture



Working:

1) ENROLLMENT:

Enrolment of students faces for database creation Initially, a database for 20 students has been created. This helps to match the recognized faces from the existing photographs stored in the database. The database consists of a range of different poses of students at different angles. The college at the time of admission takes pictures of every student, which later is stored in the database. The database is then trained to identify the students even if there are gradual changes in the appearance in a student.

2) FACE DETECTION:

Detecting a face marks the onset of human face recognition. Using face detection, we can determine the coordinates and scale of face in the given input frame. Face detection can be difficult at times because face patterns have different appearances. A few factors that cause variations are expressions, skin colour, or common objects such as glasses or moustache. One of the main factors is lighting changes that also can affect face detection. Face detection is derived from object detection using Haar feature-based cascade classifier which was proposed by Paul Viola and Michael Jones. This is a machine learning-based approach. To detect a face, we need a lot of positive and negative images, i.e. images with and without faces. Once we get these faces; we need to extract features from it as shown which are used to classify images. Each feature when applied to the training set a best threshold is calculated, which is then used to classify the face as positive or negative. This process continuous recursively until the required error rate or accuracy is achieved.



Fig 3.2: Face Detection

3) FEATURE EXTRACTION:

Face recognition for computer is not as simple as it is for humans. Face recognition for computers is based on geometric features which we discussed in the face detection section above. There are various approaches to face recognition which include eigenfaces, sherface, and local binary pattern histogram. The main solution here is obtained through local binary pattern histogram (LBPH). The main objective is to encapsulate this structure described by the local features in the image by pixel comparison to its neighbouring pixels. To compute value for each pixel, compare the pixel to its eight neighbours and follow the pixels in a circular fashion, if the centre pixel has a greater value in comparison with the neighbour, then give 0, else give 1. This gives us an eight-digit binary number. Compute the histogram, for each combination formed. Normalize (concatenate) the histogram for every cell, this provides the feature vector for the entire face under process.

4) CLUSTURING:

The process of grouping objects into sets in such a way that in a group is called cluster and the objects are similar or have common properties in contrast to those in other groups or clusters. One common method is the k-means clustering algorithm. This algorithm has various applications in data mining, data compression, pattern recognition, and pattern



classification. In k-means clustering, k data points are classified into the groups or clusters in order to reduce the geometric mean square distance between the data point and its nearest centre.

5) FACE RECOGNITION:

Face recognition for PC isn't as easy because it is for humans. Face recognition for computers is predicated on geometric options that we tend to mentioned within the face detection section higher than. There square measure numerous approaches to face recognition that embody eigenfaces, sherface, and native binary pattern bar graph. The main resolution here is obtained through local binary pattern bar graph (LBPH). the most objective is to encapsulate this structure described by the native options within the image by element comparison to its neighbouring pixels.

To figure worth for every element, compare the element to its eight neighbours and follow the pixels during a circular fashion, if the middle element incorporates a larger worth compared with the neighbour, then provide zero, else provide one. this provides USA Associate in Nursing eight-digit binary range. figure the histogram, for every combination fashioned. Normalize (concatenate) the bar graph for each cell, this provides the feature vector for the whole face beneath method.[4]

IV. CONCLUSION

Students attending being the foremost necessary task in each university is responsible for a large quantity of your time consumption. Manually marking students attending has numerous drawbacks like missing attending, losing attending sheet, and most significantly proxy issue. So these problems will be eradicated through our system. The sole drawback that our system faces are memory consumption however since, it reduces time and energy. memory consumption that isn't a difficulty area unit future Endeavor includes changing this technique to a software or associate application in order that it will be used throughout each university. we'll conjointly be performing on reducing the general time and area. the system needs in execution, so that our system will be 100% correct.

REFERENCES

- [1] O. Arulogun, A. Olatunbosun, O. Fakolujo, and O. Olaniyi, "Rfid-based students attendance management system," *International Journal of Scientific & Engineering Research*, vol. 4, no. 2, pp. 1–9, 2013.
- [2] O. Shoewu and O. Idowu, "Development of attendance management system using bio-metrics," *The Pacific Journal of Science and Technology*, vol. 13, no. 1, pp. 300–307, 2012.
- [3] I. T. Toudjeu and P. Z. Sotenga, "Design and implementation of a rfid based smart attendance register," in *2017 IEEE AFRICON*. IEEE, 2017, pp. 748–751.
- [4] R. Agarwal, R. Jain, R. Raghunathan, and C. P. Kumar, "Automatic attendance system using face recognition technique," in *Proceedings of the 2nd International Conference on Data Engineering and Communication Technology*. Springer, 2019, pp. 525–533.
- [5] M. F. Mokhtar, C. W. S. B. C. Ahmad, and K. Abd Rahman, "E-attendance system(eas) using Bluetooth."
- [6] A. B. Kathole, "Optimization of vehicular adhoc network using cloud computing," in *2017 International Conference on Energy, Communication, Data Analytics and Soft Computing (ICECDS)*. IEEE, 2017, pp. 562–564.