***Project Report***

***On***

## LITERATURE SURVEY

***Submitted in partial fulfilment of the requirement for the award of the degree of***

## BACHELOR OF TECHNOLOGY

**In**

## ELECTRONICS AND COMMUNICATION ENGINEERING

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## DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

**ADITYA ENGINEERING COLLEGE(A)**

**(**Approved by AICTE - Permanently Affiliated to JNTU Kakinada **–** Accredited by NBA, NAAC with „A‟ Grade, Recognised by UGC under sections 2(f) and 12(B) of UGC Act, 1956) Aditya Nagar, ADB Road, Surampalem, E.G.Dist., A.P-533437

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**Automatic Attendance Tracing using Image Processing in Python**

**Abstract:**

There are different prevailing methods to capture person's presence like biometrics to take attendance which is a time-consuming process then why going with biometrics or manual attendance while we have a better alternative using image processing. In the human body, the face is the most crucial factor in identifying each person as it contains many vital details.

In this Project ,

The group image is captured first and then from the group image individual faces are identified using Viola-Jones Algorithm and the recognition of faces is done by using LBP(local binary pattern) Algorithm. The capturing of image is continued till the class ends. The attendance will be posted at the end of the class after identification of each and every person. The latest images are updated in the database every day for the better identification.

AAT marks individual attendance, if the captured image matches the image in the database i.e., if both images are identical. The proposed algorithm reduces effort and captures day-to-day actions of managing each student and also makes it simple to mark the presence.

**BLOCK DIAGRAM**

**ALGORITHM**

**IMAGE CAPTURE**

**IMAGE PROCESSING**

**RECORD ATTENDENCE**

**POST ATTENDENCE**

**UPDATE STORED ATTENDANCE**

**NO**

**YES**

**CLASS END**

**Literature Survey:**

**Research Paper 1:**

Real-Time Smart Attendance System using Face Recognition Technique by authors Shreyak Sawhney, Karan Kacker ,Samyak Jain, Shailendra Narayan Singh and Rakesh Garg. Attendance marking using image processing. Uses CNN (Convolutional Neural Network) for driving the core to mark attendance. Overcomes the chances of proxies and fake attendance. Accuracy is less due to false detection. The image is captured once or twice that may lead to missing attendance marking.

**Research Paper 2:**

The facial detection model proposed by Kruti Goyal and others, is a facial detection model which is built using different types of algorithms like AdaBoost, Haar Cascades. This model uses MATLAB and OpenCV for its implementation. Extraction of facial features is done as a localization of the face which is performed using pattern recognition.

**Research Paper 3:**

Abhishek Jha and others proceeded further to a superior system for the recognition process by utilizing statistical methods PCA and LDA in addition to likewise comparing the picture taken and the saved images for marking the attendance. They suggested to the extensive and blunder inclined procedure of participation making which whenever bargained may influence the understudy definitely. They proposed a framework for figuring the pictures in a specific procedure with the goal that matches scoring should be possible. While it very well may be accomplished by utilizing certain calculations, like color detection, PCA and LDA. They made many extractions of facial features from the picture for instance framework of face, nose, and eyes and so on. The PDA and LDA make use of the Eigen Values for students’ attendance to be marked accurately.

**Research Paper 4:**

Face recognition-based mobile automatic classroom attendance management system: by Authors R. Samet, Muhammed Tanriverdi Published in 2017, proposed three solutions, each of which includes a variety of mobile-based applications for children; instructors and parents would need to download them to their smartphones in order to track and monitor the real-time attendance process. This advantage of this system was .it’s already tested among students at author’s college or institution and the results obtained were satisfactory but on the other side, this system also has some limitations such as it requires three different kinds of mobile applications which was a major drawback of this system.

**Research Paper 5:**

Automatic attendance system by face recognition using machine learning In This paper, The Authors Sumeet Kewalramani Shree Kasera Bazar Vidya Niketan, published in Oct 2018.it proposed a system that is high usability and it comes with a proxy removal technique which makes the system perfect it is the most promising alternative of fingerprint scanner which consumes time this system works on an algorithm that is a combination of HVS and RGB algorithm. It is more efficient when it takes a single face for recognition, when it takes multiple faces as an input in a single time then sometimes it gives false detection. The facial recognition attendance system is a very efficient way and great tool for taking offline attendance .it is a very portable system we can access it from anywhere by computer or phone. With the help of pure software, approach proxies are completely avoided in this system. It’ll Reduce the amount of labour, time, and resources (such as paper) required and pen for taking manual attendance it’ll already create the list of students with their subjects which very continent for teachers.

**Research Paper 6:**

Face Recognition and RFID Verified Attendance System proposed by Md. Sajid Akbar, Pronob Sarker, Ahmad Tamim Mansoor is design and implementation of the Attendance System based on Face Recognition and Verification by RFID which the was aim and objective of the paper at the beginning ends with a success as both part works as desired. There it goes without any saying that our proposed model has the potential to overcome the manual attendance system because it’s efficient and convenient. Our model is more user friendly and it provides the most accurate and organized data. And with just some few modification we can use our system in any secured facilities

**Research Paper 7:**

Priyanka Wagh and others discussed about the various face recognition techniques like Principle Component Analysis (PCA), Eigen face, Support Vector Machines (SVM) and Neural Networks and compared them based on their success rate. The authors also wrote about system architecture, stepby-step methodology and supported it with its algorithm. They have also provided a mathematical model using mathematical concepts and language.

**Research paper 8:**

Attendance monitoring in classroom using smartphone & Wi-Fi fingerprinting by Anand S, Kamal Bijlani, Sheeja Suresh and Praphul P discussed Academic performance is directly affected by student attendance during the lecture hours. There are existing manual and automated attendance tracking systems that work to ensure that students attend the lectures without fail. However, the practical implementation of most automated systems have drawbacks such as high monetary cost, the need to install specialized hardware, and proneness to fake or proxy attendance. To address this, we propose a novel attendance marking system with which students may mark attendance using their smartphones. While applying facial recognition via the smartphone's front camera to determine the student's identity, the system also makes use of the campus Wi-Fi network to determine the student’s location. The proposed system does not require high monetary cost or specialized hardware and yet incorporates adequate foolproof measures to counter fake or proxy attendance. Experimental studies with our system show that fingerprinting, which is the technique used here to determine indoor location, can achieve very good positioning accuracy even in classroom environments, where signal interference is usually very high.

**Research paper 9:**

Saeed Mian Qaisar, Abdulhamit Subasi from R. F. Kurdi College of Engineering, Effat University, Jeddah, KSA discussed An Event Driven Attendance Tracker, In current era the Internet of Things (IoT) is becoming an important part of our daily life. It is employed in a variety of applications like smart cities, smart agriculture, smart wearable’s etc. The aim of this project is to use the IoT with an intelligent event-driven system in order to devise an effective quasi real-time attendance tracker. The idea is to keep the whole system in the standby mode except for the low power motion sensor. On the detection of an event, when a person enters and originates a motion, the front-end embedded processor is alarmed. The attendance log remains globally available via the cloud and can be accessed anytime. The system design flow is described. Its parameters are adjusted in order to achieve the effective performance. The proposed system operation is tested with an experimental setup. Results have confirmed a proper system functionality.

**Research paper 10:**

An Image Acquisition Method for Face Recognition and Implementation of an Automatic Attendance System for Events discussed by Luis Fung-Lung, Mikael Nycander-Barua and Pedro Shiguihara-Juarez as Facial image acquisition systems produce low quality face images. This happens because the imaging conditions like illumination, occlusion or noise might change among images. To achieve optimal images, we proposed an image acquisition method for face recognition. Then, with this method, it was created the Smart Event Faces Database that contains video frames from videos taken by smartphones and Raspberry Pi. Also, it was measured the accuracy for face recognition and execution time for the Smart Event Faces Database using ResNet 34 for feature extraction and the next classifiers: K-Nearest Neighbors, Naive Bayes, Random Forest, Multi-Layer Perceptron, Decision Tree, Adaboost and Support Vector Machine. Additionally, we compared these classifiers to show which was effective for the dataset in terms of accuracy and execution time. Then, we used the Smart Event Faces Database to create an automatic attendance system for events using Raspberry Pi, ResNet-34 and K-Nearest Neighbors classifier. The results achieved in the Smart Event Faces Database showed that K-Nearest Neighbors and Support Vector Machine had the best results with more than 0.96 of accuracy for face recognition and less than 1.5 seconds respectively of execution time. The automatic attendance system had an accuracy for face recognition of 0.94 and 0.5 seconds approximately per frame in execution time for 19 persons in 2 events.

**Research paper 11:**

Attendance Management System Based on Face Recognition Using Haar-Cascade by Ashish Yadav, Aman Sharma and Sudeept Singh Yadav from SCSE Galgotias University Greater Noida, India discussed Smart Attendance with Real-Time Face Recognition is a practical option for managing student attendance systems on a daily basis. An attendance system based on facial recognitionis a method of identifying people by their faces.The regularity of student attendance is now a major problem for educational institutions. This is primarily owing to the fact that a student's total academic success is influenced by their attendance at the institute. Calling out the roll call or having students sign a piece of paper are the two most common methods of recording attendance. Face biometrics based on a high-definition monitor are used to recognise students' faces for the purpose of taking attendance.They were both more difficult and time-consuming. video, as well as other forms of information technology. Faces will be found by a computer system in my face recognition project. can distinguish human faces in photos or videos acquired by a surveillance system quickly and precisely camera. For enhancing the performance of face recognition, a variety of algorithms and strategies have been developed.As a result, a computer-based student attendance management system is required, which will assist instructors in automatically keeping attendance data.

**Research paper 12:**

Automated Attendance System in the Classroom Using Artificial Intelligence and Internet of Things Technology proposed by Duy Dieu NGUYEN, Xuan Huy NGUYEN, The Tung THAN and Minh Son NGUYEN from University of Information Technology – VNUHCM Ho Chi Minh, Vietnam discussed Computer vision is recently developing and applying in the utility apps serving people, facial recognition is one of its applications. Although the accuracy of the facial recognition is less than when compared to fingerprint recognition, iris recognition and Radio Frequency Identification (RFID) card recognition. But it is still widely used because the recognition process does not contact the device. With the advantage of the facial recognition method, we propose an automated attendance solution which uses embedded device integrated Artificial Intelligence technology (AI) and Internet of Things technology (IoT) in the smart classrooms. The highlight of the system is the ability to take attendance automatically and continuously throughout the learning period. When the students enter the class, the management department and the parents can know the student’s participation status by viewing the report in the real-time system. The system which is an embedded system-based application solution has low operating costs and rapid deployment.

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