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Radial basis function Artificial Neural Strategy with Dimensionality Reduction Algorithms Intelligent Fusion Method for Student Attendance Monitoring

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Abstract: Image processing is the act of applying various image analysis to identifying task and improve the collected of data. Student attendance monitoring is described as the malpractice shown in a biometric system for identifying unauthorized students as the same actual consumer across original biometric or RFID Tag to identity today's number of present. Face images contain different regions based on skin color, face size, and camera quality. Nowadays, many face recognition methods are used for locker security and phone lock applications. The previous Method, the Convolutional Neural Network (CNN) method, was developed to classify the image and identify whether the image was a Spoof or not. Still, those methods have some drawbacks, such as identifying the separate parts of the region and blurring images. So this work introduces the combination of Machine learning based Radial Basis Function (RBF) for classification of each student and performance of the classroom of student attendance monitoring. The image Preprocessing using the Gaussian Filter identifies the desired region with a noise-free image, and the proposed filter calculates the values for a clear structure image. The segmentation separates the different regions like skull, skin, and Background with applied Radon Transform, this transforms technique identifies the complex pixel from different skull sizes of input images. The final step is the Classification of Radial Basis Function (RBF) using Dimensionality Reduction Algorithms to classify the image based on RGB components. Radial basis function dimensional reduction Algorithms for a clear view of a specific image with a specific name of each student of each classroom. The student data was continuously monitored based on Name and role number using IOT (Internet of Things). The performance of the proposed method is validated and developed through simulation using the mat lab software based on that accuracy specificity is developed in future processes.

Keywords: *Radial Basis Function (RBF), Preprocessing, Gaussian Filter, Classification, IOT Internet of Things.*

1. Introduction

Maintaining attendance is critical in all institutions in order to evaluate students' performance. Each institute takes a unique approach in this field. Some individuals still manually record attendance using the obsolete broadsheet or file-based Method, while others have transitioned to biometric-based automatic attendance solutions.

A range of automated procedures, such as biometric attendance, are feasible for this logic. Because students must queue up to place their thumbs on the scanning electronic gadget, all of these strategies take time.

In order to determine the number of present and absent students, the faculty manually controls and analyses attendance data while employing this technique. Absent students will have another opportunity to fill out an attendance sheet faculty must retake the class after the attendance sheet is misplaced. In addition to being cumbersome for the lecturer, the practice will have an impact on students since time is required to sign manually, verify, and submit the attendance sheet. Thus, it is essential to create a computerized platform that can manage the instructors and enable them to attend and maintain their attendance. The professors can readily access this program. The curriculum must carefully monitor and regulate

Automated attendance with face detection and identification can improve the efficiency of managing and controlling attendance. A computer-programmed module that detects the faces in the pictures captured on video registers the students and then records the outcomes in a database for later examination. The system uses the Eigen face recognition method to identify faces. Eigen faces, which are faces comprised of eigenvectors, are evaluated and measured by the system. In order to determine the existence and identity of a person (face), this method also calculates the Eigen faces

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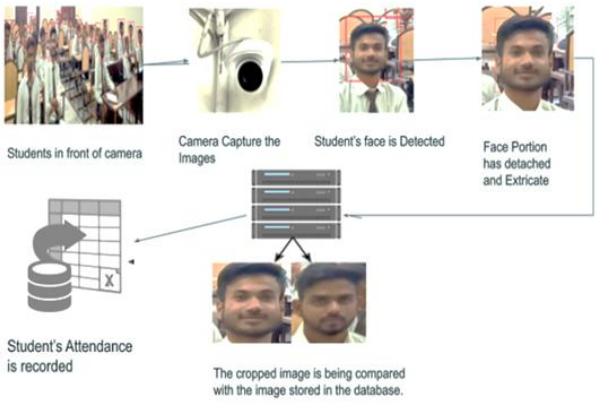


Fig 1. The basic working architecture of student attendance monitoring**.**

2. Literature Review

Figure 1 represents the Face recognition and IOT (the Internet of Things), two rapidly developing technologies, are frequently combined to make offering smart home systems easier, simpler, and more reliable. Facial Recognition is a rapidly developing subject that can be greatly aided by Machine Learning, a branch of Artificial Intelligence that may also be used to explore new sectors or even boost the productivity of ones that already exist. Individuals have an extremely difficult time remembering faces, but computers don't have these problems. Thus, they may be employed in situations when more photographs need to be stored in facial database entries. The conceptual design of the training set management sub-system should include an image capture component, a face detection characteristic, and a training set portion.

Once that was finished, the trained photographs were also saved in the folder needed for facial Recognition. These are a few crucial phases in the execution of our Strategy. When the camera is close to the classroom entrance, it captures live data continuously. It records data from the camera's live broadcast. Images that were captured are compared to those that were kept in a folder at the time of certification. If the image matches properly, the Student's Name and registration number are shown on the identified or detected facial. This study employs an image texture analysis approach to identify face image spoofing. The suggested texture analysis approach combines the Local Binary Pattern (LBP) with the Gray Level.

Line mapping is carried out on faces using such characteristics. Here, the grey-scale approach is used to transform clouded photos into grey images. Distribution of an oriented variation is a process that may be used for both faces and objects. Each pixel was given an integer once all photos were reduced to grayscale. Finding the face's darker area is the main focus. Eigenfaces: This approach is used to encode and extract the required characteristics from faces and photos. It takes several photographs to generate a collection of faces with all the required features.

Any approach used to detect a spoof attempt by assessing whether the source of a biometric sample is a living human person or a false representation is referred to as liveness detection. Algorithms examine data obtained from biometric sensors to identify whether the source is live or replicated. Facial spoofing is stealing someone's identity by capturing their face and faking their facial biometrics with a photo or video (becoming a digital identity theft). Although it may be used for various money-laundering operations, a face spoofing attack is most commonly employed to perpetrate a crime connected to bank identity fraud; how facial spoofing is accomplished for banking identity fraud. Identity spoofing has developed dramatically in recent years, particularly in online contexts. It is primarily used to open a bank account or apply for a loan in the case of financial institutions.

Face spoofing-based face unlock recognition technologies such as programmed, photos/selfies, or even masks are used in identity spoofing fraud to obtain an offshore bank account. The variance and covariance matrices are computed using the data. Each photograph is an eigenvector. As eyes, noses, and mouths include a variety of additional characteristics, this method is used to extract their features. However, these tactics should only pass the anti-spoofing facial recognition or phishing detection tests required in some stages of onboarding new users, signing contracts, lending, or contracting new services. The problem for face-based security systems is detecting facial image forgeries, such as spoofing. Spoofing happens when someone attempts to impersonate a registered user to gain unauthorized access to and benefit from the protected system.

1.1 Objective

- To develop a spoofing detection image, that is both reliable and accurate through image processing technique.
- An image preprocessing based Preprocessing using Gaussian filter technique aims to achieve a clear image to reduce noisy or blurriness.
- To high sensitivity to identifying data obtain image of each specific person using IOT (Internet of Thing).
- To improve classification of accuracy result while detect actual or spoofed image using the proposed Radial Basis Function (RBF)
- To reduce the number of incorrect matches of images and identify methods for reduce the false ratio using machine learning.

2. Previous Research work

A prostate cancer malignancy classification approach based on the Adaptive Neuro Fuzzy Inference System (ANFIS) is suggested. The preprocessing, changes, feature extraction, and classification phases make up the suggested technique. During the preprocessing stage, the brain MR images are improved, and the Curve let shift is used to turn this spatial domain imagine into a multi-quality signal. The Jacquard Similarity Index (JSI), Dice Similarity Index (DSI), sensitivity, specificity, and accuracy of this suggested meningioma cancer detection method are examined. The findings revealed that the well calibrated Curve let Transform and ANFIS Model attained a sensitivity of 91.5% [1].

By concatenating the binary numbers in a row-wise order, 10101110, which equals 174, the binary pattern should now be transformed to a decimal value. The "central pixel value" is the calculated value. The number of cells that must be taken into account while forming the histograms to extract the characteristics by merging tiny histograms is determined by the grid coordinates X and Y. A sliding window of "k" size, also known as "Kernel Size," can be initially defined in order to extract the features. For the sake of simplicity, the system contains 3* 3 grayscale pixel values, and a threshold value of 60 is calculated based on the radius and number of neighbors' factors. Several decades previous, the development of biometrics and image processing led to a number of smart applications [2].

The suggested solution makes use of carefully placed cameras at entry points to identify employees based on their facial traits. Individual staff profiles are kept in a thorough database together with any linked photos, making it easier to identify them and maintain track of their attendance. An automated punishment mechanism to discourage tardiness is a key feature of this system. The system also accommodates visitors by providing a distinct on-site registration procedure made possible by a different database. A complete solution for businesses looking for ways to enhance their workforce management procedures has been created through the integration of facial recognition technology, attendance databases, and automatic fines. This advances the field of attendance tracking methods and provides a model for businesses looking to install cutting-edge, convenient, and secure attendance management systems [3].

An Excel file will be updated for the attendance record based on the face recognition results after the web camera takes pictures of the Student's face so that they can be identified. The computer then automatically detects the face and finds a student name that most likely matches what has been captured. The Method uses a pre-trained human Cascade model to find faces in internet camera footage. The test outcomes for one class of 28 pupils revealed that Recognition of facial features is often 95% accurate. The attendance system, however, is sensitive to variations in lighting and the distance between the subject's face and the image being captured [4].

Advanced characteristics of pre-trained facial Recognition and training from the Exception algorithm are used by the Facial Image Threshing (FIT) machine. In addition to the data-augmentation approach, the FIT machine required the removal of extraneous facial photographs, the gathering of facial images, the correction of misplaced face data, and the huge merging of original datasets. With the FER 2013 dataset, the suggested technique's final FER results increased validation accuracy over the traditional Method by 16.95%. To support the real-time testing, the confusion matrix assessment based on the hidden private dataset demonstrates a 5% improvement over the first Method with the FER 2013 dataset [5].

Proxies and students are counted as present even when they are not. The live video stream used by this technology is used to record attendance. Open CV is used to extract the frames from the video. Face detection and face Recognition—both of which this sort of system uses dlib for—are the primary implementation tasks. Using deep learning, it is possible to learn a lower-dimensional effective metric space where points are used to represent visuals and where points belonging to the same class are grouped together, and those belonging to other classes are spread apart instead of lowering the pixel space's size directly. In contrast, a bank of convolution layers has several convolution filters [6].

A classification algorithm suggested design that aims to forecast heart illness using patient data. Our strategy uses CNN methodology to train discriminative scale features with minimal computing cost and parameter constraints, unlike prior approaches that extracted multi-scale features from data using multi-stream classifying. In order to extract high-dimensional, large-scale data from predictive details, steps are employed as crucial tools. It is vital to create predictions for the class of coronary heart disease and evaluate patient data in order to obtain a corresponding increase in the performance of the model as a whole [7].

The initialization phase and the authentication phase are the two steps that make up the Attendance Management Method based on Crowdsensing (AMMOC). An instructor requests that the server monitor attendance during the initialization process. Following receipt of the request, the server notifies the students to provide their location data and then, after collecting all of the responses from the students, creates the student location map. During the authentication stage, the server asks various students to count the number of pupils in order to confirm the accuracy of the location information. The work assignment module and the attendance

verification module are the two modules that make up the authentication phase [8].

Address this problem by contrasting self-reported attendance data from the same set of adolescents (aged 15–16) in Flanders, the Dutch-speaking region of Belgium (N = 4344), with administrative attendance data gathered by schools. Estimate of unpaid absences based on attendance information gathered by schools electronically differs from self-reported absence, and if so, are the differences between administrative and self-reported absence systematic. According to our findings, there is only a marginal correlation between self-reported and registered unwanted school absences. The number of recorded authorized absences was higher than the number of reported absences for boys, technical, and vocational track [9].

One of the most trustworthy solutions is face recognition. Scale-invariant Feature Transformations (SIFT) and Sped-Up Robust Features (SURF) have often been employed by the mathematical community for face recognition. Face recognition technology has been suggested for use in a smart classroom to verify the effectiveness of the proposed algorithm. The Labeled Faces in the Wild (LFW) dataset is used to train the face recognition algorithm. From one image of 40 kids, the system can identify 30 out of the 35 faces that it can detect. On the test data, the suggested Method had an accuracy rate of 97.9%. Furthermore, edge computing is used in an IoT-based architecture to compute and transport the generated data from smart classrooms. Processing has made use of edge computing [10].

The tool is outfitted with a fingerprint sensor to track and confirm staff and student attendance, a Passive Infrared (PIR) sensor to wake up the device when a person is present, and a real-time clock to synchronize each report generated with the local time. A web application is created to enable parents and school officials to watch children in real time. The system may also provide reports on a daily, monthly, and annual basis. Data is analyzed, and a model is created using classification machine learning and a decision-tree algorithm to assess the effectiveness of tracking attendance in reducing student dropout. The produced model, which has a 91.4% accuracy rate, indicates that maintaining a high percentage of student attendance will dramatically lower the dropout rate in secondary schools [11].

The influence of fluctuations brought on by emotional state makes it difficult to precisely extract all the relevant handmade aspects, though. The approach FER-net, along with twenty-one cutting-edge methods, was evaluated using five benchmarking datasets: FER2013, Female Facial Expressions, Extended CohnKanade, Karolinska Directed Emotional Faces, and Real-world Affective Faces. The analysis takes into account the seven F.E.s, including unawares, grief, and happiness. This dataset's respective average accuracy is 81.68%. The acquired findings show that, when compared to twenty-one state-of-the-art approaches, FER-net is superior [12].

Big data is also needed to enable deep learning techniques. If the database is tiny, it could operate better. Feature extraction is crucial for FER, and if the extracted features are enough to be separable, even a straightforward approach can work wonders. Deep learning techniques, however, automatically extract features, allowing some meaningless characteristics to conflict with important features. These factors make FER a difficult computer vision task even today. In the current study, experiments to assess the suggested approach were carried out on the CK+ and JAFFE databases with the goal of working with less data and extracting only important characteristics from images. For 7-class studies on the CK+ and JAFFE databases, high average recognition accuracies of 97.38% and 97.18% were obtained, accordingly [13].

The World Health Organization (WHO) highly advises using a mask when outside, among other precautions that have been taken to stop the disease from spreading. In this experiment, we demonstrate the detection accuracy of three deep learning face mask detection methods: Max pooling, Average pooling, and MobileNetV2 architectures. A deep learning architecture is trained using a dataset made up of 1845 images from multiple sources plus 120 photos of the co-authors shot with a webcam and a cellphone camera. The Max pooling has a validation accuracy of 98.67% and a training accuracy of 96.49%. Additionally, the average pooling obtained a validation accuracy of 96.23% and a training accuracy of 95.190/0. The accuracy of the MobileNetV2 architecture was 99.72% for training and 99.82% for validating [14].

Based on each Student's attendance in class, the Student Attendance Management System is in charge of keeping and producing their attendance records. For changing the Student's attendance status, each member of staff is given a special account and password. The staff members in charge of particular disciplines are in charge of keeping track of every Student's attendance. Only if a student is present during a specific period is attendance taken into account. The performance of pupils is tracked and reported on a weekly basis. The Payroll Management System includes a variety of duties related to paying employees in an organization. It involves keeping track of the number of hours put in, assuring fair compensation, and working out and processing taxes, social security deductions, and other deductions as specified by the employer. Payroll administration may also include managing contractor payments [15].

The HyNRA algorithm was trained using historical data, optimizing it to minimize recommendation errors and

prevent overfitting. When a student requested recommendations, their profile was fed into the trained HyNRA model, which generated personalized recommendations. The continuous feedback loop, enabled by the data from these 200 students, allowed for the refinement of recommendations over time using reinforcement learning techniques. Reinforcement learning techniques were employed to refine recommendations over time. The algorithm's performance was regularly evaluated using metrics like precision, recall, and F1-score. By fine-tuning the model and hyperparameters, its recommendation accuracy and effectiveness were improved. By implementing the HyNRA algorithm, a powerful recommendation system was created that enhanced student engagement and knowledge retention by tailoring educational resources, assignments, and assessments to individual learning needs and preferences.

A system that can deal with the issue of keeping track of attendance. The suggested solution consists of two applications: one that creates a Q.R. Code by entering student information and another that records attendance and outputs it in CSV or XLS format. To verify a student's attendance, the instructor will need to scan their unique Q.R. code. The system's verification of student identification to stop bogus registrations is covered in the text. All pupils' attendance is managed by the system, which also evaluates it. The teacher will get the Student's Q.R. code in order to record their attendance [16].

This technology, which is based on face recognition and recognition algorithms, automatically recognizes a student through CCTV when they enter the school or in class and announces their presence by recognizing them. It also teaches users how to avoid problems like faking. Traditional attendance records and this approach can be contrasted in terms of their positive and negative aspects. Software named Automated Student Attendance Management is used to keep track of a student's regular attendance at school. Since attendance is recorded using CCTV by taking pictures of students and saving them in the database, subject staff may now concentrate on teaching students until the conclusion of the class rather than having to worry about recording student attendance and producing an accurate report automatically [17].

Fingerprint analysis: one of the oldest and most used biometric technologies available today is fingerprinting. The process of comparing two samples of friction ridge skin imprints from human fingers, palms, sometimes known as hand identification or fingerprint identification. Recognition of voice is unique, just like many other characteristics that are employed in biometric techniques. Similar to gait patterns, analyzing the speech and identifying the person takes very little time. A "voice print" is a numerical representation of the sound that is used in biometrics [18].

The multiple K-nearest neighborhood approach is used by the multi-action body silhouette feature to train the identification model, identify the subject, and cast votes. The system may continue to provide strong recognition performance using multi-angle skeleton synthesis recognition for gait when it faces a circumstance with feature masking, such as when a person is wearing a mask or has changed their appearance or when the viewing angle is obscured. Our test findings demonstrate that as soon as a certain individual wears a mask and enters a monitored area, the system's recognition accuracy is 83.33%. The access control notification feature of the intelligent attendance monitoring system incorporates a LINE messaging API, and it offers a responsive online platform that enables managers to execute follow-up management. [19].

By examining the circumstances surrounding these issues, the idea of an attendance system based on face recognition technology is put forth, and real-time video processing-based face recognition attendance system research is done. The video facial recognition system's accuracy rate, according to experimental data, is up to 82%. The facial recognition attendance system can save costs by roughly 60% when compared to the conventional check-in proximity. The feature extraction technology gathers the data necessary to describe the face picture and creates the features that will be kept in the feature database. The face detection technology is used to find and separate a partial face image from the image. [20].

For safety during the COVID-19 pandemic, attendance monitoring is recommended, and to solve attendance issues, a face mask detection system and an RFID-based solution are suggested. In order to assure face mask compliance and offer real-time attendance data for data-driven decision-making, the project intends to develop a contactless monitoring system. The XAMPP web application creation and testing tool is introduced, and an outline of the IC7408 chip used in digital electronics is provided. The primary findings of the study demonstrate that while RFID scanner accuracy is improved by increasing sample size, optimizing times, and batch size, face mask detection accuracy. [21].

2.1 Problem statement

- The K-nearest neighborhood has a high false ratio to recognize the input face image, and it is difficult to detect all types of face images.
- The FER-net method achieves lower efficiency on the same pattern of multi-input images while the large size of images is analyzed using histogram equalization.
    - The RFID scanner accuracy is low from black and white background images with more affecting elements such as dots, blur, and shadowing.

- When the input image does not have apparent illuminance, the preprocessing or segmentation method does not get efficient output.

3. Materials and Method

Biometric authentication is a procedure that depends on the uniqueness of a person's biological characteristics or qualities. Face recognition is a complex subject in the biometric authentication domain currently under development. Face recognition technologies are being employed in various applications, including border crossings, banking, and mobile payments. Figure 2. The systematic use of human faces has focused on the dependability of face biometrics for identifying image spoofs.

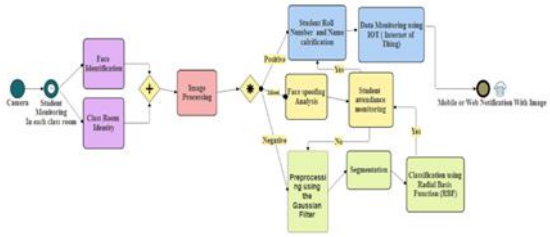


Fig 2. Working on Proposed Block diagram for student attendance Monitoring.

3.1 Input image

This is the initial stage in the image processing process. Preprocessing, such as scalability, is frequently used. The image can be scanned or captured with a webcam and used as an input. Image data is improved, and some image characteristics are enhanced for subsequent processing during this phase of image preprocessing. The image is segmented into areas with extracting characteristics in this stage. Extraction of features: the visual look of an image is natural, whereas artificial elements are the consequence of image modification. Natural characteristics include a grayscale textural area, the brightness of a pixel region, and the object's edge outline.

3.2 Preprocessing using Gaussian filter

A filter and conduct inversion on the image to blur everything. Because the symmetric matrix used in this filter is typically odd in size, researchers may establish the filter's pixel position. The values for a Gaussian filter are computed using the Gaussian function.

$$G\,(x,y) = \frac{1}{2\pi\sigma^2} = e^{\frac{x^2+y^2}{2\pi}} \qquad \ldots \qquad (3.1)$$

It first integrates a Gaussian filter to remove noise from an image, then takes that image as the starting point when applying a bilateral filter. $G\,(x,y)$ Apply both the source image and the noise image to the range kernel function of the bilateral filter. The high-frequency data associated with the image is provided by the noise image, while the low-frequency information is provided by the image that serves as the reference. A kernel is convolved with the input in order for the spatial filter, known as the Gaussian filter, to function. This $2\pi\sigma^2$ procedure calculates a weighted average of the areas around the current pixel, giving less weight to nearby pixels than to those in the middle of the image. A fuzzy image with better edges than those produced by other equal smoothing procedures is the end result of such a low-pass filter and preprocessing output show the Figure 3.

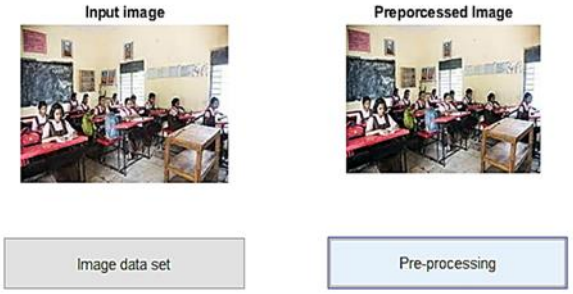


Figure 3. Preprocessing output image.

3.2 Radial Basis Function (RBF)

Reading the image, resizing it, and data augmentation—which includes image grey scaling, reflection, Gaussian blurring, histogram equalization, rotation, and translation—are all steps in the preprocessing of images. Discovering a thing the term "detection" describes the localization of an item, which entails segmenting an image and locating the object of significance. Extraction of features and training: This is a vital stage when statistical or deep learning techniques are used to pinpoint an image's most intriguing patterns and characteristics that may be exclusive to a class and later aid the model in differentiating across classes.

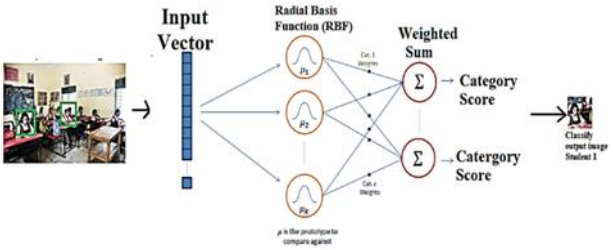


Figure 4. Classification of the Student for attendance monitoring

Model training is a technique by which the model learns the characteristics from the available data. This specific kind of Student's face is helpful in situations when non-linear data classification are shown in Figure 4. By employing the Radial Basis Function as a neuron and comparing input data to training data, RBFNs activate. In addition, they won't be given a high similarity score if they don't match the training data. Non-linear identification is possible by comparing similarity values with several data workshops. Multiple

circular basis function neurons with different weights examine an input vector, and the sum of the neurons results in a similarity ratio. Input vectors will have a high similarity score if they match the training set of data.

3.2.1 Algorithm Steps of Dimensionality Reduction Algorithms

Step 1: Input Segmented image.

Step 2: The face, color, and Background, which may identify a lot of face images in the Input vector.

Step 3: The use of "weighted" masks gives it a better option for edge identification than certain uniform blur filters.

Step 4: If one assumes that a degradation process can separate the observed signal I from the original "true" signal X, then the transformation operation entails adding the white Gaussian variance V with zero means into X. The observed data may then be written as follows.

$$I = X + V \quad \ldots \quad (3.2)$$

Step 5: During the subsequent training timing, the ratio of category layer of matrices within the hidden and layers of output must be changed.

$$C = \frac{1}{n} * \left||x - t|\right|^2 \quad \ldots \quad (3.3)$$

Step 7: Output classifies the student image from each layer of the Student.

4. Result and Discussion

4.1 First step: Face recognition

Whether a face is alone or among a group of people, the camera can recognize it and find it in Figure 5. The subject may be shown facing directly ahead or in profile.

Fig 5. Face observation in specific classrooms.

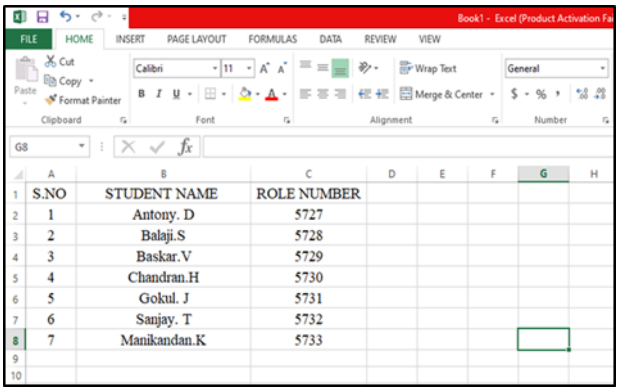
4.2 Second step: Examine your face

The face is then marked and evaluated in Figure 6. The majority of face recognition technology uses 2D rather than 3D photographs since it is easier to match a 2D image with existing data or with public imagery. The computer reads your face's geometry. Important aspects include the space between the eyes.

Fig 6. Specify each student face from the group of images

4.3 Third step: transforming the image into data

Based on the individual's facial, the face capture procedure converts analog information (a face) into a collection of digital information (data). The examination of your face is basically reduced to a mathematical formula. The face print is a mathematical code and also a database of Students shown in figure 7. Every individual has their own face print, comparable to how every thumbprint is different.



S.NO	STUDENT NAME	ROLE NUMBER
1	Antony. D	5727
2	Balaji.S	5728
3	Baskar.V	5729
4	Chandran.H	5730
5	Gokul. J	5731
6	Sanjay. T	5732
7	Manikandan.K	5733

Fig 7. Database of each class method.

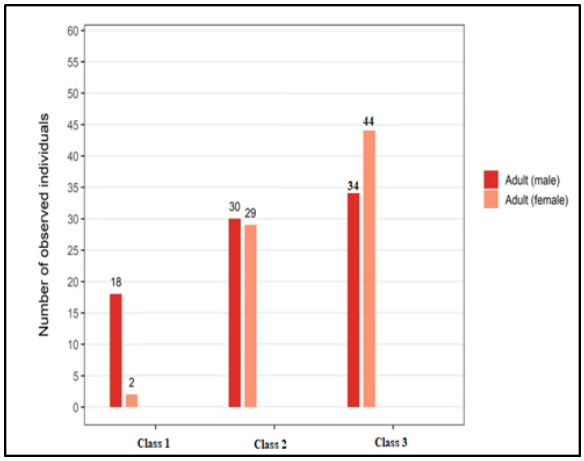


Fig 8. Graph of the individual class room.

Figure 8 chart analyzed using IOT (Internet of Thing) based each Class Room to find Individual student for spoofing analysis

4.4 Fourth step: Database (image) calculation of each image

Table 1 calculation Based on each classroom image, the user took 30 students of the images. From that, the user took a single image and analyzed the accuracy and Specificity for face spoofing analysis.

$$\text{Accuracy} = \frac{\text{True Positive+True Negative}}{\text{Total predicitions}} = \frac{30+90}{30+30+960+10} = 98\% \quad \ldots \quad (3.4)$$

The number of all accurate predictions divided by the overall dataset size yields accuracy. The accuracy ranges from 0.0 to 1.0, with 1.0 being the greatest. It can also be determined by dividing by the ERR.

$$\text{Recall} = \frac{\text{True Negative} + \text{True Positive}}{\text{Total Negative}} = \frac{90+8}{90} = 88\% \quad \ldots \quad (3.5)$$

Recall the number of accurate negative estimates multiplied by the total number of negatives is used to compute Specificity (S.P.), and True Negative Rate (TNR) is another name. Specificity ranges from 0.0 to 1.0, with 1.0 being the finest.

Table 1. Confusion Matrix-based calculating Method for student attendance monitoring using Radial Basis Function (RBF)

Parameter	Accuracy	Specificity
FIR 2013 Dataset [5]	16.95 %	72 %
FER-net: a Convolution Neural Network [12]	81.68 %	75 %
FER-net [13].	97.38%	79 %
Radial Basis Function (RBF) (proposed Method)	98.55	88.04 %

5. Conclusion

Face spoofing analyzes a student attendance system that can identify any faces in a camera if they are present. Conversely, facial Recognition identifies the face if it has previously been saved in the dataset using an internet database. The suggested system will be capable of recording attendance using facial identification. It will use a camera to detect faces and then identify them. Following Recognition, it will update the attendance records and note the identified Student's attendance. Multiple user faces are photographed as part of the data collection process and saved with a unique I.D. for this type of individual, which is then analyzed through the IOT (Internet of Things). The experiment findings show that the Gaussian filter and Radial Basis Function (RBF) perform better, although allowing fewer neurons in the hidden layer. The output result is that detecting the specific Student with a better accuracy value is 98.5% for the image classification method and Specificity of 88.04% for IOT gives better output than the proposed Method.

5.1 Future scope.

A.I. (Artificial Intelligence) and RFID-based attendance systems will make available an effective system in the future. In that regard, the produced prototype complies with all the requirements and operates flawlessly. Almost every educational institution requires students to keep an attendance track, and doing so physically can be difficult and takes time. The model developed as the outcome of this training is accessible at Open CV. One of the most effective face detection techniques is cascade detection, which the user can access using the Open CV approach in the networking system.

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