

# Smart Digital Monitoring For Attendance System

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**Abstract**— In this wind, structure takes the intrigue along these lines utilizing Face Recognition. The change depends on upon face approval and applies the structure to classroom. It is basically in light of the SURF (Speed Up Robust Feature) estimation. The system is consolidates getting the get photo of the present student in the class and secludes and the begin at now set away individual photographs of the understudies with the get-together picture, if the student is found in the social affair then the support will empower. The whole code is framed in MATLAB. Most inaccessible point is done in MS-Excel record. MATLAB is high framework preoccupation programming.

**Key words:** SURF, MATLAB, Face Recognition

## I. INTRODUCTION

As the movement is growing rapidly, everything is getting modernized; therefore the theory of a student can be taken thusly by getting the social affair picture from the camera and isolated and the set away picture. The wander of a student of classroom in the midst of pass on is joined to the video spouting affiliation; it is possible to demonstrate the video of the time when he was truant. It is basic to take the coordinated effort of the students in the classroom normally. By physically instructor taking the interest is not worthy in light of the way that it is pointless activity for both students and teacher and furthermore it is standard approach. In spite of the way that biometric interest structure is open at any rate it is in like way require extra time that will influence for student and speaker, it is other than difficult to take the support more than every one thusly.

Go up against request or face ID dismantles a data picture (test) against a database (show) and reports a match, enduring any. The explanation for face confirmation is to check the claim of the character of a man in a data picture, while go up against taking after methods reliably assess the range and maybe the presentation of a face in a photo amassing unendingly. Go up against Detection in Color Images is a structure for along these lines perceiving human faces in cutting edge shading pictures. The structure relies on upon a two phases get ready which at first sees areas which are likely going to contain human skin in the shading picture and thusly limits information from these districts which may demonstrate the zone of a face in the photo. The skin obvious check is performed using a skin channel which relies on upon in the wake of shading and surface information. The face exposure is performed on a reduce scale picture containing only the obvious skin ranges. A blend of channel holding and steady morphology are used to focus disagreement joins that would exhibit the closeness of a face. The face prominent confirmation handle works for the most part and unpretentiously dependably.

## II. BLOCK DIAGRAM

### A. Attendance System

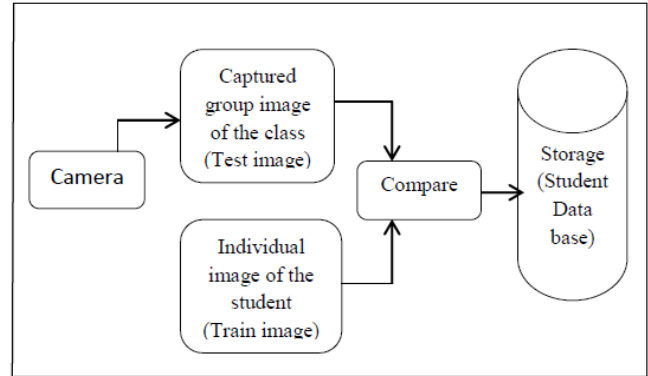


Fig. 1: Block diagram showing the processes involved in attendance monitoring

Particular photos of each student is gotten and secured in the database called "Plan pictures". These photos are to be gotten with a camera having astonishing confirmation and with real edification. On dependably the getting of the photos in the class is done. This photo will be a social gathering photo of various individuals. This photo is secured in another coordinator called "Test picture". After a short time for the stamping of wander Train pictures are isolated and the Test pictures. The SURF number is used for the masterminding reason. SURF is a descriptor which sees the interest centers in the Train pictures and yields for all intents and purposes indistinguishable fragments in the test picture. It then channel through couple of centers and left with couple of enchanting focus interests. In setting of the Euclidean portion, the obsessions having scarcest divisions are supported. In case of the refinements at centers are made then the name out of the readied picture is secured in the database which demonstrates a particular understudy is open on that day. The database is made using MS-EXCEL. The figure 5.2 demonstrates the flowchart of the entire framework.

### B. Interest Point Detection

Given a point  $x = (x, y)$  in a photograph  $I$ , the Hessian mastermind  $H(x, \sigma)$  in  $x$  at scale  $\sigma$  is portrayed as takes after.

$$H = \begin{bmatrix} L_{xx}(x, \sigma) & L_{xy}(x, \sigma) \\ L_{xy}(x, \sigma) & L_{yy}(x, \sigma) \end{bmatrix}$$

Where  $L_{xx}(x, \sigma)$ ,  $L_{xy}(x, \sigma)$  and  $L_{yy}(x, \sigma)$  are the convolutions of the Gaussian second request deficient subordinates with the photograph  $I$  in point  $x$  autonomously  $\text{Det}(H \text{ approx}) = D_{xx} D_{yy} - (\omega D_{xy})$

where  $\omega$  is a weight for the essentialness protection between the Gaussian bits and the approximated Gaussian parts Right when  $\sigma = 1.2$

$$\omega = \frac{|L_{xy}(1.2)|_F |D_{yy}(9)|_F}{|L_{yy}(1.2)|_F |D_{xy}(9)|_F} = 0.912 \approx 0.9$$

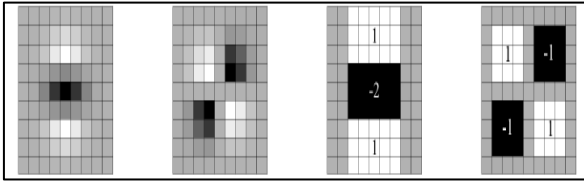


Fig. 2: The box filters of approximations of Gaussian second order partial derivative. The figure shows  $L_{yy}(x, \sigma)$ ,  $L_{xy}(x, \sigma)$ ,  $D_{yy}(x, \sigma)$  and  $D_{xy}(x, \sigma)$  from left to right.

### C. Interest Point Description

The SURF utilized the total of the Haar wavelet reactions to portray the fragment of an intrigue point. Fig.6.2 shows the Haar wavelet channels used to enroll the reactions at x and y course. For the extraction of the descriptor, the hidden walk contains building a square range focused at the intrigue point and planned along the introduction picked by the introduction choice procedure. The territory is part up additionally into more small 4x4 square sub-ranges (as appeared in Fig. 6.3). This stick fundamental spatial data. For each sub-region, we handle Haar wavelet reactions at 5x5 similarly isolated illustration focuses. For simplicity, we call dx the Haar wavelet reaction in level course and dy the Haar wavelet reaction in vertical bearing. To build the quality towards geometric turns and restriction messes up, the reactions dx and dy are first weighted with a Gaussian focused at the intrigue point.

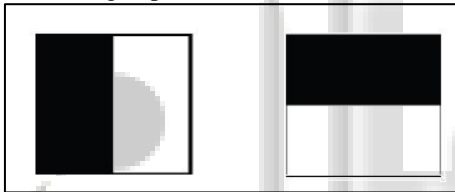


Fig. 3: The Haar wavelet filters used to describe the interest points.

By then, the wavelet reactions dx and dy are summed up over each sub-range and packaging a first game-plan of fragments in the part vector. Keeping in mind the end goal to fulfill in data the utmost of the power transforms, we in addition seclude the whole of the all around estimations of the reactions,  $|dx|$  and  $|dy|$ . Starting now and into the foreseeable future, each sub-area has a four-dimensional descriptor vector v for its fundamental oblige structure  $v = (\sum dx, \sum dy, \sum |dx|, \sum |dy|)$ . Interfacing this for each of the 4x4 sub-domains, this outcomes a descriptor vector of length 64. The wavelet reactions are invariant to a slant in illuminating (counterbalance). Invariance to isolated (a scale variable) is capable by changing the descriptor into a unit vector.

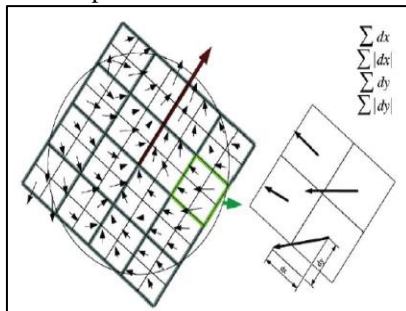


Fig. 4: The demonstration of descriptor building.

### D. Fast Index For Matching

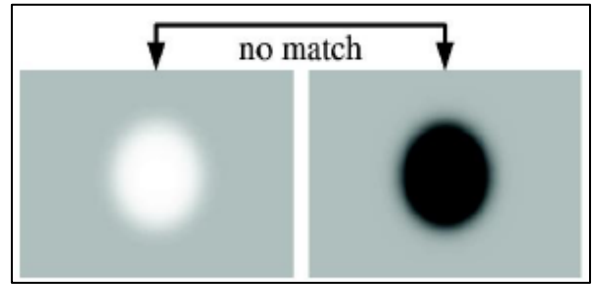


Fig. 5: The fast index for matching.

To enliven arranging stride, the indication of the Laplacian (i.e, the sign of the Hessian sort out) for the intrigue point is utilized. Basically the point-unite with a practically identical sign will be created with the segments. Fig.6 shows the diagram blobs of the sign.

### E. Flowchart

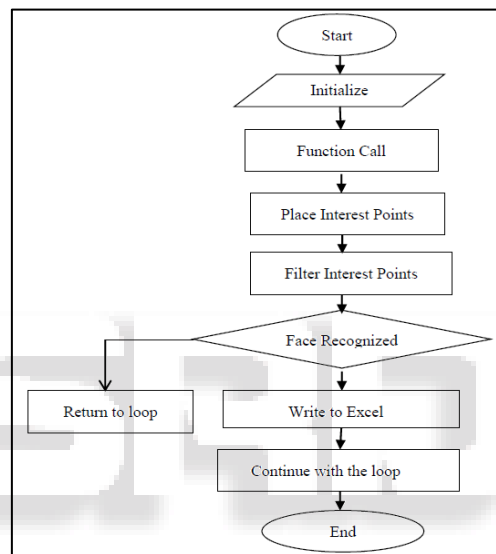


Fig. 6: Flow chart showing the steps involved in attendance system development

## III. RESULT

In Table 1 the affirmation rates on all used section sorts are given. Unmistakably SURF-64 has an equivalent verification rate to that of SIFT-128 sections.

Recognition rate of different feature	
Feature used	Recognition rate
SURF-64	95.6
SURF dbl-64	95.2
SURF-128 SURF dbl-128	96.0
SIFT-128	95.9
SIFT dbl-128	96.6
SIFT_GRID[4]	94.0
SIFT_CLUSTER	96.6

Table 1: Recognition rate comparison among SURF and SIFT features.

Table 2 demonstrates the organizing time and execution of different SIFT or SURF unites into face affirmation. As we seen, the normal dealing with rate of SURF-64 is the speediest one, and diminishment basically one half risen up out of that of SIFT-128, and SURF-128 could save more than 30% estimation time showed up particularly in association with that of SIFT-128. In our procedure the point orchestrating is speedier in light of limitation of the looking for range. In like way, no sub-region getting sorted out is required. Plainly the speed of our system can be regular speedier either using SURF or SIFT highlights.

Feature Used	Ratio Threshold	Recognition Rate	Matching Time Avg (ms/image)
SURF-64	0.45	95.6 %	0.378
SURF-128	0.45	96.0 %	0.597
SIFT-128	0.45	95.9 %	0.911

Table 2: Computation time cost with different feature types.

Table 3 shows the effects of past what many would consider conceivable on masterminding execution in occasions of SURF and SIFT. The trial happens demonstrate that the SURF segments are all the more practical to the change of the degree edge than SIFT highlights do.

Feature Used	Ratio Threshold	Recognition Rate(%)
SURF-64	0.5	95.6
SURF-128	0.5	96.1
SIFT-128	0.5	95.5
SURF-64	0.45	95.6
SURF-128	0.45	96.0
SIFT-128	0.45	95.9

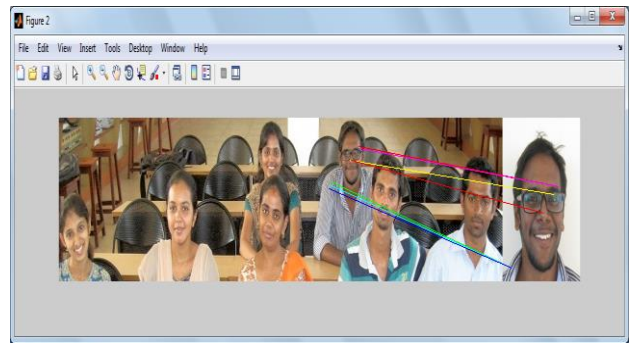
Table 3: Recognition rate with different ratio thresholds

#### IV. SNAPSHOT

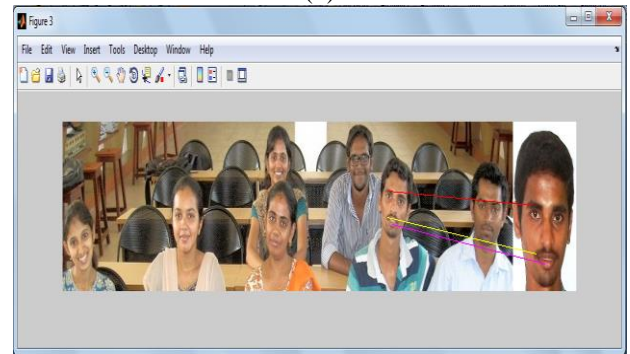
##### A. Attendance Monitoring System



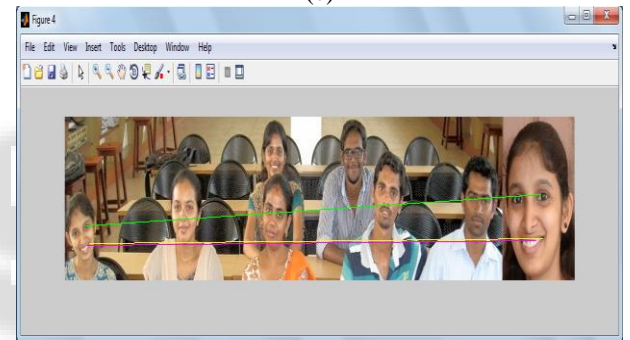
(a)



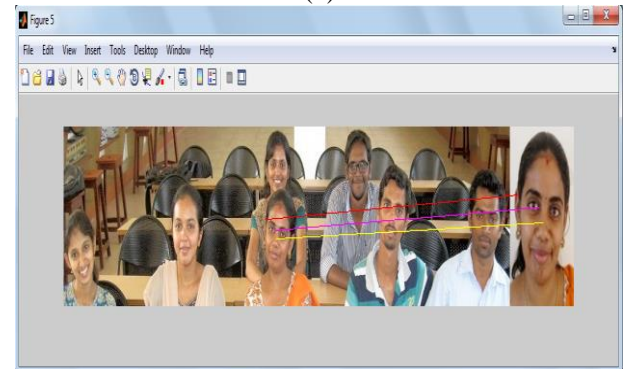
(b)



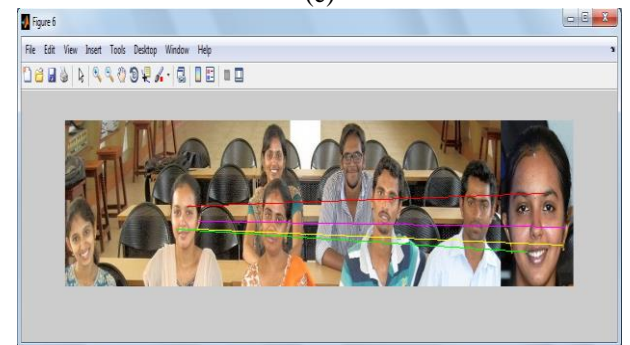
(c)



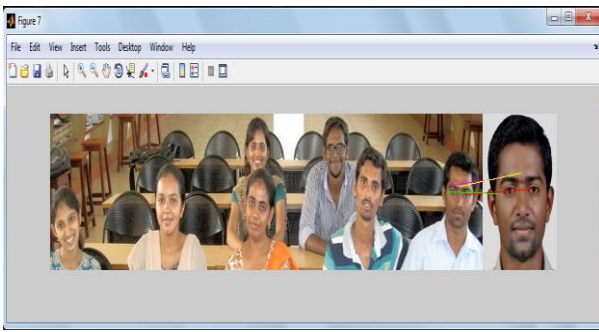
(d)



(e)



(f)



(g)

Fig. 7(a) to (g): Face recognition by matching interested points on individual's face.

	14-May-13	15-May-13	16-May-13
1			
2	Sushmitha	Sushmitha	Sushmitha
3	Ajey	Ajey	Ajey
4	Somanatha	Somanatha	Somanatha
5		Bhavya	Bhavya
6	Devika	Devika	Devika
7	Mallika	Mallika	Mallika
8		Rakshith	Rakshith
9			
10			
11			
12			
13			

Fig. 8: Stored names of the students who are present on each day under respective date in EXCEL Sheet

## V. CONCLUSION

We pondered different estimations for face confirmation reason, which are given in the past regions. Among all SURF was able and in this way the meander utilized the same for face insistence.

The meander on an exceptionally fundamental level utilized another descriptor called SURF. By the test considers SURF is most appropriate for face insistence. The drawbacks of PCA, LDA, and SIFT are overcome in this procedure. Introduction, scale invariant properties of SURF is the obvious thing which made the challenge to work tirelessly.

SURF based participation checking structure has its own specific applications in different spaces as said. Also it can be adjusted further as shown by the client. The structure misuse the fundamental contemplations of face confirmation. There are different unmistakable fields were face confirmation can be utilized, for example, confront appearance insistence and so forth. The framework is beneficial up to a most absurd degree. There are couple of disadvantages which are shown and proposed the climbs to be done in future.

## REFERENCES

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