

# ATTENDANCE SYSTEM BY FACE RECOGNITION USING SIFT ALGORITHM AND SMS REPORTING TO PARENTS MOBILE PHONE

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**Abstract:** Face recognition includes analysis of an image and extracting its facial features which will help to discriminate it from others. It deals with unique facial characteristics of human beings. It involves the technique of image processing systems, identity authentication and video retrieval. Scale invariant feature transform (SIFT) is used to extract distinctive invariant features from images. It can also be used to perform reliable matching. The features extracted are invariant to rotation, image scale and illumination. In this project an approach to detection and identification of human faces is represented and then recognizes the person by comparing characteristics of the face to those of known individuals is described.

**Keywords:** Face recognition, feature extraction, GSM, image processing, SIFT.

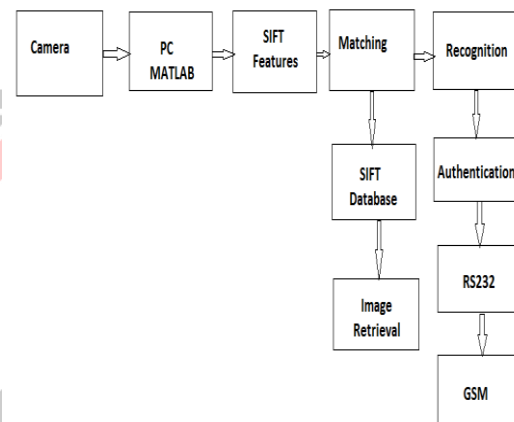
**Key point localization:** At each candidate location, a detailed model is fit to determine location and scale. Key points are selected based on measures of their stability.

**Orientation assignment:** One or more orientations are assigned to each keypoint location based on local image gradient directions. All future operations are performed on image data that has been transformed relative to the assigned orientation, scale, and location for each feature, thereby providing invariance to these transformations.

**Key point descriptor:** The local image gradients are measured at the selected scale in the region around each key point. These are transformed into a representation that allows for significant levels of local shape distortion and change in illumination.

## I. INTRODUCTION

This project is step towards developing a face recognition system which can recognize and can be modified to work with dynamic images. In that case the dynamic images received from camera can be first converted into the static ones and then the same procedure can be applied on them. Image matching is fundamental aspect of many problems in computer vision including object or scene recognition, solving for 3D structure from multiple images and motion tracking. This SIFT describes image features that have many properties that make them suitable for matching differing images of an object. The features are invariant to image scaling and rotation and partially invariant to change in illumination and 3D camera point view.



## II. SIFT ALGORITHM

Image matching is a fundamental aspect of many problems in computer vision, including object or scene recognition. For image matching and recognition, SIFT features are extracted from a set of reference images and stored in a database. The features are invariant to image scaling and rotation, and partially invariant to change in illumination and 3D camera viewpoint. The major stages of computation used to generate the set of image features are as follows:

**Scale-space extrema detection:** The first stage of computation searches over all scales and image locations. It is implemented efficiently by using a difference-of-Gaussian function to identify potential interest points that are invariant to scale and orientation.

## III. HARDWARE REQUIREMENTS

- Camera
- ARM7 controller
- Display unit
- GSM

## IV. SOFTWARE REQUIREMENTS

The name MATLAB is expanded as Matrix Laboratory. MATLAB is a high performance language for technical computing. It integrates computation, visualization, and programming environment. It has sophisticated data structures, contains built-in editing and debugging tools, and

supports object oriented programming. These factors make MATLAB an excellent tool for teaching and research. There are tool boxes in MATLAB for signal processing, image processing, symbolic computation, control theory, simulation, optimization, and several other applied sciences. The software part of this system is implemented using MATLAB version R2015.

**V.RESULTS**

The results obtained in the matlab are given below:

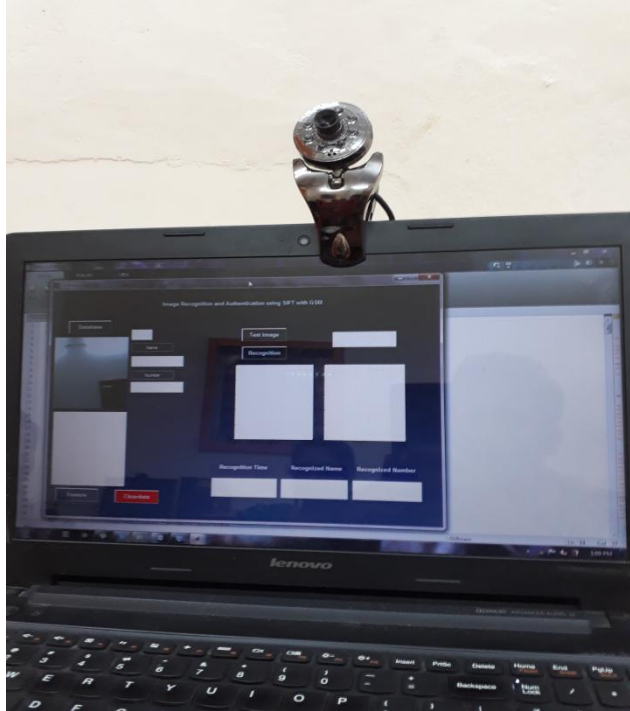


Fig. 1 creating GUI

After creating the GUI we have to give the input database. We can give any number of inputs to the database.

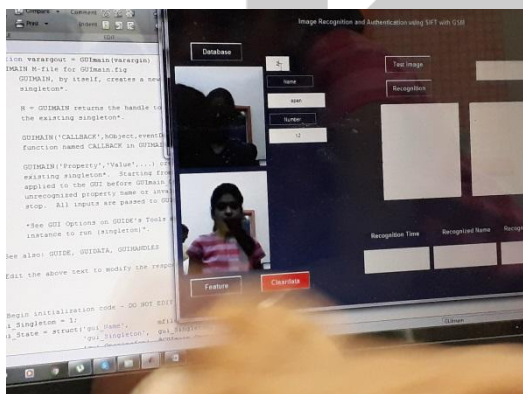


Fig. 2 input database

Now the GUI extracts the features, at this moment camera will freeze(i.e. off state).

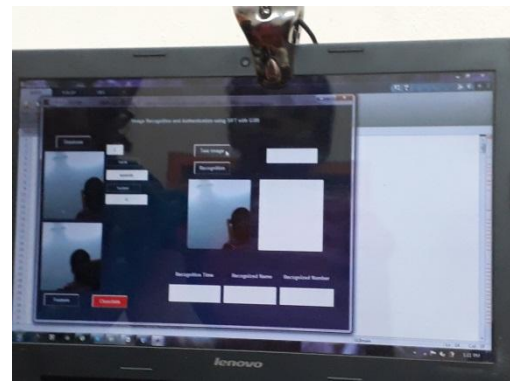


Fig 3 test image as an input

As the database image is already taken and stored in database folder then test image is taken for recognition purpose.

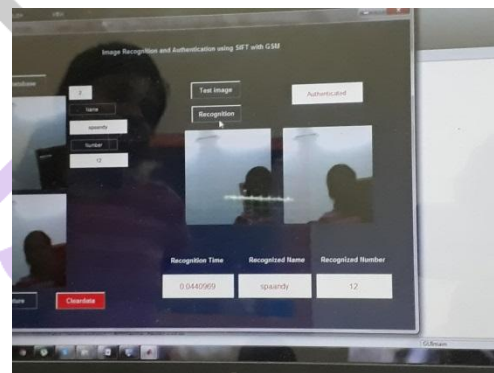


Fig 4 identification

Once the image features are recognized then we get output message as "Authenticated" otherwise "Unauthenticated".

**VI.CONCLUSION**

Face recognition using Scale Invariant Feature Transform outperforms in many aspects. SIFT provides efficient face recognition results under varying lighting condition, scale, pose and expression. Finally, detection and identification of human faces is presented and then recognizes the person by comparing characteristics of the face to those of known individuals is described. Also SMS alerts are given to the authorized user mobile.

**REFERENCES:**

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