

# Student Attendance System Based On Fingerprint Recognition and One-To-One Matching

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**ABSTRACT:** Our venture aims to plan student participation, which can monitor student participation. Participate is set separately after it is understood. For understandable evidence, a unique mark acknowledgment based ID framework is used. Specific mark based specific evidence has been one of the best biometric. Fingerprints are considered to be essential components for consistent personal acceptance. We make examples of ridges and fur, as well as minutiae dots to obtain exceptional fingerprints. Fingerprint based identification has been one of the most successful biometric techniques used for personal identification that was proposed an efficient scheme for fingerprint recognition. Fingerprints are considered the best and fastest method for biometric identification. They are safe for destinations like a nation like India.

## I. INTRODUCTION

The objective of this venture is to establish students' fingerprint-based participatory framework for designing staff who continuously participate in various meetings. The basic idea of the framework is based on the management of the fingerprint reader, which is used to obtain students' fingerprints. Management has to be through an interface with a fingerprint reader.

The interface to be proposed is designed to provide care for and provide the means with all the data that are required for the participatory framework. This data consistently identifies with the personality of the students (counting their IDs, offices and levels), the course, and the understanding participation status in each course. This data needs to be remembered for a dedicated information base for the participatory framework, which must be overseen and transformed all through the interface. This is the product side of the problem. The opposite side is planning an approach regarding the particular of the organization through which different readers are associated with the worker. This undertaking mainly relies on unique

usage, is interesting to each person and does not change over the course of one's life. Fingerprint recognition is an adult area for the day, yet separating a person from too many selected fingerprints is a period of taking a cycle. It was our responsibility to improve the fingerprint identification system for implementation on large databases. An institution or a country etc. In this project, several new algorithms have been used viz. Gender estimation, key-based matching a lot, removing border minutiae. Using these new algorithms, we have developed an identification system that is faster in implementation than any other available in the market. Despite the fact that we are using this fingerprint differential proof framework in our work for understanding ID reason, the coordinating results are acceptable to the extent that this huge information mark can perform very well on identifiable proof innovation. The distinguishing mark consists of a space with an assembly designated "biometrics". Biometrics speak for computerized strategies for personally identifiable evidence relying on a physical or social trademark. Predicted highlights include: face highlights, fingerprints, iris and retina highlights, hand veins, hand counts, engraved markings, keystroke elements and voiceprints, DNA coordination. Fingerprints are spoken by examples of edges and wrinkles on the outside of a finger. The fingerprints are extraordinary and examples remain throughout the life. Fingerprints are infallible to the extent that even indistinguishable twins are unique. The prints of each finger of an equal person are unique.

The finger impression scanner captures a picture of the unique mark and uses complex finger impressions, varying the proof count to convert the picture into an extraordinary "map" to take into account the evidence or examine the details edge. Description Focuses are neighborhood edge properties that occur in edge bisection (segmentation) or an edge refinement (end).

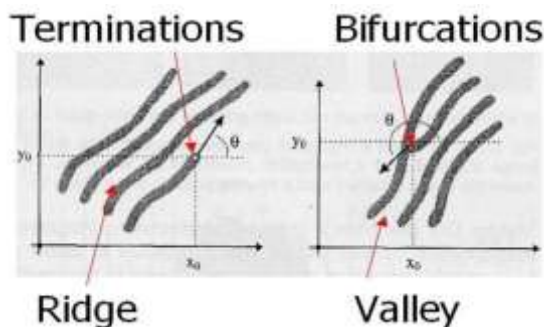


Figure 1: fingerprint bifurcation and termination

## II. OVERVIEW

### Attendance Management

There is a restriction on the age for manual participation and reporting. This is fine for 30–60 understanding, yet in relation to the involvement of vast numbers in number, it is troublesome. Participation for something, a meeting, and so on is frustrating for the calling and manual participation framework. Spends time on responses to time understanding, misuse of paper, etc. and manual participation frameworks are in place. Additionally, the trend report is similarly not built on schedule. The participation report which is given on NITR webmail is two months old. To defeat these non-ideal circumstances, it is fundamental that we should use an on-line participation in the board sis-mandir. Therefore we present an implementable participation in the structure of the executive. Understeady participatory framework The structure is divided into three sections: hardware / software design, unique iconography. This record downs the size

and flora deletion as a unique mark that cannot be reproduced from the put-away format. Attendance management approach and on-line report creation. Each of these is explained below.

Tools - Software Level Design.

The necessary hardware used must be easy to maintain, implement, and readily available. The proposed hardware consists of the following parts:

- (1) fingerprint scanner,
- (2) LCD / display module (optional),
- (3) Computer / CPU
- (4) LAN connection

In PC programming a unique mark scanner will be used to record finger impressions of teachers / understanding. The LCD show will showcase the moves of those whose participation is stamped. The PC software will interfere with the unique mark scanner and LCD and be connected to the organization. It will include unique markings, handle it and center the highlights for coordination. In view of coordination, it will refresh the information of Aadhaar participation.

Table 2: Estimated Budget

Device Name	Cost of One Unit	Number of Units Required	Total Unit Budget
Scanner	500	100	50000
PC	21000	100	2100000
Total			21,50,000



Figure 2: Hardware present in classrooms.

### III. ATTENDANCE MANAGEMENT APPROACH

This part explains how savvy and instructors will use this participation in the board framework. The following focus will ensure that participation is effectively stamped, with no problems:

- 1) All the equipment will be inside the study room. So the outside barrier will be missed.
- 2) All devices, apart from the unique mark scanner, can be placed inside a little lodge, to eliminate unexpected access and reduce equipment to perceive undesirable efforts. As another

arrangement, we can introduce CCTV cameras to deforestation practice.

- 3) When the teacher enters the study room, the seal of participation will begin. PC programming will begin the cycle in view of the instructor's unique mark of contribution. It will detect the subject ID, and will use the current semester teacher's ID or can be physically set on the product. In the event that the teacher does not enter the homeroom, the participation inquiry will not begin.
- 4) After some time, say 20 minutes of this cycle, no participation will be given as a result of late passing. This time can be expanded or extended as required.

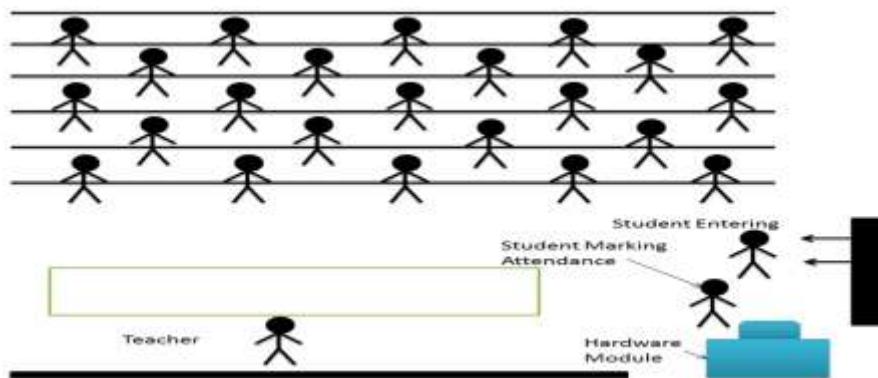


Figure 3: Classroom Scenario

#### Attendance Report Generation

The basis of information for participation will be a table with the following fields as a mix for the required area: (1) day, (2) roll, (3) subject and non-required areas to follow: (1) attendance, (2) Semester. Using this table, all partnerships can be monitored for an understanding.

This partnership framework will span a broad organization from homeroom to intranet to the web. The graph of the organization appears in fig. 2.3. Using this organization, participation reports will be made accessible on the web and

email. A month to month report will be sent via email and site for a report every month. The element relation graph for the basis of understanding and records of participation appears in fig. 2.4. In the ER outline, the required fields are Role, Date, Subject ID and Teacher ID. The four tables are Students, Attendees, Subjects and Teachers. Using this information base, participation can be understood without any stretch. The dataflow appears in the information stream chart (DFD) that appears in the figures.

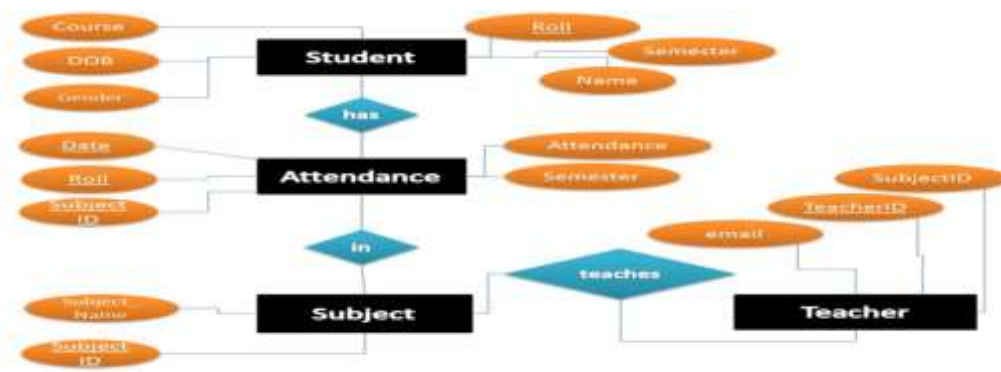


Figure 4: ER Diagram

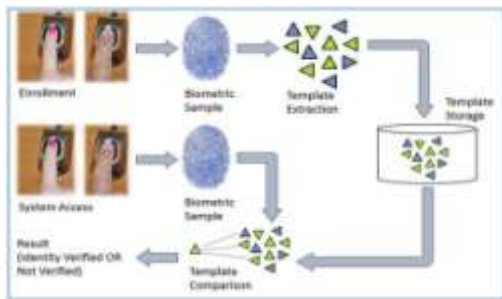
#### IV. FINGERPRINT IDENTIFICATION SYSTEM

##### Fingerprint recognition system

A recognizable evidence structure is one that helps differentiate between many individuals when point data is not accessible. This may involve coordinating the accessible highlights of contestants such as fingerprints with those who have now taken a crack at information.

##### Fingerprint recognition system flowchart

The brief methodology of our fingerprint identification system is given here in the flowchart. Each of these is explained in later chapters.



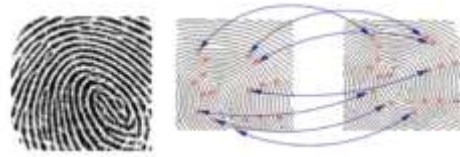
##### Fingerprint Technologies

An increasing variety of biometric technologies are anticipated over the years in the past, but only within the last 5 years additional extensive deployments occur. Some technologies are more suited to specific applications than field unit others, and some field units are additional acceptable trousers. We have a tendency to describe some of the major biometric techniques:

- Facial recognition
- Pure mathematics of hands
- Iris recognition
- Signature recognition.

##### Fingerprint identification

The fingerprint is region unit specific, time and area unit in identical twins do not make completely different modifications. There are some limitations of this technique combined: Excessively moist or dry skin will compromise system performance, usually not being usable due to fingerprints or scars, in addition they require a catastrophic effect among the user, which is done between associations. Criminal figure and hence fingerprints. There is such a technique that is extra common even if it is challenging to implement for huge machine value and request resources.



**Figure 6:** Fingerprint obtained by an optical scanner (a) and a matching between two fingerprints with micro-characteristics detected (b).

The form and therefore the dimensions of the hand are used as specific features. The pure mathematics recognition systems of the hand have many blessings that honor fingerprints: it requires less area to store templates, the complete system is very convenient and meets little psychological resistance from humans. However, this technique has some drawbacks: individuals do not desire space} on the palm wherever there are many alternative options. Performances depend on climate or hand cleaning and therefore the style of hand throughout the life is not irreversible. Finally, a downside is that the huge dimensions of the hand detector, so this technique is not acceptable for some applications, although transportable devices (cellular, pod so on).

#### V. LITERATURE REVIEW

In the field of specific mark proofs, a good sort of works are done to this point. we've got full-fledged varied communication papers, the work done these days and therefore the techniques utilized in every work area unit shown below this segment: Ishpreet, s.v. additionally, m. Raman (2012). Specific iconographic elevations and specific coordinates in fingerprint ..totally different methods are investigated publically house for distinctive image correction, and over again technology permitting unmatched exhibitions is projected [1]. To avoid the apparent shortcomings of this cycle, the methodology follows the employment of CLAHE 1st with clip limits to upgrade the resolution of little tiles to deceptively kill the program with a novel mark with MATLAB. to finish all the steps of. Acknowledgment is formed. This distinctive mark is beneficial for understanding the systems of acknowledgment. additionally, show the central queries of fingerprint reorganization. Jain, A.K., J. Fang, and K. Nandakumar (2010). distinctive mark coordination has been used effectively by the Law Authority for over a century. The innovation is presently finding many various applications, for instance, character possessors and access management. The creators illustrate a processed distinctive mark acknowledgment framework and acknowledge vital difficulties within the field and therefore the gap of

the examination. An audit paper on distinctive Mark, Proof Framework (2014). Unique mark verification is that the most advanced strategy for all biometric methods and has been totally investigated through varied applications. Indeed, even highlights, for instance, somebody's face or mark will amendment over time and be created or traced. Be that because it could, a typical fingerprint is exceptionally common for an individual and remains untouched for a life. This paper uses totally different approaches and methods used for distinctive marking supported a distinct substantive framework. Global Conference on Info and Communication Technology (ICICT 2014) FFT × | improvement of distinctive icons victimization F channel. F channel n. Neethu S., \*, Sri Hindu deity S., Deepa Ravi Shankar "Division of natural philosophy Engineering, college of Engineering, CUSAT, Kochi. The specific mark upgrade may be a basic error within the machine-controlled fingerprint recognition system. during this paper, a basic technique for upgrading distinctive image is introduced, that depends on FFT. FFT is searched once apportionment the distinctive icon image into a block. this can be then duplicated FFT | n, wherever n is obtained by experiment as two.2. the most effective correction results were obtained for a sq. size of four × four. during this technique, gap of holes in edges and adding spasmodic edges were accomplished. This strategy was the other and had specific easy reform procedures.

### **An Efficient Algorithm For Fingerprint Recognition Using Minutiae Extraction**

N. U. Ann, F. Shaikat, A.S. Nagra and G. Raja. Fingerprints square measure systematically thought-about to be the basic element to private acceptance. The presentation of the particular mark acknowledgment framework depends on the particular ones that square measure faraway from the raw distinctive mark drawings. during this investigation, an efficient theme for distinctive scar acknowledgment was planned. Previously, the data image was improved victimisation pre-preparation ways. once picture correction, image segmentation was performed and detail extraction was wont to cut back edge and check details. For this, a faux special removal was done before the ultimate match. within the planned beliefs, put down edge ablation was fine-tuned to boost the final effectivity of the distinctive traces recognizable proof, resulting in an outsized reduction in way and FRR. The planned assumptions were evaluated employing a dataset of five hundred pictures taken from FVC 2002, FVC 2004 and FVC 2006 and

incontestible superior performance once contrasted with previous techniques.

The Anonymous Network web site is predicated on the Finger Printing Attack methodology wave Transformation ch'i Lai and Islamic Group Ling province, China. (2019)

Unknown organizations in making certain client protection information, nonetheless targeting the problem of mysterious organization, for its outlaw demonstrations, additionally to the employment of rogues, and therefore the observation of criminalisation of organs of administration, to extend following and preventive proliferation This paper proposes a web site procedure attack technique for TOR mysterious organization. The wave transformation is acquainted with the management of traffic created by visiting the positioning. SVM algorithm is employed to find out and turn out classifiers, establish specific mark highlight libraries, and so analyze the data created by the target meeting {site|website|web web site} to verify its meeting site. Thus, the take a look at results show that the final acknowledgment accuracy of the target sites is ninety six.7% beneath the totally far-famed highlights of the sites, that is healthier for writing.

Verification and ID (definition, trends, use cases, legislation and most up-to-date news 2020 audit).

Biometric verification is that the methodology of moving info as critical the person's characteristics therewith person's biometric "format" to work out similarity.

The reference model is 1st placed in a very secure versatile element just like the info base or lover card.

The obligatory info is then verified with the person's biometric info. Here it's the character of the one who is being confirmed.

In this mode, the check is: "Are you, of course, Mr. or Mrs. X on the opposite side?"

Biometric ID involves deciding temperament's| ahuman| somebody's} personality.

The point is to get biometric info from this person. It might all right be an image of their face, a record of their voice, or an image of their distinctive mark.

This info then contrasts with the biometric info of a couple of totally different individuals placed within the info base.

In this mode, the probe may be a basic one: "Who is right?"

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## VI. METHODOLOGY

A total detail extraction conspires for a programmed distinctive mark acknowledgment framework is introduced. The projected strategy utilizes rising decisions for the image improvement live, driving after to AN enlargement of the reliability within the particulars extraction task.

### FLOW CHART

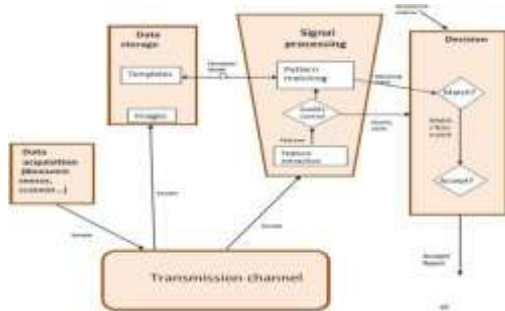


Fig. 7: A fingerprint recognition system constitutes of fingerprint acquiring device, minutia extractor and minutia matcher

Figure 8: Simplified Fingerprint Recognition System

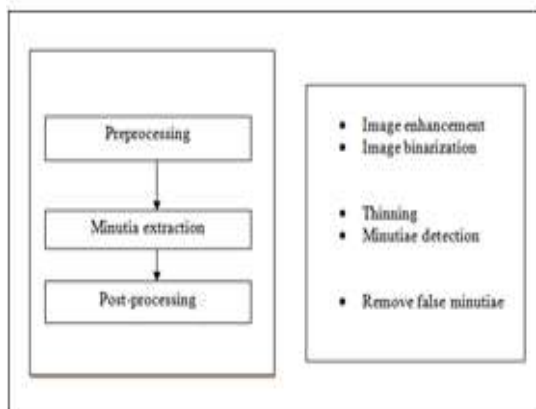
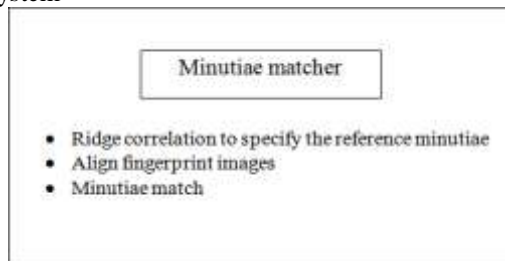


Figure 9: Minutia Matcher

### Finger print image enhancement

Typical mark correction is employed to create the image additional easy and straightforward. Since specific markings purchased through a scanner or another suggests that aren't

absolute to be of impeccable quality, correction techniques that stretch the excellence between edges and valleys and stop fake broken edges of edges because of lack of ink area unit helpful for Keep a high accuracy for fingerprint acknowledgment.



Figure 11: Image Matcher

## VII. EXPERIMENTAL RESULT



Figure.12 Input image.

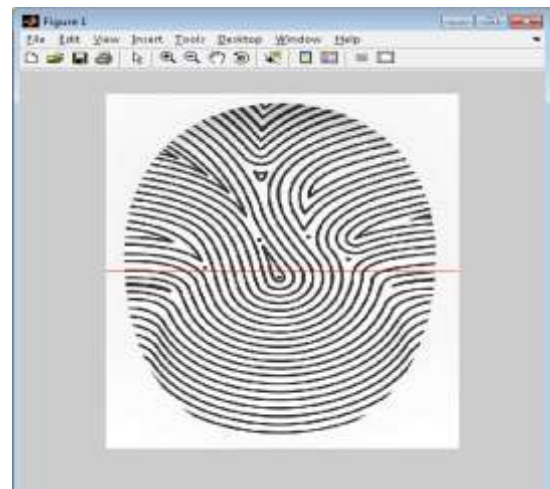
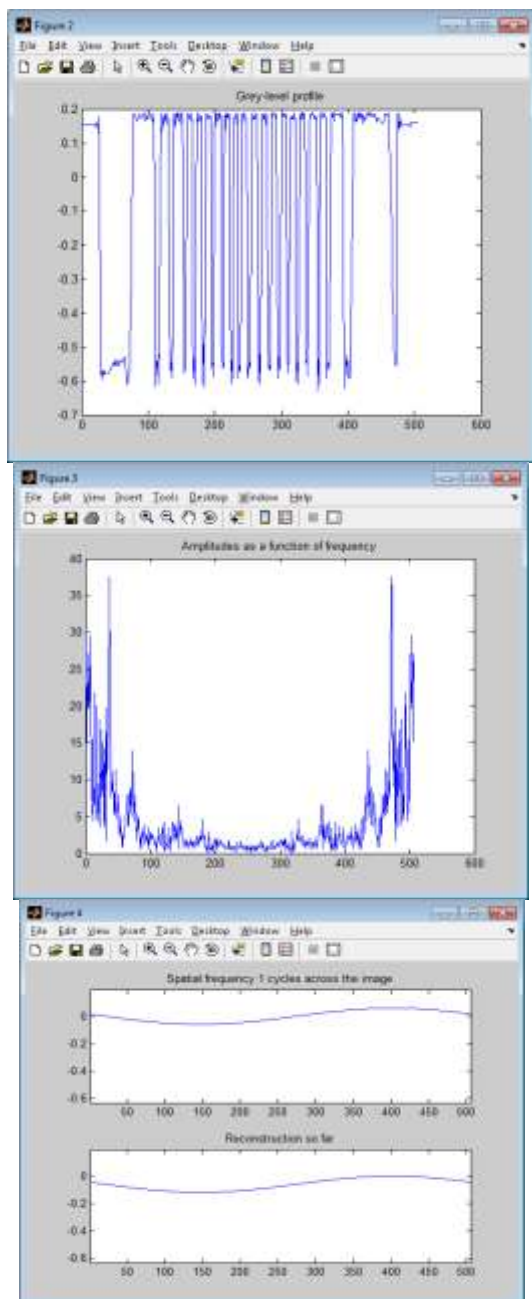


Figure.13 Result Image



### VIII. CONCLUSION

The unbreakable quality of any programmed distinctive mark framework powerfully depends on the accuracy found in detail extraction measurements. numerous parts injury the proper space of Minutia. Among them, the helpless image quality has the foremost impact. The projected arrangement-based variable coordinate calculation is provided to search out correspondence between particulars supported a radical examination. there's a spread of enhancements as so much as productivity and accuracy, which might be accomplished by up the

instrumentation to capture the image or by up the image elevation processes. therefore the info of the decreasing state is created higher, it will improve the long run stages and therefore the consequence.

### REFERENCE

- [1]. Ishpreet, S.V. and M. Raman (2012). Fingerprint image enhancement and minutiae matching in fingerprint verification. *J. Comp. Tech.*, 1
- [2]. Jain, A.K., J. Feng, and K. Nanda kumar (2010). Fingerprint matching. *IEEE comp. soc.* 43(2).
- [3]. Jie, Y. (2006). Fingerprint minutiae matching algorithm for real time system *Patt. Recog.* 39(1): 143–146.
- [4]. Khan, M.A.U., T. M. Khan, D. G. Bailey, and Y. Kong (2016). A spatial domain scar removal strategy for fingerprint image enhancement
- [5]. ManishaRedhu, Dr.Balkishan (Jul-Aug 2013,) Fingerprint recognition using minutiae extractor
- [6]. Dr. AllamMousa Fingerprint Recognition using MATLAB
- [7]. RajuRajkumar , K Hemachandran, A Secondary Fingerprint Enhancement and Minutiae Extraction, *Signal & Image Processing : An International Journal (SIPIJ)* Vol.3, No.2, April 2012.
- [8]. Khalid Saeed, MarekTabe,Dzki, Mariusz Rybnik, MacinAdamski, K3M:
- [9]. A Universal Algorithm for Image Skeltonization and Review of Thinning Technique, *Int. J. Appl.Math. Computer Sci.*, 2010, Vol. 20, No. 2, 317–335.
- [10]. TatsatNaik, Om Sri Satyasai, Study of Fingerprint Recognition System”, B-Tech. (Project), National Institute of Technology, Rourkela
- [11]. Lin Hong, Student Member, IEEE, Yifei Wan, and Anil Jain, Fellow, IEEE, Fingerprint Image Enhancement: Algorithm and Performance Evaluation, *IEEE Transactions on PatternAnalysis and Machine Intelligence*, VOL. 20, NO. 8, AUGUST 1998.
- [12]. HuiXu, YifanQu, Yan Zhang, Feng Zhao,FPGA Based Parallel Thinning for BinaryFingerprint Image, *IEEE*, 2009.
- [13]. Raig T. Diefenderfer, Fingerprint Recognition, M. Sc. Thesis, Ensign, United States Navy, B.S., United States Naval Academy, 2005.

- [14]. Neeta Murmu, AbhaOtti, Fingerprint Recognition, National Institute of Technology, Rourkela.
- [15]. ShahramMohammadiAliFrajzadeh, A Matching Algorithm of Minutiae for Real Time Fingerprint Identification System, World Academy of Science, Engineering and Technology, 2009.
- [16]. RoliBansal, PritiSehgal and PunamBediPravesh Kumar. "Use of Fuzzy Set and Neural Network to Extract Fingerprint Minutiae Points and Location", M.E. Thesis, Computer Science and Engineering Department, Thapar University, June 2009.
- [17]. NasimMirArmandehi "Fuzzy Image Restoration", Final Project, Sharif University of Technology, 2007
- [18]. N. U. Ain, F. Shaukat, A.S. Nagra and G. Rajaan efficient algorithm for fingerprint recognition using minutiae extraction Pakistan Journal of Science (Vol. 70 No. 2 June, 2018)
- [19]. Xu, M., Feng, J., Lu, J. and Zhou (2017). Latent fingerprint enhancement using Gabor and minutia dictionaries. In *Img. Proc. (ICIP), 2017 IEEE Intl. Conf.* 3540-3542
- [20]. Wang, J.W., Le, N.T., Wang, C.C. and Lee, J.S. (2015). Enhanced ridge structure for improving fingerprint image quality based on a wavelet domain. *IEEE Signal Process. Lett.* 22(4), 390-394.