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# A PROPOSED FAHT MODEL FOR FINGERPRINT RECOGNITION

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## ABSTRACT

fingerprint based recognition is one of the best human recognition technique. In the paper, we are analysis the different-2 fingerprint paper for better recognition rate and also decrease the FAR and FRR by using FAHT method. In FAHT method, first we are applying ten member of fuzzy after that HWT on every fuzzy resulted member.

**KEYWORDS**:.

## INTRODUCTION

Fingerprints have been using for over a century. It can be used in forensic science to support criminal investigations, biometric systems such as civilian and commercial identification devices for person identification. It is one of the most significant biometric technologies which have drawn a substantial amount of attention recently [1, 3]. A fingerprint is comprised of ridges and valleys. The ridges are the dark area of the fingerprint and the valleys are the white area that exists between the ridges. The fingerprint of an individual is unique and remains unchanged of over a lifetime. The uniqueness of a fingerprint is exclusively determined by the local ridge characteristics and their relationships [1, 2].

The Fingerprint Recognition is a process of determining whether two sets of fingerprint ridge detail are from the same person. There are multiple approaches that are used in many different ways for fingerprint recognition which are minutiae, correlation, ridge pattern. These types of approaches can be broadly categorized as minutiae based or texture based. Minutiae is the most popular approach that is used for fingerprint representation. It is based on local landmarks. The minutiae-based systems locate the points firstly. These points are called minutiae points which represent the fingerprint ridges either terminate or bifurcate in the fingerprint image, and then these minutiae points are matched in a given fingerprint and the stored template. While minutiaepoints perform fairly high accurate fingerprint matching for minutiae based verification systems [8, 9], they ignore the rich information in the ridge patterns which are used for improving the matching accuracy[3]. In other words, further improvements are needed for acceptable performance, especially when large database involved. In addition, it is difficult to extract minutiae automatically and reliably from poor quality fingerprint, dried fingers or fingers with scars. For texture based approach, it uses the entire fingerprint image around minutiae points. The texture based fingerprint representation is limited due to the collection of local texture based on the minutiae points. Also, it performs depends upon the extraction of minutiae points.

## SHAPE DESCRIPTOR

Shape description techniques [8] can be broadly categorized into two types, boundary based and region based. Boundary based methods use only the contour or border of the object shape and completely ignore its interior part of shape. Hence, these methods are also called external methods. The region based techniques take into account internal details like holes besides the boundary details. Recognition of a shape by its boundary is the process of comparing and recognizing shapes by analyzing the shapes boundaries but the local structural organization is always hard to describe. Generally we know that shape recognition has two major parts, shape representation and shape matching. The objective of shape descriptors is to measure geometric attributes of an object that can be used for quantifying shapes, matching shapes, and recognizing objects [8].

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## PREVIOUS WORK

**Paper title:- Fingerprint Recognition by Multi-objective Optimization PSO Hybrid with SVM.**

In this paper, we used the core idea of multi-objective optimization to transformSVM into a new form. This form of SVM could help to solve the situation: in tradition, SVM is usually a single optimization equation, and parameters for this algorithm can only be determined by user'sexperience, such a penalty parameter. Therefore, our algorithm is developed to help user prevent from suffering touse this algorithm in the above condition. We use multiobjective Particle Swarm Optimization algorithm in our research and successfully proved that user do not need to use trial – and – error method to determine penalty parameter C.Finally, we apply it to NIST-4 database to assess our proposed algorithm feasibility, and the experiment results shows our method can have great results as we expect

## PROPOSED WORK

My research has combined of fuzzy with DWT approaches to make minutia extractor and minutia matcher. The combination of above methods comes from a wide investigation of previous research papers. In dwt we will use HAAR wavelet transformation. The algorithm of proposed work is given below.

Input:- Take a fingerprint query image.
Output:- Recognize the input image.

## ALGORITHM

Step1- Take a fingerprint image for recognition.
Step2- Read the query image.
Qimg=Read_img(Qimg)
Step3-Apply dimension normalization.
NQimg=apply_dimN(Qimg)
Step4-Apply fuzzy system on the step3
$[f_{fo},f_{f1},f_{f2},f_{f3},f_{f4},f_{f5},f_{f6},f_{f7},f_{f8},f_{f9}]$=Apply_fys(NQimg,[fo,f1,f2,f3,f4,f5,f6,f7,f8,f9])
Step5-Calculate HAAR Transformation of all above final fuzzy value.
$f_{fh0}$=Cc_HT=($f_{fo}$)
$f_{fh1}$=Cc_HT=($f_{f1}$)
$f_{fh2}$=Cc_HT=($f_{f2}$)
$f_{fh3}$=Cc_HT=($f_{f3}$)
$f_{fh4}$=Cc_HT=($f_{f4}$)
$f_{fh5}$=Cc_HT=($f_{f5}$)
$f_{fh6}$=Cc_HT=($f_{f6}$)
$f_{fh7}$=Cc_HT=($f_{f7}$)
$f_{fh8}$=Cc_HT=($f_{f8}$)
$f_{fh9}$=Cc_HT=($f_{f9}$)
Step6- in this step we are calculate the overall mean of above step.
$R_{Qimg}$= Cc_M($f_{fh0},f_{fh1},f_{fh2},f_{fh3},f_{fh4},f_{fh5},f_{fh6},f_{fh7},f_{fh8},f_{fh9}$)
Step7- Now we will be comparing $R_{Qimg}$with pre-defined database.
Recognition-stats=Cmp_qd($R_{Qimg}$, Database(di1,di2,di3……..di1000)

## CONCLUSIONS

In this paper, FAHT model for Fingerprint Recognition is proposed. The proposed algorithm reduces the time complexity , false acceptance ratio and also improve the recognition rate.

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