A Unique Identification Through Lip Score By QR Code

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Abstract – **This paper introduces a digital approach for lip print recognition and Unique Identification through lip score. Dental data, DNA, finger prints based identification, face recognition, voice recognition, iris recognition are the most popularly used identification methods[5]. Identifying a person through lip prints is termed as Chelioscopy. The emerging technology or tool for human identification is Chelioscopy[2]. The lip-prints are used as biometric and these can also be determined in a digital way using Adobe Photoshop 7 and uses salting technique for the lip score to make it more secure which further makes a unique identification by a QR code. The related work and the scope for future development and implementation in real world is also discussed.**

Keyword: **Lip prints; Chelioscopy; Biometrics ;Imageprocessing; AdobePhotoshop; lipscore; Salting; QR code;**

I.   INTRODUCTION

Lip prints are either analysed manually or using automated computer algorithms [2].Now, lip prints can be analysed using digital systems. In order to use lip prints for biometry, there is a need to make it digitalized. The lip imprints would be taken using scanners. Since 1950's Japanese researchers have performed exhaustive study on lip prints. In early 1970's two Japanese Scientists named T.Suzuki and Y.Tsuchihashi analysed the lip prints of 1364 individuals and inferred that lip prints are unique for an individual[7]. Lip prints are the natural lines forming ridges and depressions on the human lips. They are unique alike finger prints for an individual throughout his life time .Manual methods are prone to human errors. Automated methods uses various image processing techniques, machine learning algorithms and statistical approaches are prone to complexity[6]. Digital approach gave a path to lip print recognition in a easier way.

II.   RELATED WORK

In this paper section 2 discusses the digital approach towards lip print recognition and section 3 discusses the future works and conclusion is discussed in section 4.

III. DIGITAL APPROACH

As a prerequisite consider a lip print of an individual which is scanned using an image scanner set at a resolution of 600 pi. Then the lip prints were classified into four quadrants using the classification given by Suzuki and Tsuchihashi .

Type I: Patterns of grooves in a straight line, arranged vertically across the lip.

Type I': Patterns whose groove patterns were also in a straight line though not covering the entire width of the lip, just one half of it or partial-length grooves of Type-1.
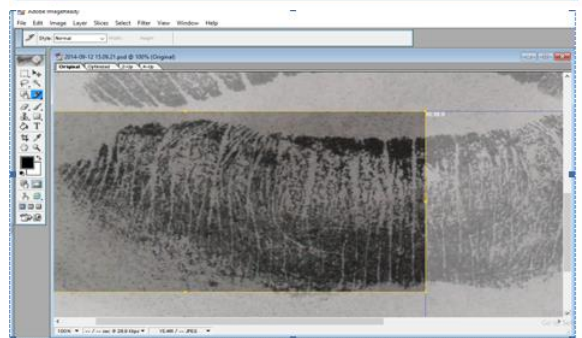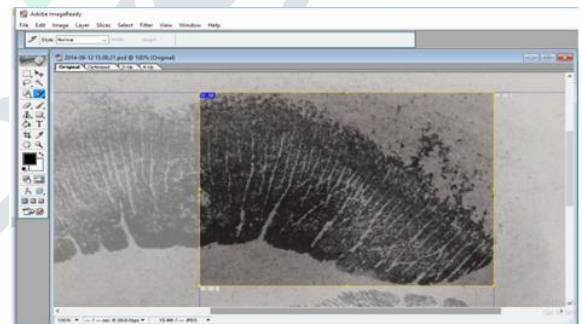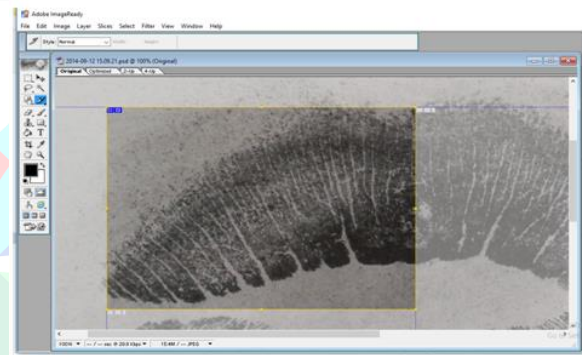
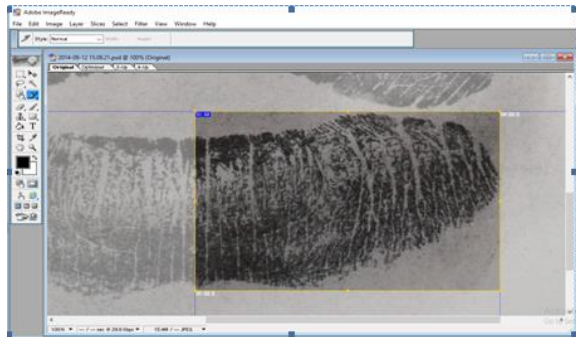**Type II**: grooves that were bifurcated or forked or a branched groove .

Type III: Crisscrossing grooves or intersected grooves.

Type IV: Reticulate or web-shaped grooves.

Type V: Grooves that do not fall into any one of the above categories and cannot be differentiated morphologically.[7]

In accordance with the pre research on lip score a sample is considered

After adding all the types of lip Scores in every Quadrant the result is as follows:

Quadrant-1	Quadrant-2
559	558
Quadrant-3	Quadrant-4
159	159

As it is already shown that lip prints are better unique identification than a finger print, it is prioritized to use lip score for further unique identification of a individual. So these lip scores can be used to create a unique Quick Response Code for every individual. An automated QR code can be generated by QR code generators for the lip score. In order to make it more secure a lip score undergoes through salting technique which is explained below.

IV. SALTING TECHNIQUE

Here we define a process to produce the salt which is added to the input which improves the security.

These Steps includes:

First, convert all the quadrant scores to gray code.

1. For Quadrant-1 ,add the ones in the gray code which produces a number which should be added to the lip score of type 1.

2. For Quadrant-2,add the ones in the gray code and make it powers of 2 which should be added to the lip score of type 2.

3. For Quadrant-3,add the ones in the gray code and make it powers of 3 which should be added to the lip score of type 3.

4. For Quadrant-4,add the ones in the gray code and make it powers of 4 which should be added to the lip score of type 4.

After the conversions of Gray code the results of Lip score:

Quadrant-1	Quadrant-2
1100111000	1100111001
Quadrant-3	Quadrant-4
11010000	11010000

After adding salt the results of Lip score:

Quadrant-1	Quadrant-2
$=559+1^5$	$=558+2^6$
$= 560$	$= 622$
Quadrant-3	Quadrant-4
$=159+3^3$	$=159+4^3$
$= 186$	$=223$

An Automated QR code is generated for the above scores

Recognition Result

560 622 186 223

Cancel   Copy
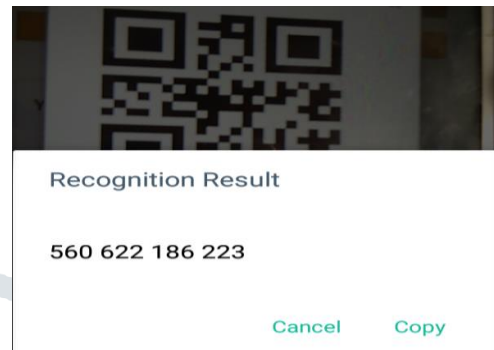
V. CONCLUSIONS

The approach described in this paper has not been applied yet and it is a new author's conception. Lip print images used in the researches were collected by means from sut-lips-db database biometric research centre,university of silesia. In the proposed method Salting techinique is implemented in a different way. Since a great deal of research is taking place globally in this direction, very soon lip-prints will be used as a popular biometrics technology in every field. To make use of its unique lip score we generated an Automated QR code for taken sample lip print. To make it more secure, we used a technique called Salting which makes it impossible to use lookup tables and rainbow tables to Steal the information. At last, a unique identification number is generated by using lip prints score.

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