TONGUE SCANNING AS A BIOMETRIC TOOL FOR IMPROVISING THE SECURITY IN IDENTIFICATION

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ABSTRACT

Biometrics refers to a real-time identification system that is used in the identification of a person using a specific physical or behavioral characteristic which is compared with a library of characteristics of many other people.This is done using a biometric scanning device (tongue-print scan) which captures the user's biometric data such as the tongue-print scan and converts it into a digital information that the computer interprets and verifies.Many models in biometric authentication system have come into existence such as finger print scan, iris scan, digital signature, voice recognization. These methods are using widely, even though these methods using widely they posses some demerits. This paper will discuss about the various biometric techniques and mention that "Tongue Scanning " and how it overcomes the problems in existing techniques.

keywords: tongue-print; biometric; Histogram; pattern recognition system; Tongue code; Biometrics authentication system

I. INTRODUCTION

Biometric scanning devices takes the data about individuals physical attributes and then convert into digital information that can be accesses when it is required. This form of identification is quite successful compared to other methods, because of the physical attributes cannot be misplaced or lost. Tongue is a vital organ encased in the oral cavity and protected from the outside environment.

Tongue has unique features which differ from the individual to individual and in between the twins also. Every tongue is different in terms of aspects like shape and texture, the tongue is the only organ housed inside the body but it can easily stuck out for inspection. Another form of identification involves finger prints and iris scan which are already exposed. The tongue is connected to the oral cavity and cannot inspected without having the permission of the subject, sticking out the ones tongue is undeniable proof of life , where as the other biometric techniques can be applied without the person consent. Tongue print as a biometric tool this will highlights the uniqueness of tongue prints. It's advantage over the other biometric techniques is tongue prints classification will be has application in the fields of forensic desistry, as well as by this biometric tool we can improvise the security for biometric authentication system.

A biometric system is a real-time identification system which identifies a person by measuring a particular physical or behavioral characteristic and later comparing it to a library of characteristics belonging to many people. Fingerprint and other biometric devices consist of a reader or scanning device, software that converts the scanned information into digital form, and wherever the data is to be analyzed, a database that stores the biometric data for comparison with previous records. When converting the biometric input, the software identifies specific points of data as match points. The match points are processed using an algorithm into a value that can be compared with biometric data scanned when a user tries to gain access.

II. METHODOLOGY

2.1 Tongue Print Collection For Identification

A simple visual inspection of a tongue shows several features such as color of tongue, texture if surface, variations and some other characteristics present in it.

Digital photography of tongue can be captured and matched with the database for verification. These can also used to identify the shape of the tongue. The tongue image includes the both geometric shape and surface texture of individuals, and the database was the valuable resource for assessment, comparison and evaluation.When we observe the individual tongue through simple visual inspection, they have various shapes and surface textures.

https://www.scienceabc.com/wp-content/uploads/2015/11/tongue.jpg
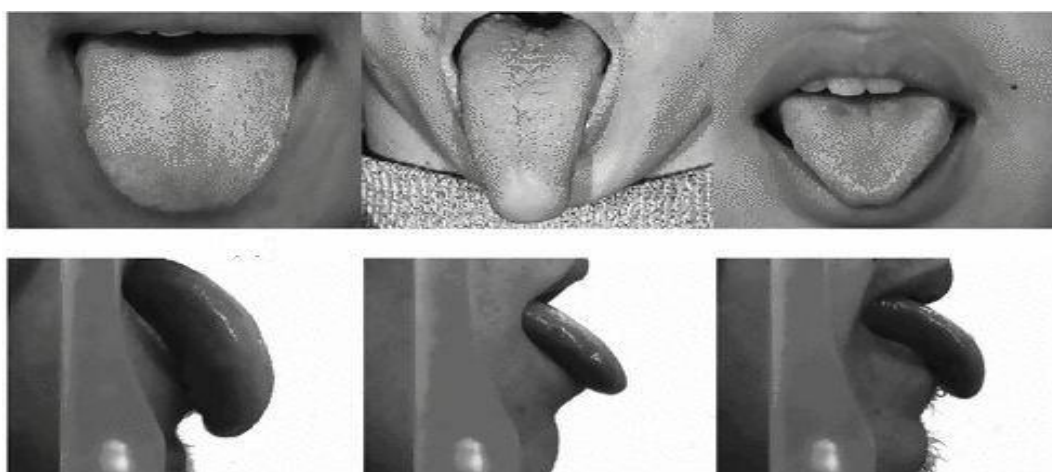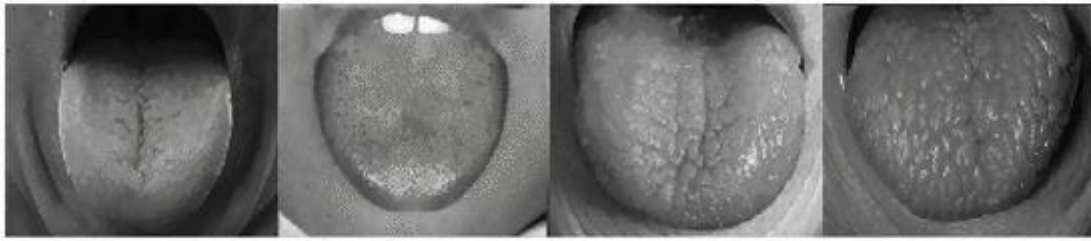
3D analysis of tongue can be the best option for assessment analysis of tongue is performed by talking and cast preparation [capturing the unique features]. The shape of the tongue is obtained by joining the three reference points-Texture, Textual variations and Tongue geometric feature

2.2 Tongue Shapes

The 3D analysis will reveals the various shapes of the tongue, texture and geometric features as shown below.
http://ars.els-cdn.com/content/image/1-s2.0-S0020025509004071-gr1.jpg

https://www.scienceabc.com/wp-content/uploads/2015/11/textures-of-tongue.jpg

III. OTHER BIOMETRIC SYSTEM DISADVANTAGES

Now a day's various biometric systems for identification are finger prints scanning, retinal scanning, voice recognition, and digital signature. Biometric techniques have advantages as well as disadvantages.

1. Finger prints can be eroded, change due to work, altered by the surgery and subjected to injuries and burns, so they are not stable.

2. Retinal scanning is highly sensitive user can be affected by the bright light and diseases such as cataract and astigmatisms.

3. In the voice recognization, the voice can be affected by the cold and cough, in case of extreme emotional states; there are chances of misspoken words.

IV. TONGUE SCANNIGNG ADVANTAGES

Comparing to other biometric techniques tongue scanning have numerous advantages,

1. The tongue is unique to every person with respect to its shape and texture.

2. Even though it is an internal organ it can be easily stuck out for inspection.

3. It is not affected by the outside environment.

4. It cannot be inspected without having the permission of subject.

5. Most important tongue us undeniable proof of life.

V. LITERATURE REVIEW

1. "A tongue print image database for recognization by Zhilu,Jing;D-zhang" In this literature 3D image database including tongue geometric shape and surface texture.

2. "Visual cryptography improvises the security in banking system by Rohila, swetha, ieee explore " In this literature preserving the privacy of digital biometric data storing in central database for the access control.

3. "Dynamic tongue print novel biometrics identifies article in pattern recognization" In this literature a technology for non invasive biometric assessment.

4. "How Tongue Prints Are Going To Revolutionize Identification Methods" In this literature what are the unique features of tongue.

5. "An Extraction and Recognition of Tongue-Print Images for Biometrics Authentication System"

VI. CONCLUSION & FUTURE WORK

Although so many biometrics have been used and developed, to our best knowledge, there is not so work has been done in tongue print recognition system and its use in any application yet. With increasing identity fraud and emphasis on security, there is a growing and urgent need to efficiently identify humans both locally and remotely on a routine basis. The human tongue promises to deliver a level of uniqueness to identification applications that other biometrics cannot match in context of that it is well protected in mouth and is difficult to forge. As the only internal organ that can be protruded from the body, the human tongue is well protected and is immune to forgery. The explicit features of the tongue cannot be reverse engineered, meaning that tongue verification protects the privacy of users better than other biometrics. Tongue-prints of the human tongue qualify as a feasible new member of the biometrics family. Matching a given image with one or many others is a key task in many computer vision applications such as object recognition, images stitching and 3D stereo reconstruction.

To make tongue recognition more secure, Make tongue biometric Template with three views of tongue image that is Left lateral view, Right lateral view and Profile view (because tongue is a non rigid organ and it's very difficult for a person to keep it straight). For make it more simple Tongue should be extracted from face in a pre-processing stage with more efficient and simple algorithms like segmentation, it will work better if it could be done online in verification process. Since human tongue is non rigid when it moves, we expect to collect the video of tongue to extract some rules of its movements.

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