

IMPLEMENTED FINGERPRINT RECOGNITION SYSTEM USING BOZORTH3 ALGORITHM

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Abstract—Minutiae, those irregularities in the ridges on a finger of a person are rich in details, are unique to every individual. Thus, extraction of biometric pattern of these minutiae from sample data of fingerprint forms the prime task in formation of automatic fingerprint recognition system. To authenticate a person's identity a NIST reference system is used for matching minutiae patterns on a finger. It starts with binarization of each grayscale input image for locating minutiae points. Then a finger print matcher, using a digital image processing compares input search with all available data samples to make a conclusion of most probable existing match. No subject will be required to carry hard documents with this recognition system being in usage. Technological advancement towards mobile and handheld devices like tablets will only promote this mechanism. The proposed work envisages a process of paperless documentation using superlative features of android application developments and concepts like multithreading for thumb recognition simplifying tedious tasks similar to that of governments'

Index Terms—Biometrics, BOZORTH3, NIST, Thumb Recognition

I. INTRODUCTION

All over India traffic police use hard documents to verify persons' identity. This proves to be a herculean task for people as well as the verification officers. Considering the user public prospective there is a need of paperless documentation which isn't catered by RTOs in India. The persistent issue people experience is the tedious task of carrying hard copied documents which also implies probability of information loss over a span of time.

The finger print recognition technique is based on recognition, differentiation and matching of distinctive characteristics of a fingerprint. A finger print recognition device collates finger print image data; For the process of extraction of unique features Bozorth3 algorithm is put to application. As and when the match is located officers will get all the detailed information about vehicle on synchronized handheld android device. Now a day's android technology is available with almost everyone, this technology will not only save time involved in verification process but also will be cost effective.

The main objective of the proposed work is to identify the identity, authority and regulation towards on road drivers in India. Thus, the proposed application will not only reduce the tasks involved in RTOs but will also make documentation paperless.

II. SYSTEM

The traffic police use a manual process for verifying documents of a person. However, People have to face many problems with the current procedure used by the police for verifying documents of a person. According to the public point of view there is no facility provided by RTO which will make the person document free. The main problem with the existing system is that

either people have to carry their documents or smart card but there is possibility that the information might get lost.

In finger print recognition technique finger scan is based on distinctive characteristics of the human fingerprint. A fingerprint image is read from a fingerprint recognition device then features are extracted from the image using Bozorth3 algorithm and the regarding information is extracted from database. After the match is found police will get all the detail information about vehicle on his android application.

Today android devices play an important role in our day to day life since most of the tasks can be done on android device. Since the people have to carry documents regarding the information of the vehicle, the police as well as people have to face many problems. Thus the traffic police app not only reduces the task of the police but also makes the person document free.

III. IMPLEMENTED SYSTEM ARCHITECTURE

Following fig shows the system architecture of proposed system:

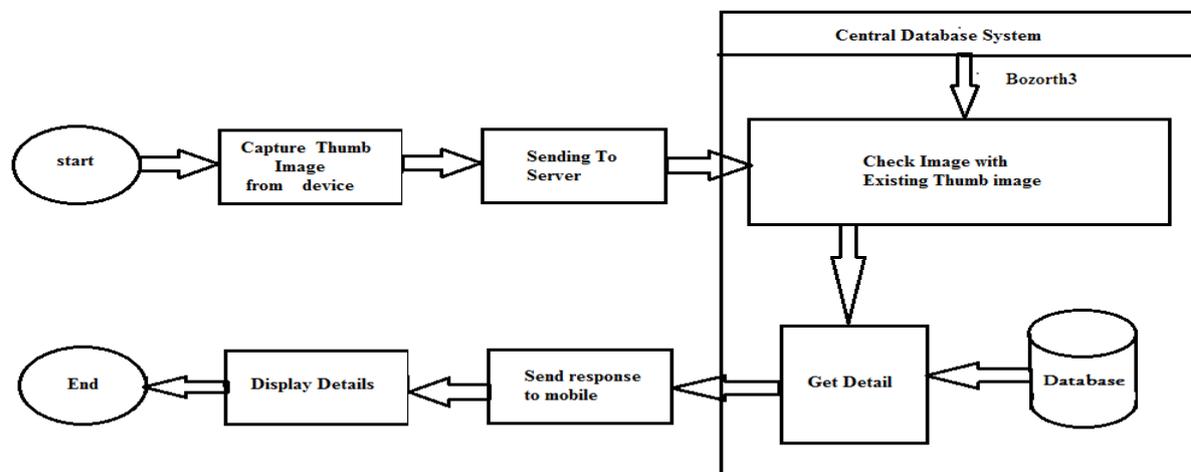


Fig 3.1 System Architecture

The proposed system is mainly divided into two modules i.e. User module and Application module. In user module, after successful login of user the application is activated for that user. The thumb impression of driver is captured using thumb recognition device by the traffic police. The captured thumb impression is sent to the server. In the application module, the match score of the thumb impression will be calculated and the details of the corresponding user fetched from the database will be sent to the android application. Fine calculation and deduction will be automatically handled by the proposed system. The following steps the overall flow of the proposed system.

1. The system will accept the fingerprint through the thumb recognition device.
2. In the central database using Bozorth3 algorithm the image is matched with the images in the database with the match score.
3. If the match score is above the threshold then details of the respective image are sent to the mobile as a response.
4. The details are displayed on the screen of android application.
5. The system will automatically deduct fine from the person's bank account.
6. The system will only verify the person's document and not issue any documents from the RTO.

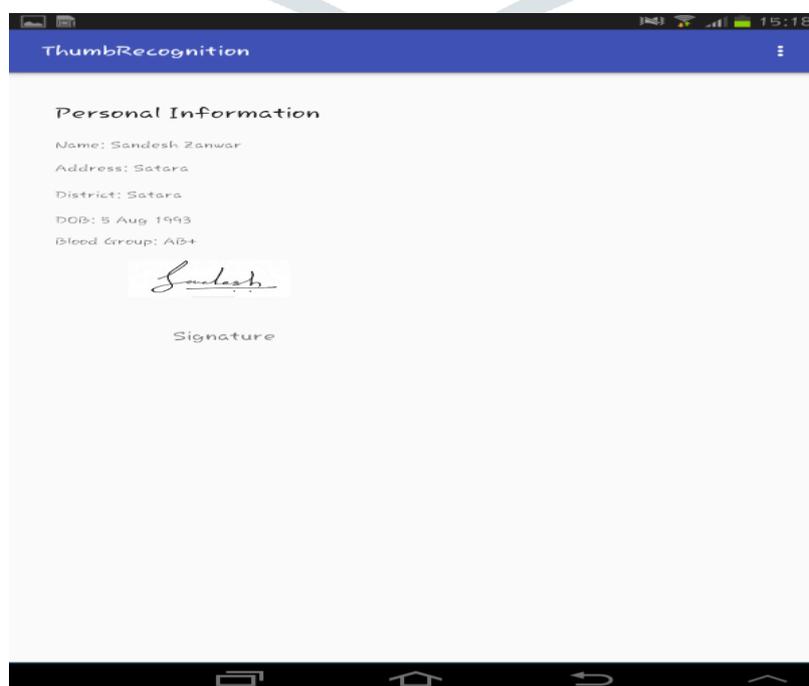
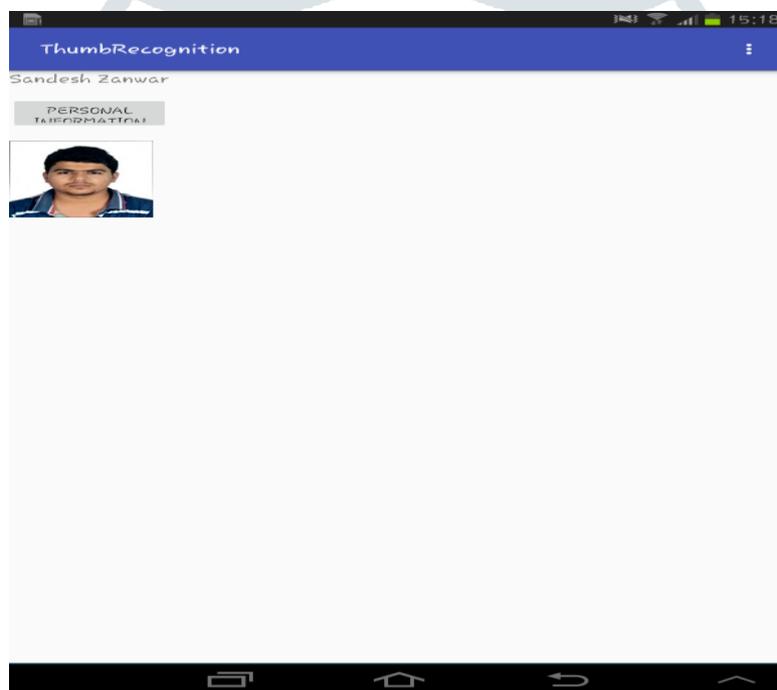
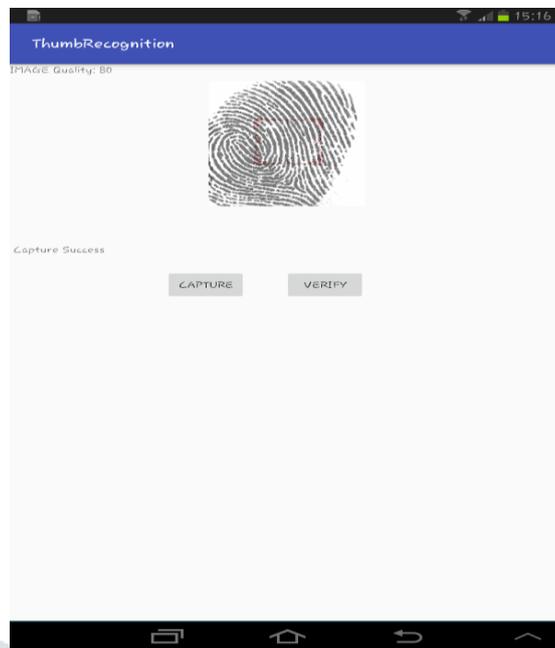
IV. BRIEF DESCRIPTION OF IMPLEMENTED SYSTEM

1. Login
 - Police login – The Police officer logs onto his/her individual device
 - New user login – New user who is not registered on the system logs into the system
2. Capture Image
 - Fingerprint image of the user is captured through the Biometric device
3. Database
 - The Database contains fingerprint images, details of the user
4. Verify Image
 - Match score calculation – Match score of the fingerprint image is calculated based on the minutiae points on the fingerprint
 - Display details – After matching the user's fingerprint, user details are displayed on the mobile device
5. Apply Fine
 - Fine is applied to the user by the police for breaking different rule violations
6. Deduction of fine from user wallet
 - Transfer of fine from user wallet to the police's wallet

V. RESULT

Thus in the implemented system details of a person are displayed after his/her fingerprint is matched.





VI. CONCLUSION

The main objective of the implemented system is to verify a user uniquely based on his/her fingerprint through the fingerprint recognition device.

Thus the system has been successfully implemented for verifying documents of a person using BOZORTH3 algorithm.

VII. REFERENCES

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