

Biometric E-licence

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ABSTRACT - Fingerprints are rich in details which are in the form of discontinuities in ridges known as minutiae and are unique for each person. One of the most important tasks considering an automatic fingerprint recognition system is the minutiae biometric pattern extraction from the captured image of the fingerprint. The fingerprint matcher compares features by using Digital Image processing from input search point against all appropriate driving licences in the database to determine if a probable match exists. With this implementation, there'll be no need to carry documents along. A single fingerprint and an image will be enough to recognise and verify the individual and the vehicle.

Mobile platforms such as smart-phones and tablet computers have attained the technological capacity to perform tasks beyond their intended purposes. The steady increase of processing power has enticed researches to attempt increasingly challenging tasks on mobile devices with appropriate modifications over their stationary counterparts. In this work we describe main features of software modules developed for Android smartphones that are used by RTO officers for licence and vehicle documents verification. In this project we use biometric approach like fingerprints and vehicle number plates for verification.

PROBLEM STATEMENT/EXISTING SYSTEM

The main objective is to develop technology that include android application and web application to provide digitalization to both, an individual and RTO system, by reducing the documentation part.

Currently the traffic police use a manual process for identifying and verifying authority of a person. However, people have to face many problems with the current procedure used by the traffic police. According to public point of view there is no facility provided by the 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.

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.

APPLICATIONS

- This system will help in increasing the robustness and speed of the RTO system.
- It will also increase efficiency in procedure related to vehicle burglary.
- All the data would be maintained in the database will be easy to maintained.
- Documents would be digitalized.

INTRODUCTION

Fingerprint classification and matching are key parts in an automated fingerprint recognition system. The fingerprint matcher compares features from the input search point against all appropriate records in the database to determine if a probable match exists. There are various approaches of automatic fingerprint matching that have been proposed which include minutiae based approaches, and image based approaches. Minutia based approaches are the most popular ones being included in almost all contemporary fingerprint identification and verification system.

Fingerprint verification problem is divided into two main tasks:

- Minutiae extraction.
- Minutiae matching.

The first stage consists of fingerprint sensing which has been historically carried out by spreading the finger with ink and pressing it against a paper card and then scanned, resulting in a digital representation. This process is known as off-line acquisition and is still used in law enforcement applications. Currently, it is possible to acquire fingerprint images by pressing the finger against the flat surface of an electronic fingerprint sensor. This process is known as online acquisition.

Acquired image may contain noise that is removed in pre processing stage and minutiae are extracted from pre-processed image. Final stage for fingerprint matching is performed by passing minutiae patterns of the fingerprint to matcher. This matcher will produce a match score based on fingerprint matching.

MOTIVATION

An individual has to carry licence and vehicle documents, if he fails to present those at the time of certain on road investigation by Government authority, He has to pay the fine, here carrying documents is a mandatory part. This tedious and hectic procedure inspired us to think about the present RTO system and also motivated us to implement this system which increases the robustness and efficiency of RTO system and traffic issues. We would implement this system on android to give portability to system.

PROJECT OBJECTIVES

1. To identify a person’s information through his/her finger prints and to make the person document free.
2. The fingerprint recognition technique will help to identify whether the person is authorized to drive the vehicle or not.
3. In the central database using Bozorth3 algorithm the image is matched with the images in the database with the match score.
4. If a match is found then details of the respective image are sent to the mobile as a response.
5. The details are then displayed on the screen.
6. The system will automatically deduct fine from the person’s bank account.

PROJECT SCOPE

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 a match is found then details of the respective image are sent to the mobile as a response.
4. The details are then displayed on the screen
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.

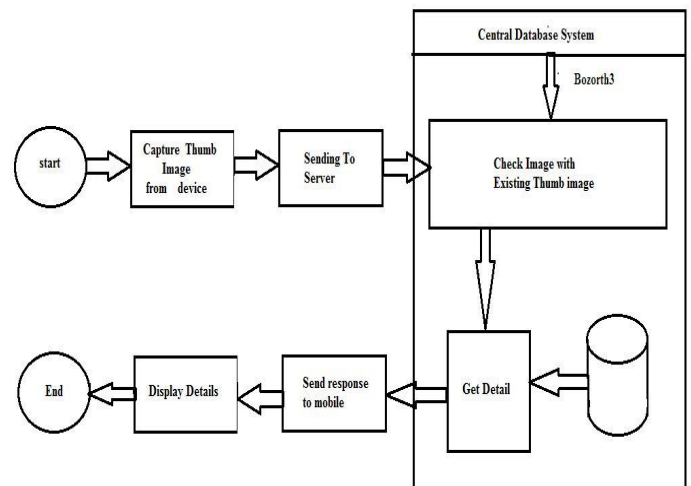
SOFTWARE SPECIFICATIONS

1. Front End : Android APK
2. Back End : Java (Socket programming)

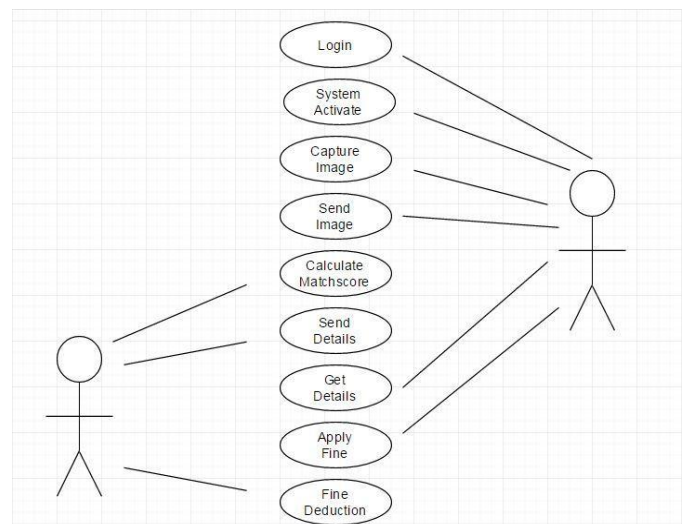
HARDWARE SPECIFICATIONS

1. Processor : Pentium IV or above
2. RAM : 2 GB or above
3. Hard Disk : 40 GB
4. Monitor : 15 color monitor
5. Android Device : Android Mobile / Tablet with battery capacity of 4000 mAh or above
6. Fingerprint recognition device : Connector / USB cable

SYSTEM ARCHITECTURE



USE CASE DIAGRAM



SOFTWARE INTERFACE

MySQL : MySQL is a relational database management system that runs as a server providing multiuser access to a number of databases.

Java : The two principal products in the Java SE platform are : Java Development Kit(JDK) and Java SE Runtime Environment(JRE). The JDK is supper set of the JRE, and contains everything that is in the JRE, plus tools such as the compilers and debuggers necessary for developing applets and applications.

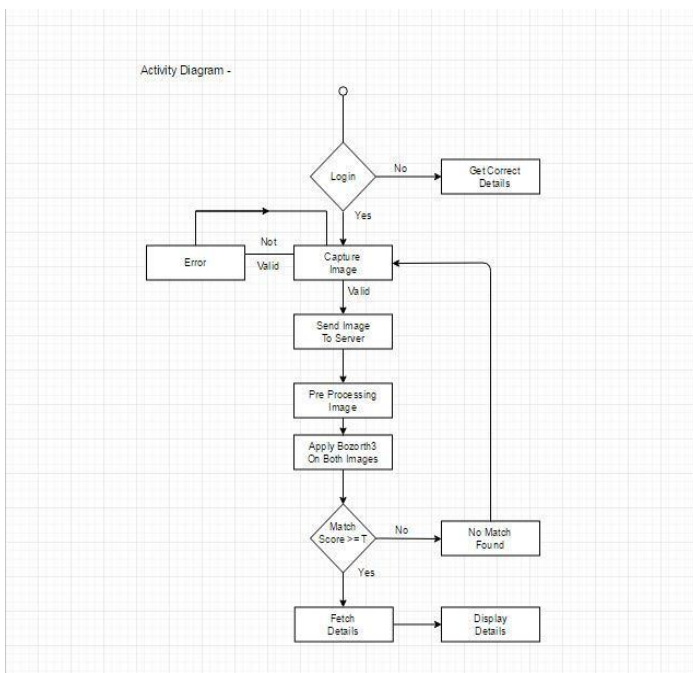
Java Script : Java Script is primarily used in the form of client side Java Script, implemented as a part of Web Browser in order to provide enhanced user interfaces and dynamic websites.

JSP(Java Server Pages) : JSP is Java technology that helps software developers server dynamically generated Web pages based on HTML,XML or other documents types.

Hypertext Markup Language(HTML) : HTML is a predominant markup language for web pages.HTML elements are the basic building blocks of Web Pages.

Apache Tomcat : Apache Tomcat is an open source servlet container developed by the Apache Software Foundation(ASF).Tomcat implements the Java Servlet and the Java Server Pages(JSP) specifications from Oracle Corporation and provides a pure Java HTTP Web Server Environment for Java code to run.

ACTIVITY DIAGRAM



Assumptions

1. User must have basic knowledge of computer and handling an Android device.
2. The user has to be from a police or RTO background.
3. Device used must have Android OS installed.
4. After activation system should fetch data from the server.

Dependencies

1. Only Administrators will be able to edit main configurations.
2. User and Administrators will communicate among themselves while executing the application.
3. The proposed system is dependent on Android OS.

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