

IAS - Investigation Assistance System

Criminal tracking using fingerprint recognition system

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Abstract— The Investigation Assistance System (IAS) is an integrated approach that enables faster and efficient investigation and detection of criminals. The system is used by the police departments to track the criminals by performing search either name wise, age-group wise and region wise and also using a fingerprint recognition system. This system also has facilities to register petty complaints from the public so that the police personnel can take appropriate action immediately. This integrated approach provides an intelligence platform that bridges the gap between the public and the Police Department and between the Forensics Science Laboratories and the Police Department and thus enables efficient use of police workforce and makes it easier to collect inputs needed for proper and quicker investigation of a case. The efficiency of the police personnel and the effectiveness with which they tackle criminal cases depend on the quality of information that it derives from the existing records and how fast they can access it. Thus, the system provides high quality and transparent policing that satisfies the aspirations of the public and also provides the intelligent tools and technologies to the Police Department to speed up the overall investigation process.

Keywords-criminal tracking, fingerprint, criminal data management

I. INTRODUCTION

The Investigation Assistance System is an online comprehensive criminal tracking system to engage public, police and investigation agencies to be more quick, proactive and responsive to fight against crime and criminals by trying to automate the entire process keeping in view the database integration approach along with fingerprint recognition.

Police officials can use the system to track the criminals using a fingerprint recognition system by fetching relevant details from the database. The system provides facilities for criminal search – name, age-group wise and based on fingerprint recognition. The officials can view information about the missing persons and most wanted criminals.

The system maintains the records of complaints and criminal details online. This system provides a facility where public can register petty complaints after verification through OTP by enclosing proofs and identity proof details. Also the public can provide information to the police and view complaint status. The police official can logs on to their account to view complaints.

II. OBJECTIVES

- The main objective of the Investigation Assistance System is to enable investigation and detection of criminals by providing tools, technology and information to aid in the investigation process with the help of an online information management system and fingerprint recognition system.

- To computerize the task of fingerprint recognition by maintaining the fingerprint images of the criminals along with the criminal details and also to search the criminals by matching the fingerprint collected from a crime scene with the existing ones.

- To make complaint registration online and allow sharing of complaint information among other police stations.

- To provide flexibility to the public to register a complaint to the nearest police station online anywhere and

anytime irrespective of the location of incident and provide a mechanism to track the complaint status.

III. SCOPE

The Police department maintains a website. Access to the various functionalities of this website is based on authentication and authorization. The police can perform criminal search based on name, age and fingerprint recognition. The public can access just a few functionalities like viewing progress of complaint status and posting complaints. This system registers the complaints from people online and it will be helpful to the Police department in tracking criminals.

IV. PROJECT REQUIREMENTS

A. Hardware Requirements

- Processor: Single core processor or Core 2 duo
- Processor Speed: 1.7 GHz or above
- RAM: 4 GB or above
- Storage Space: 1 TB or above

B. Software Requirements

- Programming language: PHP and MATLAB
- Development Tool: Notepad++, XAMPP Server, MATLAB R2013A

V. SYSTEM DESIGN

A. Architectural Design

The following block diagram shows the principal parts of the system and their interactions. The architectural diagram shows the main actors interacting with the system. The architecture used is a two-tiered client server architecture. Here, the computing client talks directly to a server with no other intervening processes. Clients manage the user interface, validate data entered by the user, dispatch requests from clients, execute database retrievals and updates, manage data integrity,

control transactions, execute business logic, and send data to clients.

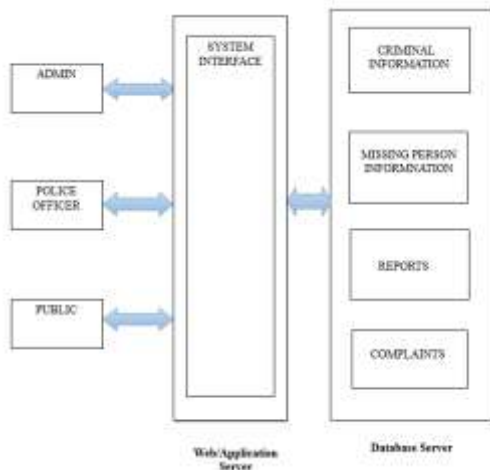


Figure 1. Architectural Design

B. Sequence Diagram

1. Registration

Registration is done by the public. When the user clicks the registration button, they have to read and agree on the instructions provided. Then, the user is directed to an OTP page where they are requested to enter the phone number. Once the users enter their phone number, they receive an OTP on their phone. They have to enter the OTP in the given field. They are redirected to the registration form.

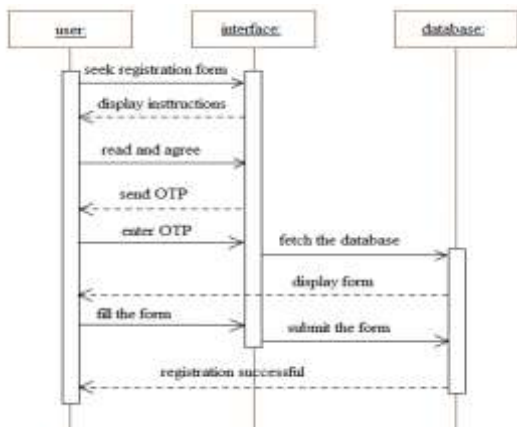


Figure 2.Registration

2. Login

Login allows 3 types of users: public, police and admin. User enters the username and password to login. Entered username and password is checked. If the entered username and password is valid for the particular user type, then the user is successfully logged in, otherwise “Wrong username or password” message is displayed.

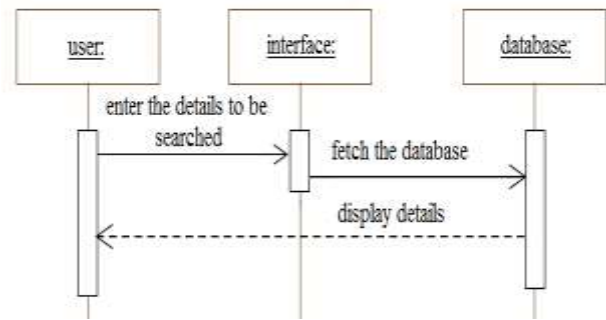


Figure 3.Login

3. Criminal Information Search

Criminal information search is used by the police to search for the criminals in the database. Police can search the criminal by name, age, region or fingerprint. Search by name gives the details about all the criminals whose name matches with the entered name. Search by age gives the details about all the criminals with the respective range of age. Search by fingerprint gives the details about the criminal whose fingerprint matches with the entered name. Here, police enters the details to be searched and submits. If there is any match for the entered details, details are displayed.

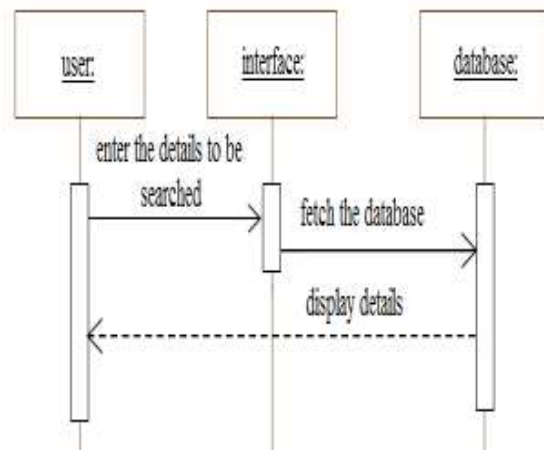


Figure 4.Criminal Information Search

4. Complaint Registration

Complaint registration is done by the public after registration. User has to enter the details into the form and submit.

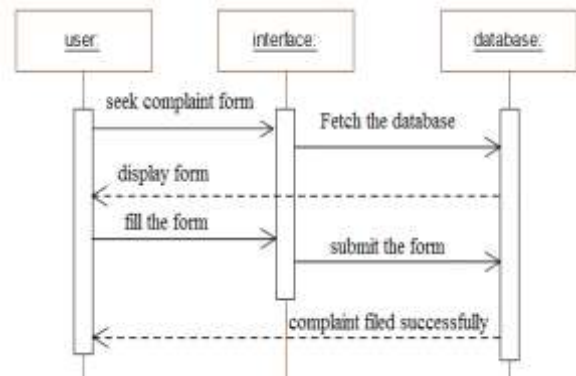


Figure 5.Complaint Registration



Figure 6. Home page of the Investigation Assistance System

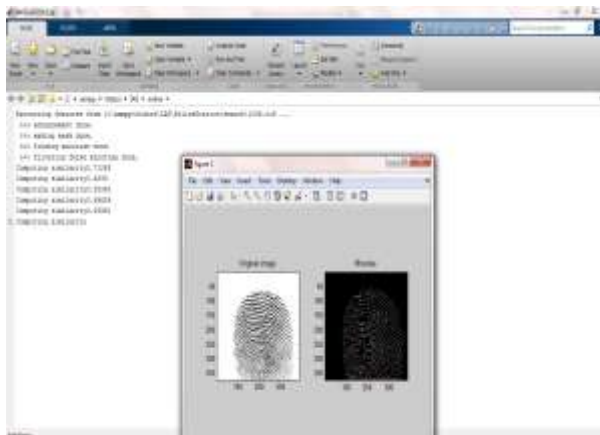


Figure 7. Fingerprint Matching in MATLAB



Figure 8. Result of Criminal Search using Fingerprint

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