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IoT Based Online Police First Information Report (FIR) Record System

Manali R. Bhosale[1], K.P. Paradeshi[2]
[1]PG Student, [2]Associate Professor
Electronics Engineering Department, PVPIT, Budhgaon, Sangli, Maharashtra, India

Abstract: Technology is continuously used by government, corporate bodies and individuals to lower security threats. The crime record management system is majorly employed manually with the use of paper and pen. These records are easily accessible to both authorized and unauthorized personnel. This method has serious issues in authenticity, security, storage, retrieval and exchange of data. The proposed system aims to design secured crime record management system, which will have efficient storage, quick retrieval, and exchange of information. With the help of IoT, the centralized database system will give easy access to any record as per our convenience.

Keywords: Biometric system, CRMS, FIR, IoT, Web server

Introduction

Nowadays technology has become an integral part of our lives. With the help of technology, performance of operations has been improved. When it comes to law enforcement record keeping becomes laborious. The widely used crime record management system crime record management (CRMS) is a manual process. Paper files are used for the documentation of details of the crime. Crime details involve the name of the criminal, address, place of the crime, date etc. When the accused is brought in,these details are handwritten into the case files. First Information Report (FIR) form includes complainants statement concerning the accused. Before the computers came into the picture, these case files were then kept in wooden or metal cupboards. These records are susceptible to destruction from pests, fire hazards, authorized and unauthorized personnel. This method resulted in problems like authenticity, security, retrieval, and exchange of information within the police department.

In recent years, desktop applications such as Microsoft excel were adopted, therefore the approach became both manual and slightly computerized. However, this method of record keeping results ininconsistencies wastage of disk space, poor control, and coordination of data. Employment of this method has drawbacks like corruption, fire hazards, lack of necessary skills and resources for information management.

This proposed system aims to design computerized real-time crime record management(CRMS) for the police station. In which data used by the CRMS is stored in acentralized database. All the information is stored at a central location which can be easily updated and easily accessed. This is a more effective storage method than the paper-based case file system. The benefits of the systems arereduced time consumption, Computerized record keeping with less manpower, Cost reduction, Operational efficiency.

The centralized database consists of all the Information about criminals, users of the system and charge sheet details. The police department now can keep the record of criminals who have been arrested or to be arrested. This will help the police station to manage the information in an effective way. The main entities in the whole process include the person who files a First Information Report (FIR), a victim, criminal, case, and investigating officer.

Background

The main aim of the police service is,maintaining an effective and efficient service for the public. The primary task includes securing the continuous needs of the public in a well-organized manner. To keep the criminal record, paper files are usedwhich are not trustworthy. There is no proper authenticationn of avoiding possible manipulation of data which results in alteration by unauthorized users. when the data is needed from the previous years it becomes cumbersome and time-consuming to retrieve it. If it is not addressed in the nearest future, it becomes highly impossible to access the past criminal history of a suspect. Therefore, for easy storage, retrieval and exchange of the data IoT based crime record management system can be used.

Dr. Nilakshi Jain, Siddharth Agarwal [1] proposed that Crime file system initiates the objective of providing the user with customized and process management system side software. The software is built with options such as prisoner's registration, complaint registration, and post-mortem report generation. All the requirements which are specified during the system analysis and design phase arefully met. The database is maintained over a certain time span, thus it is strong enough to withstand regressive yearly operations. The interface provided isuser-friendly and flexible.

Shweta Gaur,V.A.Shah [2] mentioned thatBiometrics technology is a which has only been implemented in public for commercial purpose. Especially in security systems, there are many applications of biometrics technology. It provides the exact solution for identity detection and recognition problems. Biometric system has many advantageous features which can improve security, authentication. Fraud can be reduced by the biometric system. The fact that cannot be denied that this new technology will certainly make our life comfortable and change it for the better.

Anil K. Jain, Ajay Kumar proposed that [3], The Biometric system is mainly used for security purpose. Mostly this identity system used for individual identification like, to scan a finger, eye, iris, voice. To minimize the criminal activity and terrorist attacks the biometric system is used. For better recognition accuracy, the next generation of biometric technology must overcome many hurdles and challenges. Therefore, by improving the recognition it will have an ability, to handle poor quality and imperfect data, attain scalability to accommodate hundreds of millions of users, and protect user privacy, while reducing the system cost and enhancing system integrity.

Criminal Records Ohio Information System presented that [4], the database enables search for people who have been convicted in Ohio. It holds information about when a person is convictedwhen the person was sentenced, and when the person was released from the prison. Ohio Department of Rehabilitation and Correction protects and supports people by ensuring that, adult felony criminals are well supervised in environments which are safeand secure. It aims to promote citizen safety. To become law-abiding members of society through rehabilitative and restorative programming, it seeks to fix in offenders an improved sense of responsibility.

Sandip Ray, YierJin and Arijit Raychowdhury [5], provided an overview of IoT. It helps readers to have a systematic view of how IoT has evolved. through an introduction, it providesthe IoT developing trends as well as the specific topics in IoT security and IoT energy efficiency. From both academic and industrial views, some of the defined critical growth and research areas in IoT development are shown.

Daniel E.S. Kawai1, Dogo Samson [6] have given the following approach. For keeping the records of criminals for future references the automated system has been developed. If it is adopted, it will be difficult for criminals to escape from the authorities. It will be easier for the authorities to catch and convict criminals. This system is introduced on the internet and linked to Personal Digital Assistants (PDA's) and also on mobile phones of the Nigeria Police department. It will help in addressing the challenges which security has faced.

Following are the steps involved in the implementation of a criminal record management system. Refer to Figure 1

1) Data from the biometric security system is added to the computer software, the web server is updated.
2) Add users, different levels of privileges are assigned to the police officers.
3) For better authentication, validate user login details and confirm user-level privileges.
4) Information about crime and criminals can be stored and retrieved.
5) Based on some specified criteria, perform search functions.
6) Perform crime analysis and statistics.
7) First information report (FIR) is generated.

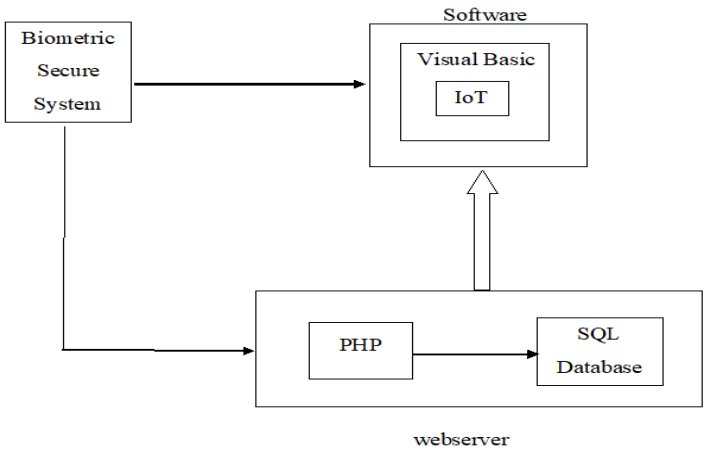

Figure 1: Block Diagram of the system

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Results and discussion

1. Biometric System Module

Figure 1: Fingerprint Sensor

For better authentication biometric system is used. Figure 1 shows the fingerprint sensor R305. The criminal record can be accessedwith the help of fingerprint of an accused person.When the fingerprint matches with given data from the library, it returns with the result as a success. when the given data does not match, then it's a Failure.

2. Login Module

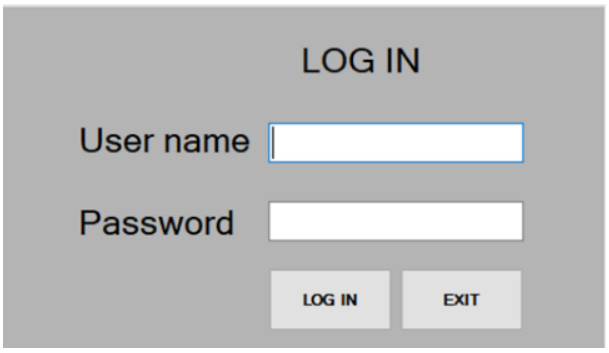

Figure 2: Login Module

Figure 2 shows the Login page. Authentication is done by this page. This module is responsible for logging users into the system. To login into the system, correct and already registered police id, the password is provided. If they do not match then access is denied by the system. When users put incorrect or unregistered details, the page returns with an error message showing 'Invalid Username and password.

3. Selection Module

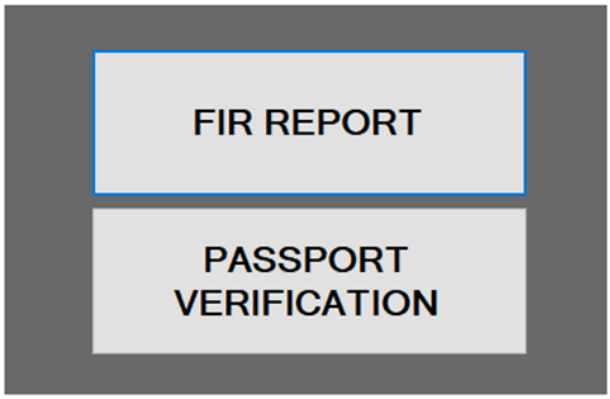

Figure 3: The Selection module

Figure 3 shows the selection module of the system. After logging in into the system with the correct username and password, two options are given.

As per requirement, one option can be selected either FIR report system or to Passport verification system.

4. FIR report Module

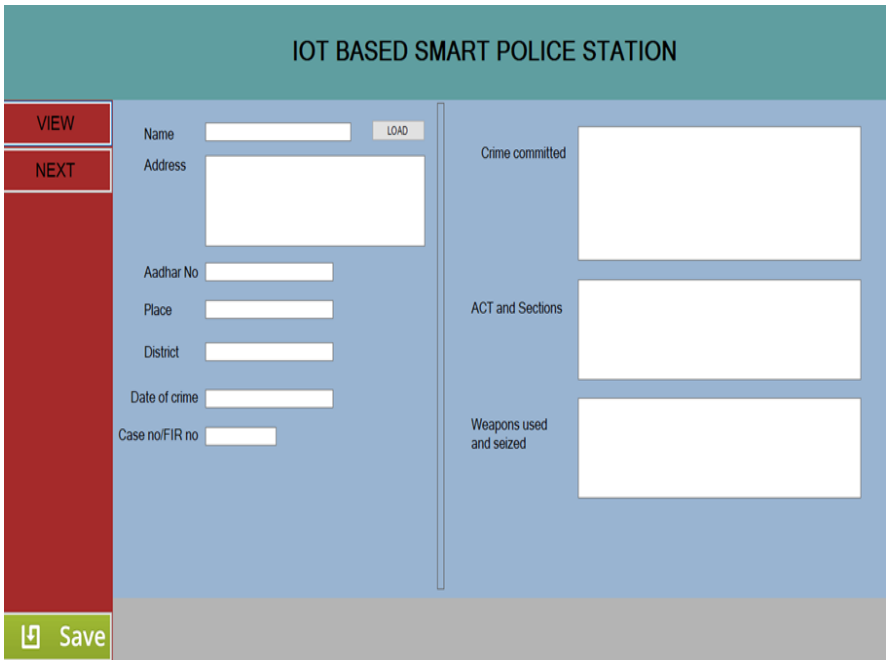

Figure 4: FIR report page

Figure 4 shows the FIR report page. After logging in into the system, the FIR report page is the third step of the system. This enables police officers to put new FIR into the system. The data can be retrieved only by a fingerprint. This also enables background checks to be performed on individuals.
All fields in all of the forms have a null key attributed to them. If some of the fields are left null, the system does not register the details.
All the database has been updated to the cloud using PHP. We have accessing database on a cloud. The database is fetched onto the C# dotnet framework.

5. Charge sheet Module

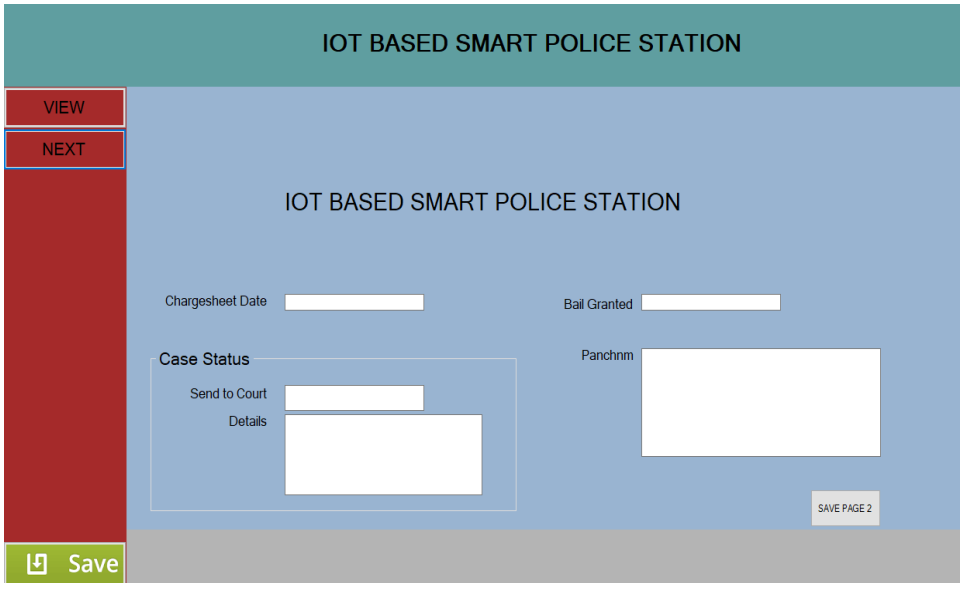

Figure 5: Charge sheet details

Figure 5 shows the charge sheet details of the system. When a criminal is accused then these details can be seen by the court or can be sent to court for further proceedings. These details also can be seen in the police department if needed.

A. *Discussion of the results*

First information report (FIR) is an important part of any criminal investigation. Most of the time the First information reports (FIR) are handwritten. By using IoT based online police First information report recording system we can access the data as per our convenience.
Biometric system is used that's why the system is secure than any other previous FIR recording system. Data can be updated, retrieved & can be accessed anywhere because of the cloud storage system.

NAME : Raju Suleman Mishra
AADHAR : Ambedkar Road ,Pune
ADDRESS : 123456789
PLACE : Pune ,Tamilnadu ,Hyderabad
DISTRICT : Pune
DATE OF CRIME : 1/4/2014, 2/5/2016, 4/11/2017
CASE/FIR NO: 002, 244 , 348
CRIME COMMITED: 1.Hit and Run 2.Drink and Drive 3.Breaking and Entering
ACT and Sections: 1. 205A,305A 2. 304A,205,B 3. 207A,306C
Weapons used and seized: 1.Bike as supportive weapon 2.Car as a supportive weapon 3. Electronic devices as a weapon
Chargesheet Date: 2/8/2020
Send to Court : Yes Details:Not active
Bail Granted: Yes
Panchnm: 1.Stolen Devices 2.Jeep

Figure 6: FIR Report sheet of Criminal 1

SMART POLICE STATION

NAME : Samira Sinha
AADHAR : Mira Road,Mumbai
ADDRESS : 123456789
PLACE : Mumbai
DISTRICT : Mumbai
DATE OF CRIME : 7/8/2014
CASE/FIR NO: 032
CRIME COMMITED: 1.Breaking and entering
ACT and Sections: 1.405A
Weapons used and seized: 1 Stolen devices
Chargesheet Date: 10/10/2014
Send to Court : Yes Details:Not active
Bail Granted. NO
Panchnm: 1.stolen Items

Figure 7: FIR report sheets of the criminal 2

The data need to be stored at a centralized location. For this purpose, the previous record of the criminal is required.Figure 6 and figure 7 shows the FIR report sheets of criminal. When the previous record of the criminal is required then data can be retrieved is shown as above. For the court proceedings these, FIR report sheets can also be seen by the court.

This system can be globalized using the cloud, with the help of a private cloud provider called open stack software. Open stack software is a cloud operating system which can control a large amount of storage. It has networking resources throughout the datacentre, that will provide authority to the right person. The authorized person will decide the users who can have access to the criminal information through a web interface.

In terms of authentication, real-time access, and centralized storage the system is more efficient. The system has a simple and highly interactive design. Therefore, accomplishing the set objective of making it user-friendly. It also gives enhanced access to comprehensive, reliable and precise information.

CONCLUSION

First information report (FIR) recording system has issues when it comes to retrieving the data from the paper-based case files. The proposed system is fair and transparent crime record management system (CRMS) than the current system.

With the use of proposed system crime handling will become more faster and easier, Crime rates will be lowered. This system will increase national security in the future.

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