

Enhancement in existing CCTNS System

Riya B. Agrawal, Nivedita U. Singh, Shubham A. Upadhyay, Shrutil P. Awari, Sachin A. Thanaker

¹ Student (BE), Computer Engineering Department, AVCOE, Maharashtra, India

² Student (BE), Computer Engineering Department, AVCOE, Maharashtra, India

³ Student (BE), Computer Engineering Department, AVCOE, Maharashtra, India

⁴ Assistant Professor, Computer Engineering Department, AVCOE, Maharashtra, India

ABSTRACT

The "Enhancement in Law and Order System" is an online solution for the crime reporting/tracking and the database storing module in the future projects like 'Smart City' and 'Digital India', which are unlikely to be there in the existing module. This is a purely survey based project, as per the need of the administrative body, who interacts with the citizen of their area of deployment. The highly blooming project like Smart City and the other Automation Practice in the existing system, like 'CCTNS (Crime and Criminal Tracking System)', the data storage in particular format with the help of the Digital India concept to make the data available throughout the system user, a daily practice based statistics will make assure regarding the updates in the activities and the report creation/generation method will be much easier than that of now.

Keyword: - Internet of Things, Data Mining, Networking, Digital India, Smart City.

1. INTRODUCTION

Nowadays, there is lot of information being exchanged and retrieved from one corner to other in blink of eye in a secure manner. Internet plays a major role in circulating changing information about traffic conditions, business information, weather forecasting etc. A new word "pervasive" has been emerged in development of information technology (IT). Basic motto of creating pervasive network is "creation of environment saturated with computing and communication capabilities, yet gracefully integrated with human uses".

Wireless communication and web services have changed the point of view of organizational communication. Web services allow us to learn programs on different languages on different platforms to communicate in standard way. Web services include security models such as security topology, platform/transport level security, and application layer security. The above mentioned models should ensure integrity, confidentiality and security of web services.

In 21st urban life metropolitan citizens face problem in keeping track of every developmental activities taking place among urban authorities. So there is a need of reducing time and saving money among urban citizens. CCTNS is "Crime and Criminal Tracking Network System" which reduced the above issues to a great extent. This paper is regarding "Enhancement in existing CCTNS System". Our system provides:

- Different login portal of citizen as well as administrator.
- Interconnection of police stations.
- Register FIR electronically.
- Paperless and online interface.
- Citizen friendly interface.
- Tracing GPS location.
- Collecting evidences through audio, video and images.
- Reducing manual work.

2. OVERVIEW

This system consist of two portals i.e. citizen and administration portal. Both citizen and administrator can register through their unique identity such as aadhar card number, driving license number, PAN card number etc. Citizen can claim their FIR and other complains via their respective login ID. They can upload evidences such as finger prints, images, audio-video tapes, location etc. The complete crime and criminals records are being stored in administrator's database. An investigative report will be given to the location officers and so that action could be taken rapidly. Also citizens can take a view of their investigation procedures and actions being taken on them.

3. LITERATURE SURVEY

3.1 Crime and Criminal Information System

Initially, CCIS was built on Unix Operating System in 1990. With the development in technologies, CCIS is also available on Window platform. CCIS is a National Crime Record Bureau (NCRB) and has been implemented in 35 states and union territories including around 14000+ police stations around the country. It is used to put out online reports and proclaims online query facilities.

3.2 Crime and Criminal Network System (CCTNS)

CCTNS was a concept initiated by Ministry of Home Affairs and is under guidelines of National e-Governance Plan (NeGP). CCTNS aims at efficient and effective system of policing at all levels. The main ideology behind CCTNS is "Bundling of Services" and "Integrity Service Delivery". According to these concepts a System Integrator (SI) is appointed which act as single point of contact for the state.

3.3 Common Integrated Police Application (CIPA)

The concept of CIPA was introduced in 2004 for computerization and automation of police station. It centrally managed application. It works on Linux platform using Java and PostgreSQL database. The main modules of CIPA are Registration Module, Investigation Module and Prosecution Module.

4. MODULES:

4.1 Registration Module

Registration module comprises of gathering and storing the information and deciding their priority. The operations are performed by police personnel's taking input from civilians.

There are two login portals for Police Administrator and Citizen. During their registration they require their basic information including Unique Identification Number. They can perform their respective operations using their own accounts. There are certain accessing restriction different users.

4.1.1 Administrative Section

When administrator login to account, it have different subsection with different tasks. The y are as follows:

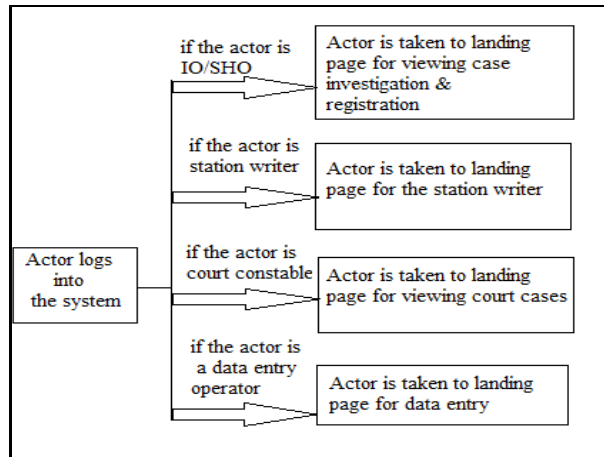


Figure 1: Administrator login

- If the administrator is IO/SHO then his role is to view the case investigation and registration.
- If the administrator is station writer he is taken to landing page for station writer.
- If the administrator is court constable he is taken to landing page for court cases.
- If the administrator is data entry operator he is taken to landing page of data entry.

4.1.1.1 Service Petition

The citizens submit a petition to the police station. His petition is being filed in form of online application and a proper action is being taken on it. The petition is being saved in the system and the unique number is being submitted for the petition.

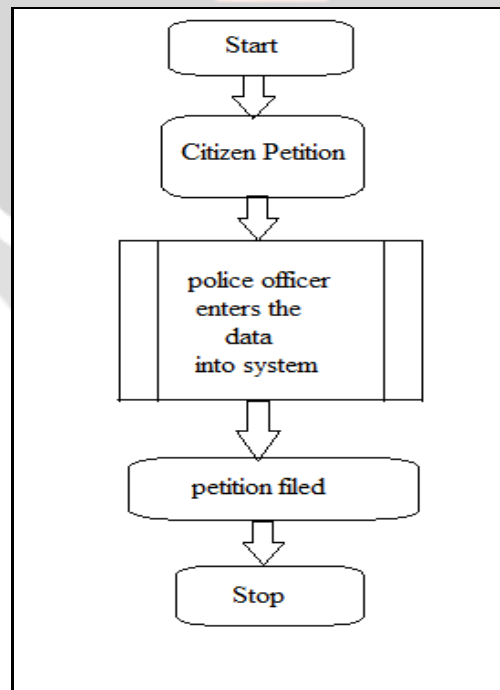
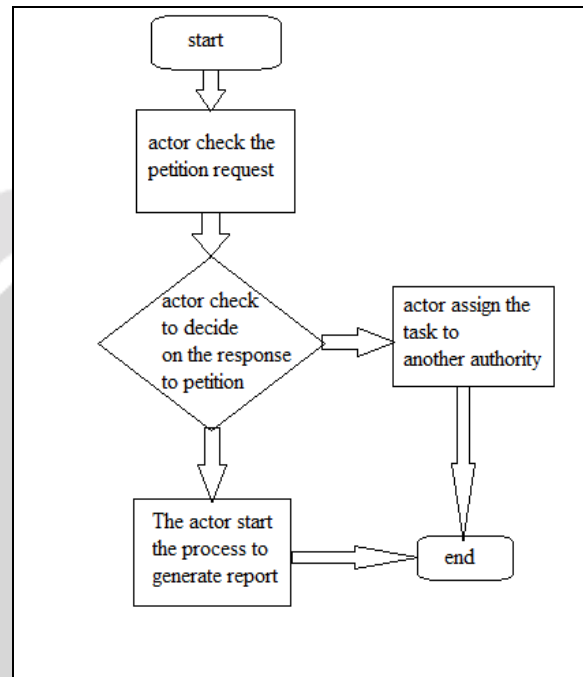


Figure 2: Service Petition**4.1.1.2 Prepare Response**

The response to service petition is submitted by the citizen. These data is used to

1. Generate report and certificate required by Citizen.
2. A notification sending to various authorities whose response is needed.

**Figure 3: Petition Response****4.1.1.3 Complaint Process**

The FIR should include Date, Time of incident, place of incident, investigation officer, duty officer, acts, session. The information of convicts should consist of following information:

1. Name with alias
2. Sex
3. Parent age
4. Marital status
5. Age and year of birth
6. Nationality information
7. Social economic status
8. Address
9. Jurisdiction

Details about:

- a) Victim(s) (if applicable)
- b) Accused (if applicable)

c) Witnesses (if applicable) are also being reported.

On completion of registration 6 scenarios takes place:

- a) Save and quit
- b) Save and Create FIR
- c) Save and Create NCR
- d) Save and Create Complaint report
- e) Generate zero FIR
- f) Generate final report of juvenile case

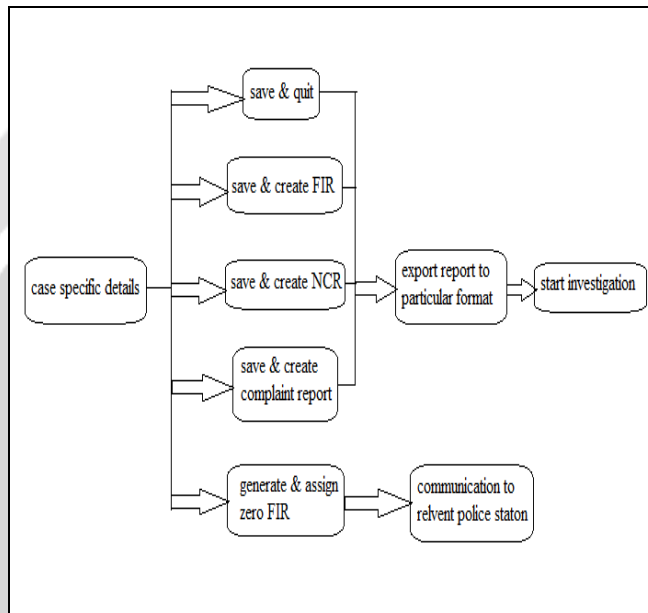


Figure 4: Complete Registration

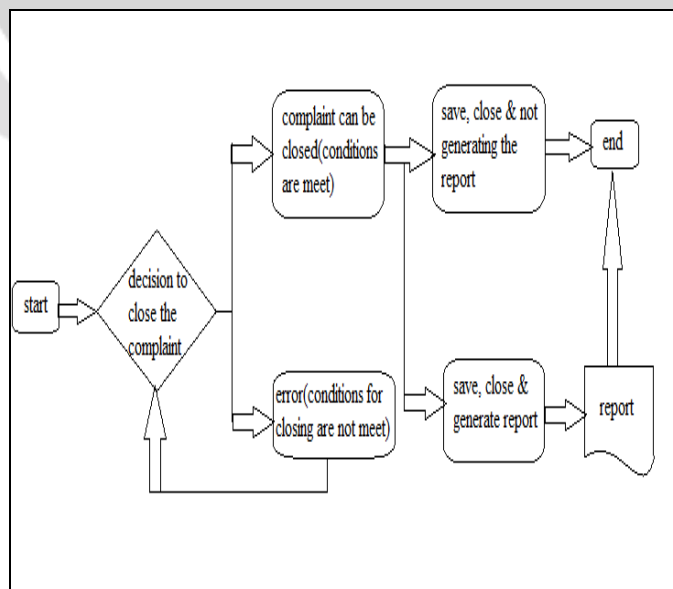


Figure 5: Close Complaint

4.1.2 Citizen Interface:

It provides smooth interaction between Citizens and Police. It enables citizen to register complaints online and receive an electronic acknowledgment giving an indication that police has received the complaint.

1. Citizens can submit the evidences in form of fingerprints, audio, video, images etc.
2. Citizens get the copies of case documents.
3. Citizen can also conduct the query based on
 - a) Process of registering complaint
 - b) Investigation update
 - c) Status of case
 - d) Unclaimed or abandoned property
 - e) Most wanted person in area
 - f) Crime profile of area
4. The Citizens can also submit feedback to police.
5. Submit intelligence, information to police.
6. Register Complaint against police.

4.2 Investigation Module

Registered complaint is taken to investigation officer to conduct investigation activities.

4.2.1 Capture Crime Details

The investigation officer captures the crime details and use the following details for investigation.

- a) Select the date of Crime Details Capture
- a) Select place Type
- b) Select Suspected Gangs
- c) Enter Implements Used
- d) Select Motive of Crime
- e) If victim exists then capture victims details
- f) If accused exists the capture accused details
- g) If witness exists then capture witnesses details

4.2.2 Capture Investigation Details

Investigation details should be updated to know the status and to keep track of progress of case. Police administrator adds relevant data and saves the data which includes:

- a) Case Status
- b) Witness
- c) Accused
- d) Victim
- e) Property
- f) Motive
- g) Place of Occurrence

h) Changes in section through alteration memo

For case status of current case the system displays Details collected, Evidence Collected, Charge sheet created, Arrest made. In arrest Bail, Arrest and Fugitive are the subsections.

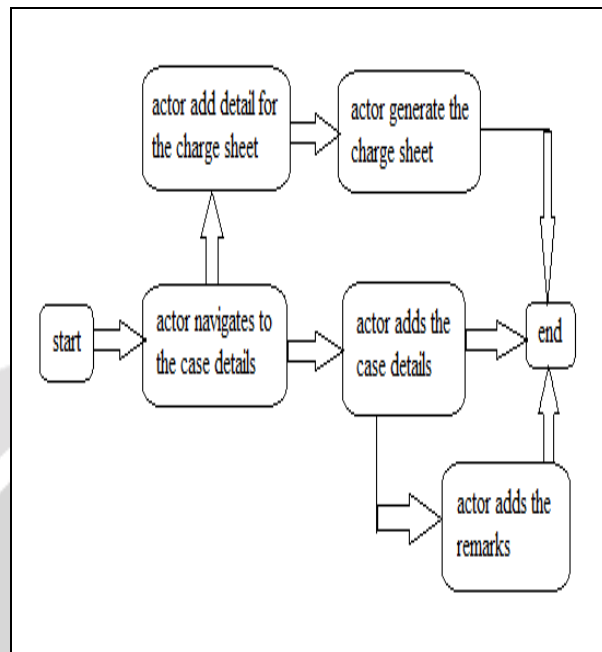


Figure 6 : Investigation Procedure

4.2.3 Prepare investigation Report

During the investigation, we generate:

- a) Arrest Card
- b) Remand Report or Judicial Custody Report
- c) Property Seizure Form
- d) Prepare FPB/FSL/PME/MLC/RTO/Excise request form
- e) Prepare FPB/FSL/PME/MLC Response Report
- f) Prepare Inquest Report
- g) Prepare Charge Sheet

4.3 Prosecution Module

In Prosecution Module, citizens can enter/update/view/information about prosecution going on for the particular registration time. Court give a court case number based on charge sheet filed. When the case comes to the court the output of the trial is registered like this:

- a) Next hearing date
- b) Who will be examined
- c) What needs to be produced
- d) Summons
- e) Warrants

- f) Bail petition by accused
- g) Accused details.

4.4 Search Module

Search Module includes basic and advance search techniques that help us for quick retrieval of information.

In quick search user enter search criteria and executes search. The system displays results which match the search criteria entered.

In Advance Search the search criteria for criminal detail option displays on page load. Most of the search criteria presented as combo box providing ability to search on multiple values for single field.

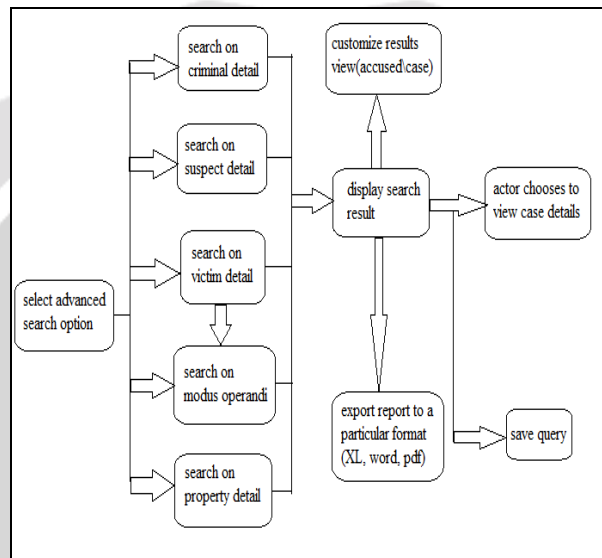


Figure 7: Advance search

4.5 Configuration Module

It helps administration to maintain the system on daily basis. Police department update the data as per need. This is interface that system provided to administration staff after login in the system. They need to configure:

- a) Configure acts/sections
- b) Configure additional data element specific to the state acts
- c) Configure MO/Property
- d) Configure Police Organization Structure
- e) Configure Court FSL/FPB
- f) Configure templates
- g) Configure User

5. ARCHITECTURE

The architecture of the system will have the three phase layout as follows:

5.1 Presentation view:

1. The Presentation view logic will be responsible for the, presentation of the information.
2. The user attraction point will be the architecture view of the presented portal and the complexity of the page.
3. The UID registered or generated from the portal will be easily allow them to get accessed.
4. The data shown to the user or the administrative part will be the main content which are supposed to be secured for the external affairs.

5.2 Business Views:

1. The portal will give the different services to the user as per their requirements.
2. The modules will be activated based on the UID verification at the login stage.
3. The nearest area center's server's will take care of the data generated form the portal.
4. The various new registration updates be made through the online application available over the portal.
5. The portal information should be made available at the data collection point.

5.3 Database View:

1. The database view of the system will be the most complex and necessary view of the system.
2. The all data of the citizen registered will be collected at the center trough portal.
3. The logic used behind this will be the UID, which will be compulsory for the every citizen who is registering to the system.
4. The Database has the Unique ID as their UID Number or anything else that could be made available to all as a Proof of the locality.
5. Further, the data generated from a particular number of the station will be handling by the only.
6. The records, application form and other documents can be accessed from the digital locker of registering citizen.

6. TECHNOLOGIES

To make the system more effective the technologies used should be faster enough, respective to development and technologies are also responsible for the faster system deployment in action.

Technologies are used as follows:

- **IDE supporting Java:** For system development.
- **Database:** The information generated and available are stored.
- **Apache:** The Webserver used for the Server based Functionalities.
- **HTML & CSS:** The system representation is a important aspect for the user friendly representation logic.
- **AJAX:** Used for the Dynamic web page creation.
- **JavaScript:** To implement the view logic of the system.
- **Protocol:** The protocol used for the data sharing and the information security.
- **Cryptography:** The cryptography is used for the Information security and data encapsulation.
- **Datacenter:** The Server will have a big load onto them; hence the datacenter will be a better plan to handle them as well as to maintain the security too.

7. IMPLEMENTATION

The easier system will be, the highest preferable, as the need of the administrative body the system should have the basic easiest idea behind the working module and the relationship between them too. The database will be made in such a way that the:

1. User will have to register with the portal available from gov.

2. The UID based registration will be accepted, which will be the login ID of the user.
3. The all activities will be catch through the portal.
4. The database based on the user UID will be made at the datacenter's.
5. The logic behind the storage and the huge data collection can be easier with the already available information.
6. The portal will make the history all the all live activity happening over it.
7. The user interface will be very responsive, that it will make the system very easier.
8. Various Encryption techniques can be used for the data security

8. FUTURE SCOPE

The project is proposed from the need of the local and high level administrative bodies as per the survey, since the easiest system should be there with all functionalities, if we are deploying it for the citizen. The major scope of the system is like:

- A new proactive system which will make the system to be perfect.
- The projects like the Smart City and the Digital India will get the idea regarding the user and body requirement in the fastest growing era.
- The database of the crime and citizen will be there with a Unique Identification.
- The User will be satisfied with the services and transparency in it.
- The Right to information mission will be accomplished with the highest Improvements in the citizen regarding the political mess and the system status.
- The works like the Passport verification module will be easily found to be in action.

9. SOCIAL IMPACT

As we all know, this is 21st century, digitalization has engrossed in every part of the world. Also internet Of Things: collecting smart objects is evolving day by day.

There are some issues encountered during the basic training and troubleshooting the training of Police Officers. Issues involving in the Police Department are lack of smooth conduction of training. Also there was lack of interest in officials to learn the new technologies. A huge amount of public money was invested in this networking system. At initial stages this system did not give citizen centric provisions. Only inter police communication was available and citizens were not able to participate in this technology.

In our project: "Enhancement in CCTNS System", there are two portals connecting each other i.e. Admin Portal and Citizen Portal. Every police officer is being registered with this system. Also citizen can get registered easily and can share their views, case FIR, view the status of the case. A helpdesk is also provided for this application so that easy communication takes place between citizen and police.

10. CONCLUSION

We strongly believe that such a portal will revolutionize the way law and order of the cities is handles currently. This portal will help the citizens to get the information of all their nearby stations details. The system provides a systematic way to handle all the cases, and to keep the records of criminals. This system provides an efficient and effective way handling law and order for all the users involved in the system and thus this online interface has a high commercial viability. This paper has a wide scope among police security and law and order. The

portal discussed in the paper can be used at a national level, the systems can be very useful to police department as they can share the data instantly and also data from every corner of the country is available where needed.

11. ACKNOWLEDGEMENT

We want to give our special thanks to our mentor **Shri.Sachin Thanekar**, Assistant Professor,AVCOE,Sangamner for being our mentor and guiding us in our project at each step. We also want to thank Sangamner Police station department for helping us by providing relevant material information concerned to project and giving us opportunity to work with them. We also want to thank our Institute for giving us opportunity to make this project a success.

12. REFERENCES

- [1] Anindita Mukherjee Swagata Ray, Upasana Maity, Puja Talukder, Priyanka De, "Law And Order Automation", International Journal of Engineering Research Technology (IJERT), Vol. 2 Issue 5, May - 2013, ISSN: 2278-0181
- [2] Yin Hao, Fu Qiang, Lin Chuang, Tan Zhangxi, Ding Rong, Lin Yishu, Li Yanxi, Fan Yanfei, Tsinghua "Mobile Police Information System Based on Web Services", Science and Technology, ISSN 1007-0214 01/21 pp1-7, Volume 11, Number 1, February 2006
- [3] Astrid Lubinski, "Security issues in mobile database access", Computer science department University of Rostock, D-18051 Rostock, Germany.
- [4] Jules G. McNeff, "The Global Positioning System", IEEE Transaction on Microwave Theory and Techniques, VOL. 50, NO. 3 MARCH 2002.
- [5] Mikal bjorkbom, Jussi Tmonein, Huseyinyi Itler, Ossi Kaltiokallio, Jose m. Vallet Garcia, Matthieu Myrsky, Jaril Saarinen, Marko Korkalainen, "Localization Services for Online Common Operational Picture and Situation Awareness", IEEE access date of publication October 25, 2013.
- [6] Deepak Kapgate, "Wireless Criminal Tracking System using Mobile Computing", 2nd National Conference on Information and Communication Technology (NCICT) 2011 Proceedings published in International Journal of Computer.
- [7] Basil B. Mathew, "Aadhaar Project: A Critical Analysis", Online International Interdisciplinary Research Journal, {Bi-Monthly}, ISSN2249-9598, Volume-IV, Issue-I, Jan-Feb 2014.
- [8] Ghan Shaym Bansal, Apoonam Gupta, "Haryana -Impacting life of citizen through effective E-Delivery of Services", informatics.nic.in, July 2012.
- [9] Richee Sing IIM- calcutta, " Crime Record Management System CCTNS for U. P. Police", Rakshak Foundation, May 2013.
- [10] Prof. L. S. Sharma, C. Lalnuntluanga, "E-Governance Initiatives In Mizoram: An Overview", International Journal of Management and Social Science Research Review, Vol.1, Issue.11, May - 2015.
- [11] Manish Gupta & B. Chandra, "A Framework for Intelligent decision support system for Indian Police", Journal of Enterprise Information management, Vol.27, No.5, 2014, pp. 512-540.
- [12] Anjali Agarwal, "Data Protection and Privacy Laws", The International Journal Of Science & Technoledge (ISSN 2321 – 919X).
- [13] National Institute for Smart Government, Terms of Reference on Providing Consultancy Services for

Crime And Criminal Tracking Network System(CCTNS), A Project of Ministry of Home Affairs (MHA).

[14] www.niit-tech.com, "Crime and Criminal Tracking Network System Government of India and NIIT Technologies partner to digitize police records.

[15] E-Governance mission mode project(MMP) Crime and Criminal Network Tracking System, Rfp For Selection Of System Integrator, Volume –I: Released By: Delhi Police Government of Delhi.

[16] Khuram Mushtaque, Kamran Ahsan, Adnan Nadeem, Ahmer Umer, "Critical Analysis for Data Privacy Protection in Context of Cyber Laws in Pakistan", Journal of Basic and Applied Scientific Research, 4(10)1-4, 2014, ISSN 2090-4304.

[17] S.R.Deshmukh, Arun S. Dalvi, Tushar J. Bhalerao, Ajinkya A. Dahale, Rahul S. Bharati, Chaitali R. Kadam, "Crime Investigation using Data Mining", International Journal of Advanced Research in Computer and Communication Engineering Vol. 4, Issue 3, March 2015.

[18] Prof. Hanmant N. Renushe, Prof. Prasanna R. Rasal, Prof. Abhijit S. Desai BVDU "Data Mining Practices For Effective Investigation Of Crime" Prof. Hanmant N Renushe et al ,Int.J.Computer Technology & Applications, Vol 3 (3), 865-870, ISSN:2229-6093.

[19] Tata Consultancy Services, "Introduction To CCTNS".

[20] Balbir Kumar, "Role of Information and Communication Technology In Indian Police", GIAN JYOTI E-JOURNAL, Volume 1, Issue 2 (Jan – Mar 2012) ISSN 2250-348X.

[21] NASSCOM-DSCI Cyber Security Advisory Group Report, "Securing Our Cyber Frontiers".

[22] Nitin Nandkumar Sakhare , Swati Atul Joshi, "Classification of Criminal Data Using J48-Decision Tree Algorithm", IIJDWM Journal homepage: www.ifrsa.org.

[23] Social Statistics Division Central Statistics Office Ministry of Statistics & Programme Implementation Sardar Patel Bhavan, Sansad Marg New Delhi – 110001, "Report of the Committee on Crime Statistics".

[24] Puneet Kumar, Dharminder Kumar, Narendra Kumar, "ICT in Local Self Governance: A Study of Rural India", International Journal of Computer Applications (0975 – 8887) Volume 83 – No 6, December 2013.

[25] Dr. Vikesh Sethi, "Role of ICT in Police Force in India", International Journal of Advanced Research in Computer Science and Software Engineering", Volume 3, Issue 11, November 2013 ISSN: 2277 128X.