



International Journal of Multidisciplinary Research in Science, Engineering and Technology

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)



Impact Factor: 8.206

Volume 9, Issue 4, April 2026



Digital Crime Reporting: Fir Management and Online Complaint System

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ABSTRACT: In this paper, a digital system of online crime reporting and FIR tracking is introduced to enhance accessibility, transparency, and efficiency of managing the safety of people. The old system of crime reporting involves citizens walking to the police stations, which causes delays, manual mistakes, and lower reporting rates of crimes, particularly in rural units. In an effort to overcome these problems, the proposed system will give users the option of filing complaints online, checking the status of FIR in real-time, and contacting the law enforcement directly via a secure web-based system. It is created in Java, NetBeans IDE, and MySQL with some features like user authentication, role-based access control, FIR filing and verification modules, and administrative dashboard. It also facilitates SMS or email notifications to enable users to know the progress of a case. The platform will decrease paperwork and improve the quality of data and communication between citizens and authorities by digitalizing the FIR lifecycle. The experimental assessment reveals that the system has a considerable impact on the time spent on complaint processing and has a high level of transparency. More so, it helps in future upgrades like AI-enhanced crime forecasting, mobile connectivity, and multilingual access, which makes it a scalable system to be utilized in smart city settings and contemporary digital policing.

KEYWORDS: Online Crime Reporting, FIR Management System, Digital Policing, E-Governance, Web-Based Application, Crime Tracking, Public Safety, Database Management System.

I. INTRODUCTION

Effective crime control and safety to the population are important issues of the contemporary government. The conventional criminal reporting mechanisms are however not always effective as citizens will have to visit the police stations, use written complaints and wait to be processed. This manual system is time consuming, not very transparent, and does not encourage many people to report crimes, especially in rural and remote regions. Consequently, reporting lags and inaccessibility decrease the overall efficiency of law enforcement.

As digital technology continues to develop rapidly and the use of the internet becomes commonplace, there is a growing need to streamline crime reporting systems. Digital platforms can make this easier by allowing the citizens to report the cases online, get information as it comes, and get updates to their complaints in real-time. These systems enhance both the public-law enforcement agencies communication and maintain accuracy and accountability in data processing.

The present paper suggests a Digital System of Online Crime Reporting and FIR Tracking, which is based on a web-based application written in Java and MySQL. The system enables users to submit complaints, monitor FIR status, and communicate with the authorities effectively. The proposed system helps to ensure better public safety and build intelligent and safe cities by minimizing the amount of manual intervention and increasing the level of transparency.



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II. REVIEW OF LITERATURE

The use of digital technologies in managing crime and in maintaining community security has been of great interest in the recent years. Spencer and Butler (2010) also clarified the significance of smart city projects, referring to the influence of digital public services on the better organization of urban management and interaction with the population. Their effort highlights the need to embrace technology-based solutions to effective delivery of services in the public safety systems.

Cicirelli et al. (2017) suggested an edge-based platform of dynamic smart city applications and revealed how distributed computing models could facilitate real-time data processing and responsiveness in civic services. Their results imply that large-scale digital infrastructures are the key to handling big quantities of publicly available data, including crime-related data.

The article by Sherazi et al. (2019) concerned the topic of communication security in Internet of Vehicles (IoV) settings and highlighted the need to have secure and resilient systems when it comes to applications facing the public. Their research indicated that protection against cyber threats like Distributed Denial of Service (DDoS) attacks are necessary, and this is important in terms of assuring reliability within the online crime reporting systems.

The Iqbal et al. (2019) study covered the topic of managing trust in a social IoT setting and gave an insight into the role-based access control and secure user authentication methods. The ideas can be directly applied to digital FIR systems, where various stakeholders demand a regulated access to sensitive data.

Moreover, Butt et al. (2020) have developed a systematic review of the spatio-temporal crime hotspot detection by highlighting the role of data analytics in crime-related data analysis. Yi et al. (2018) introduced models that combine both the temporal and spatial aspects of crime prediction, which showed that predictive analytics can be used to improve the law enforcement approach.

Although these developments have been made, most of the available systems cannot be used easily, with real-time tracking, and combined with a system to manage complaints. The system proposed will fulfill these gaps by providing an all-inclusive, secure and accessible online crime reporting and FIR tracking platform.

III. PROBLEM STATEMENT

This conventional method of reporting crimes and registering First Information Report (FIR) is mostly manual and ineffective and poses a big challenge to both citizens and police force. People have to physically go to the police stations, wait long queues and present handwritten complaints which is inconvenient and time-consuming. This practice tends to scare individuals against reporting crimes early enough, especially in rural and remote communities whereby there is less access to police stations.

Moreover, the lack of a mechanism of real-time tracking does not allow the complainants to track the status of their cases, which results in the lack of transparency and trust in the system. The paper-based record-keeping system is more prone to loss, duplication, and errors that make it hard to retrieve, analyze and manage case information effectively. Moreover, ineffective communication between citizens and law enforcement agencies slows down the response time and generally influences the efficiency.

These limitations highlight the urgent need for a digital solution that can streamline the FIR filing process, ensure secure data management, enable real-time tracking, and improve accessibility. These problems need to be addressed in order to increase the level of trust in the population, enhance the level of reporting, and make the contemporary crime management system more effective.

IV. PROPOSED SYSTEM

The system proposed is centered on the Digital Crime Reporting that includes FIR management and Web-based complaint system. It enables the users to report crimes, monitor FIR status, and get authenticated information. The



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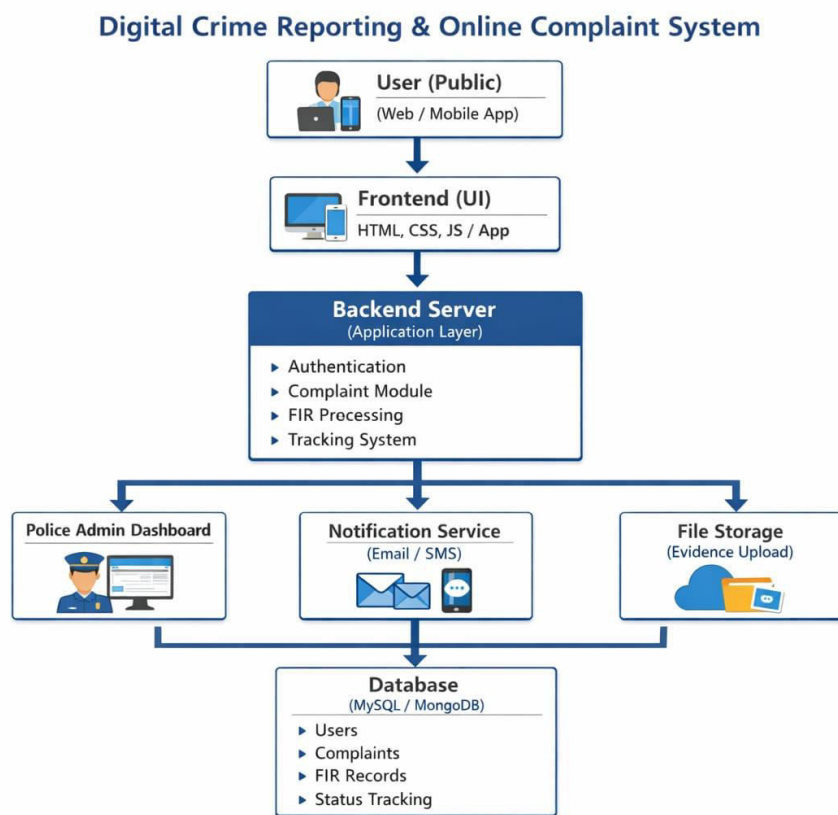
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system also enhances public safety and communication by giving real-time updates and having a smooth reporting process.

Advantages:

- All the data will be stored into database.
- The records can be easily kept.
- Police department and people relationship will be improved.

System Architecture:



The figure illustrates the process of a Digital System of Online Crime Reporting and FIR Tracking. The process starts with the Login module, where the user (citizens or an authorized official) would authenticate himself with valid credentials. Secure login is to make sure that the system is only accessed by registered users, who are able to post or check sensitive information on the system concerning the crime reports and FIR status.

Once a user has successfully logged in, he or she is allowed to access various functional modules of the system. Crime Area module enables the user to access information about crime based on geographical regions. This assists in crime prone areas and gives awareness to the masses and the government. Post Crime module allows users to report a crime on the web by providing information like the type of crime, location, description and evidence (where available). The Missing People module gives the opportunity to report missing people and search existing records on missing people, enhancing the involvement of the population in the search of missing persons.

All the data that is keyed in by these modules is secured in the Database. The database serves as the main storage that houses crime reports, FIR records, missing persons information and user information. It aids in the retrieval of data, updating and tracking FIR status in real time thereby promoting transparency and efficiency in reporting crime.



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Once data processing is done, the system will carry out a decision or verification, whereby the information provided can be checked or checked by authorized officials like police officials. On this validation, it is possible to update the FIR status and make it visible to the user to track it.

Lastly, when the user is through with the necessary operations, the process is terminated with the Logout module. Leaving the company is a safe measure as it averts unauthorized access and protects sensitive information. All in all, this online system makes crime reporting easier, increases the level of transparency in the tracking of FIR, and it also allows better communication between citizens and law enforcement agencies.

Modules / Features

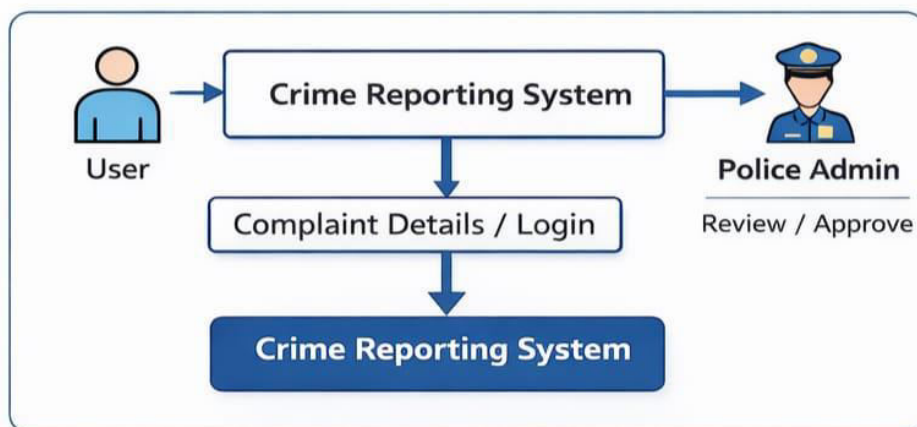
1. Registration of users and authentication: Citizens and the police officials are able to register as well as log into the system safely.
2. FIR Filing Module: This allows users to include detailed complaints, descriptions, types of crime and attaching images or documents.
3. FIR Verification Module: Complaints are vetted and confirmed by the police authorities and an FIR is registered.
4. FIR Tracking Module: Complainants will be able to monitor the course of their FIR.
5. Notification System: SMS or email notifications to inform users on status change or actions performed.
6. Admin Dashboard: Allows authorities to handle complaints, track trends and create reports.

The conventional method of crime reporting and FIR registration is time-consuming, cumbersome and non-transparent and citizens find it hard to file complaints effectively and monitor its advancement. In response to these issues, this project suggests a digitalized version of online crime-reporting and FIR-tracking that will allow users to make complaints via a secure and user-friendly application. Citizens are able to give detailed information on the incidents, describe, categorize and provide supporting documents, and police authorities are able to check, record and keep FIRs online. The system also enables the real-time tracking of complaints to keep the user abreast with the changes in status, updates of the complaint, and steps taken through notifications. The system will enhance accountability, minimize manual paperwork, and allow the authorities to track trends in crimes more efficiently by incorporating secure authentication, database management, and optional analytics. The process can be further optimized in the future with the integration of mobile applications, AI-driven complaint classification, and geolocation of the incident, and with more analytic dashboards that can deliver actionable information on preventive measures. In general, this online platform will help to address the gap between citizens and law enforcement agencies and enable crime reporting to be quicker, more open, and available to everyone, creating a safer and more responsive community.

Data Flow Diagram:

Level 0:

DFD Level 0 (Context Diagram)



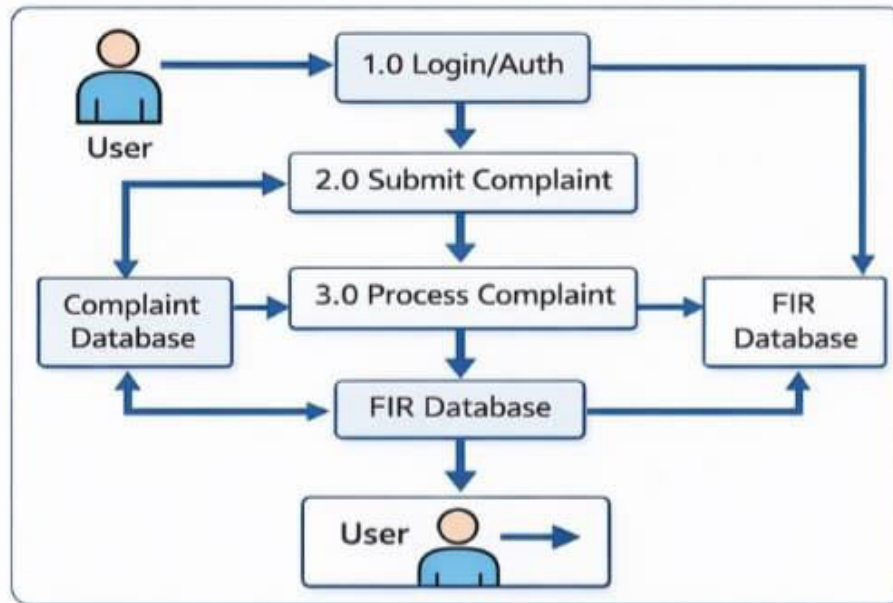


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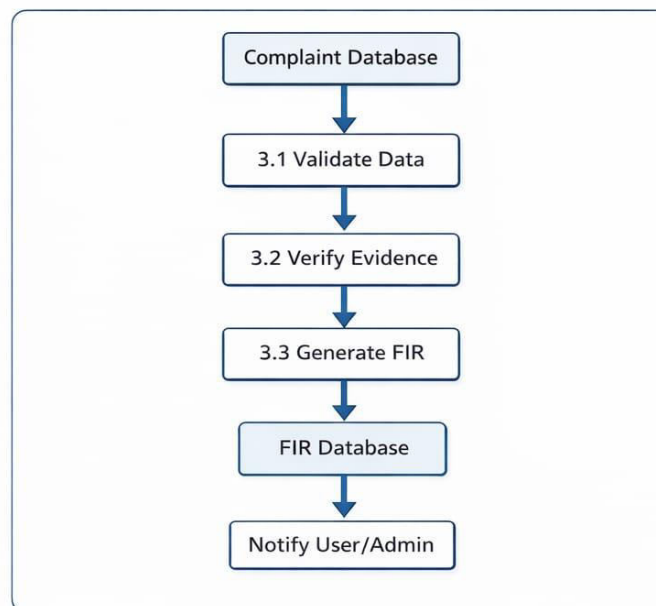
Level 1:

DFD Level 1 (Detailed)



Level 2:

DFD Level 2 (FIR Processing - Detailed)



V. IMPLEMENTATION DETAILS

The Digital System of Online Crime Reporting and FIR Tracking is a web-based application that is implemented with Java as the main programming language. Java is chosen due to its platform independence, object-oriented capabilities



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and rich library, which allows creating a secure and scalable system. The code is written in the NetBeans Integrated Development Environment (IDE) which offers a code development, debugging, graphical user interface design, and easy database integration features.

The system is based on a layered client-server architecture that comprises of presentation, business logic and data layers. The presentation layer offers user friendly interfaces to the citizens, police officers and the administrators. Business logic layer deals with basic business functions including user authentication, submission of complaints, verification of FIRs, and management of notifications. It uses MySQL relational database, which is administered using SQLyog to guarantee the efficient data storage, retrieval and integrity.

The main modules are user registration and authentication, filing of FIR, its authentication, real-time tracking, and administration dashboard. Role-based access control makes sure that users can access only functions that they are authorized to do. The notification services are also incorporated in the system to update the users with updates via SMS or email.

The hardware requirements consist of a standard computing setup that has at least 4 GB RAM and Windows as the operating system. The Java Development Kit (JDK), NetBeans IDE and MySQL database tools are the software requirements.

In general, the implementation of the system guarantees safe data processing, effective processing, and consistent system performance, which can be adopted in real-world applications in digital policing settings.

VI. RESULTS AND DISCUSSION

The Digital System of Online Crime Reporting and FIR Tracking was tested in simulated real-life conditions and used by several users (citizens, police officers, administrators). The system effectively enabled the major functions like registering users, filing complaints, verification of FIR, real time tracking, and generation of reports. The outcomes show that the efficiency has increased significantly as compared to the manual system.

The duration of filing complaints was also cut to a few minutes as users were able to file complaints online without visiting the police stations, unlike before when the process used to take several hours. The adoption of centralized database enhanced accuracy of data, reduced redundancy and allowed rapid access to records. The introduction of real-time tracking functionality increased the level of transparency as people were able to track the status of their complaints without any direct contact with authorities.

More so, the system enhanced communication between citizens and law enforcement agencies by automated notification and through digital interfaces. The administrative dashboard was useful in terms of crime patterns that can be used to make a better decision and allocate resources.

Overall, the proposed system demonstrated enhanced performance in terms of accessibility, transparency, and reliability. These advancements help to build a higher level of trust in the population and emphasize the possibility of efficient implementation of the system in the current digital policing and smart city settings.

VII. FUTURE ENHANCEMENT

Crime Prediction and Analysis with AI: The system will predict crime hotspots and trends based on historical data using artificial intelligence (AI). This would allow the law enforcing agencies to use resources in a proactive manner and deal with any possible criminal activities before they escalate.

Secure FIR Management Blockchain: Introducing blockchain technology will increase the level of transparency and security in the system. Blockchain would make sure that all complaints and investigations are inaccessible and will be recorded as they are, giving a record of everything that was done in the process of complaint and investigation.



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Voice and Chatbot Integration: It should also be used as a voice recognition interface and chatbot so that users can report crimes or make complaints more easily, particularly those with issues using text-based systems. It may also make the system more approachable to the disabled or senior citizens.

Mobile Application to Report Crimes: A mobile application would allow users to report crimes, provide multimedia evidence (photos, videos, audio) and follow the progress of their complaints on their smart phones. The combination of the location-based services would automatically label the location of the user, which would make reporting easy.

Real-Time Notifications and Tracking: The real-time notification of the status of complaints and FIRs will enhance transparency. Automatic notifications will notify victims and complainants through SMS, email or app notifications, so that they are kept updated during the investigation.

Multilingual Support: To enjoy a larger user base, the platform may also have multilingual support so that people with different linguistic backgrounds can easily log on to the site and report crime in their own language.

Cross-Jurisdictional Reporting: This is a feature whereby complaints are automatically directed to the appropriate jurisdiction (local, regional or national authorities) to facilitate faster response and timely resolution of cases by the corresponding departments.

Cybercrime Reporting and Analysis: The system would be fitted with specific tools and interfaces to report cybercrimes including hacking, online frauds or identity thefts. Digital evidence associated with cybercrimes could also be analyzed through AI and give quicker and precise investigations.

VIII. CONCLUSION

The online crime reporting and FIR Tracking Digital System offered in this paper was created to address the weaknesses of the traditional manual systems of crime reporting. The suggested framework will allow citizens to make complaints online, monitor the status of FIR in real time, and interact with the law enforcement agencies in an effective and safe environment. The system is very convenient and easy to access, as there is no need to make physical visits and less paperwork is required.

The centralized electronic database will improve accuracy of the data, provide security in storing data and provide efficient access to information. The improved transparency, accountability, and operational efficiency are provided by features like role-based access control, real-time notifications, and an administrative dashboard. Improved decision making is also facilitated by the system as authorities can analyze trends of crime and can distribute resources efficiently.

The findings indicate that the suggested solution can minimize reporting time, improve communication and the level of trust in the crime management process among the population. Moreover, the system can be expanded, and it can be scaled with the latest technologies like artificial intelligence, blockchain, and mobile integration.

Altogether, the suggested system offers a stable and effective method of updating crime reporting and assists the building of safer and smarter communities.

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