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Secure Complaint Lodging and Tracking Portal: A Review

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ABSTRACT: India is experiencing a sharp rise in crime. According to the National Crime Records Bureau, India's crime rate went from 383.5 in 2018 to 385.5 in 2019 to 383.8 in 2020. In 2021, India reported 52,974 cybercrimes, a rise of over 6% from the previous year. A large number of these offences go unreported. Individuals may have different justifications for not reporting crimes, including concerns about family honor, distrust of law enforcement, threats and harassment from the offender, and concerns about privacy (identification disclosure). Nowadays, women are the most frequently targeted individuals for cybercrimes, and their vulnerabilities are taken advantage of. Our mission is to create a blockchain-based complaint management system that enables anonymous case filing, online proof submission, and secure storage of created FIR copies without requiring personal visits to the police. Before filing a complaint, a person is authenticated in order to disprove the idea of a phoney complaint. The possibility of an FIR being tampered with and being unreported would be eliminated by keeping all the entries in an immutable database, such as a ledger.

I.INTRODUCTION

Offenses in India: All complaints or infractions must be reported to the law in India. Indian infringements fall into the following categories.

1.Cognizable offenses: These offences include major crimes including murder, theft, kidnapping, and rape. If a suspect or offender is found guilty of a cognizable felony, authorities may detain them without a search warrant. An FIR can be lodged at the station by victims or by others who observed the crime. The FIR will include the victim's name, residence, and the date, time, and location of the assault. The inspector can begin the investigative process without any orders from the magistrates of court.

Figure 1: Current complaint noting way(major)



2.Non-Cognizable offenses:

These transgressions cover things like forgery and cheating, along with other things. Without a magistrate's warrant, a police officer cannot make an arrest for a non-cognizable offence.

The current policing methods uses the pen and paper base system. The victim visits the police station and then files the complaint through the FIR. Then the official case investigation starts. In this system there are some drawbacks such as politicization, corruption and mindless denigration of police. We reasoned that if we could transit the administration to e-governance, these limitations would be erased. This can be accomplished by switching from a system that relies on pen and paper to one that should do the majority of its work online. The system we plan to create makes sure that the majority of police actions take place online. As a result, it fixes the problems with ethical policing that we discovered. The method we chose to create eliminates all political interference and official pressure on the police handling delicate and well-known cases. This lessens the amount of corruption that the department deals with while resolving cases. Complaints are transformed into FIRs, which are then stored on the blockchain with no manipulations permitted, making it the most secure method of doing so. All of the paperwork or case evidence that the victims have provided is likewise safely stored. Storing the FIRs and case related documents offline may have chances of being changes or stolen, through our system we intended to eradicate this drawback. Anyone who has been assaulted may register a complaint with the appropriate paperwork. Most often, women police officers deal with situations of sexual harassment of victims while protecting the privacy of the victims and sometimes providing the necessary counselling. The victim is periodically informed of case updates and the perpetrator will face punishment.

II.LITERATURE REVIEW

Some folks came up with concepts that are somewhat similar to the one we had. People from all across the world have conducted research and created projects related to our subject. We discovered and examined such projects and research papers that are still in existence today. They are described here

[1] Mir Shahnawaz Ahmad, Syed RameemZahraproposed a Model based on Security Framework for e- Policing. They described about the security issues in data stored in cloud. Muhammad BaqerMollah, Sikder Sunbeam Islam, Md. Aman Ullah. [2] Proposed e-police system for enhancement of e-government services of Bangladesh. They aim to upgrade the country's police administration to the world standard. The home ministry would be connected with the several police units of the city in a fiber-optic based metropolitan area network and a database will be setup for warrant notices, examining the finger prints using the latest electronic device etc

[3]Archana Iyer, Prachi Kathale, Sagar Gathoo, Nikhil Surpam have proposed to develop a system which provides an easily accessible android mobile application which forms the front end and a web portal for the police department. The complaints would be registered over the application. This idea was proposed in 2016.

[4] Prof. AninditaKhadeSanketYerigeri, Kaustubh Sonde, Shivaganesh Pillai in 2017 proposed the system of Online FIR registration and SOS project. It is designed to bridge the gap between the police and the common people. There are plenty of applications nowadays for shopping, travel and even for gaming purposes but there is no application for the purpose of registering FIR or for helping the people while facing emergency situations in 2017 effectively. They intended to create a system where the users could register an FIR under various IPC sections and inform the police whenever in an emergency situation.

[5] K. Tabassum, H. Shaiba, S. Shamrani and S. Otaibi in 2018 proposed an application that can be used by the individuals in Riyadh to report and manage the complaints effectively though an android application. Further the system can be used by the people to register the complaints and is helpful to the police department in identifying the criminals. The main purpose of the application is to improve the effectiveness and efficiency of interaction procedures between the police officials and common people.

[6]In 2020, Bárbara Aburachid Rocha proposed an Ethereum blockchain-based system for workplace harassment complaints and evidence tracking. It documents the whole procedure while creating and tracking evidence of all the actions until the complaint procedure is resolved. The proposed architecture has two proof-of-concept. One is a fixed



system that follows the guidelines of the Code of Practice Detailing Procedures for addressing bullying in the Workplace from Ireland and the other is a flexible system that can be used in different procedures.

[7] In 2020, Bárbara Aburachid Rocha proposed an Ethereum blockchain-based system for workplace harassment complaints and evidence tracking. It documents the whole procedure while creating and tracking evidence of all the actions until the complaint procedure is resolved. The proposed architecture has two proof-of-concept. One is a fixed system that follows the guidelines of the Code of Practice Detailing Procedures for addressing bullying in the Workplace from Ireland and the other is a flexible system that can be used in different procedures.

[8] In 2020, IshwarlalHingorani, rushabhKhara, Deepika Pomendkar, Nataasha Raul proposed a system “Police Complaint Management System” Using Blockchain Technology. In the system the victim can file a complaint for cognizable or non-cognizable offenses. And FIR is filed under the cognizable offenses and the direct action is taken by the inspector under non-cognizable offenses.

[9] Nicholas A. I. of Omoregbe Covenant University Ota Ogun State, Nigeria have made a project and analysed the urge to improve information flow and communication among stakeholders in NPF. The designed system shows that E-Policing will help in eradicating the barriers of manual policing system in Nigeria. The evaluation of E-Policing in Nigeria will be done by benchmarking it with the existing systems in the USA and other developed countries.

[10] A Real-time crime records management system for National Security Agencies was proposed by OludeleAwodele, Onuri Ernest E., OlaoreOlufunmike A., SowunmiOluwawunmi O. Ugo-Ezeaba Anita A. They believed that the need for a computerized platform for crime record management cannot be overemphasized. The CRMS enhances proper and efficient management of criminal records by the NPF thereby helping in making informed decisions and improving reliability thus improving law enforcement operations. This results in lower crime rate in the country thereby increasing national security.

In summary, the work presented in this paper is built on previous research to explore how security of data stored on cloud relates to people’s trust. While earlier work focused on data storage impacts people, we focus on its impact on the world-wide acceptance of cloud.

Relevance to My Project:After analyzing the existing approaches, we have identified some drawbacks in them. They are described as follows: At first, the documented FIRs are stored offline by using pen and paper. These documents can be stolen or can be tampered causing misleads in the case. Starting from 2011, people observed the need of securing the complaints data online as the hard copies may get destroyed after some time and there is no additional security for such documents other than the police. The people from various countries have tried to build an online based complaint management system to avoid the discrepancies. A project specifically was made for the women who are facing harassments at work but data in this project is not securely stored. In maximum of the projects or research papers, securing the FIRs was discussed but anonymity of the victim is ignored. Hence there may be chance of tampering the proofs submitted by victim or there may be chance of threats for the victim. In the projects made by previous scholars, there isn’t any option for women to select the investigators. This has to be taken care of, because the people in the society are not trusting the officials with their data and women feel secure if the case is dealt by a lady officer. Surveys proved that the concept of e-policing bridges the gap between the people and the police and it also speeds up the process of investigation. Indian Police System has remained devoid of web technology, with most works being carried out on a pen and paper basis. This traditional method is prone to delays and inefficiency. Thus, various mobile applications for developed to shift the work online but the security for such data is still a question mark. All the documents are made to store online in the crime portal management system as a decentralized network because accessing such data is much easier than accessing them offline. The Interplanetary file system (IPFS) is used in storing the documents offline to avoid the tampering of the case files but the identity of victim is not given any importance. Information about the updates of cases were ignored in above projects but that’s the high priority issue to be solved because victim has the right to know about the status of the complaint filed by him/her. Concept of Authentication is not used so this may lead to the generation of fake complaints and may cause disturbances if multiple cases are logged at the same time.



III.METHODOLOGY OF PROPOSED SURVEY

The proposed system is a decentralized platform for managing complaints with the help of various technologies like blockchain. The detailed architecture of the system is explained in the form of modules followed by the implementation of the system.

CONCEPT

Blockchain is a type of distributed ledger technology where every block stores the data or transactions and system validators validate each block with a consensus mechanism. Blockchain is decentralized, immutable, secure, transparent and anonymous. In this system victims can lodge their complaints online and the process of solving the cases is online too. People can complain about all types of cognizable and non-cognizable offenses. Most popular crimes include organized crime, illegal drug trade, arms trafficking, poaching and wildlife trafficking, corruption and police misconduct, crime over time and many more. Most popular cybercrimes include phishing scams, website spoofing, ransomware, malware, IoT hacking and fraud.

FUNCTIONING OF THE SYSTEM

In our proposed system a victim can complain anonymously. First a user will have to register with the unique ID, here we thought of using masked Aadhar and the virtual ID related to it in order to avoid fake complaints. The identity is verified here by matching the photo associated with ID and the photo captured using the live photo. If both match then only the authentication is confirmed, if not they should try again. The victim now can select their authority officer to generate a complaint. This point helps women a lot because they can go and select female officials and can share all the private and sensitive information without any doubt.

Lodge complaint: If a victim wants to complain, he/she has to provide the valid complaint details, like name of the accused and the valid proofs to the selected authority officer. Then the unique reference number is generated to the victim which can be used further to track the case. The complaint is stored in the blockchain network and the corresponding officer is notified. Along with it the valid proofs that are submitted by the victim are stored in the database for fast retrieval.

Storing the complaint: For storing the case proofs and the FIR generated we are using blockchain. After successful registration of complaints, user can track the status of the complaint. When the officer gets info, the officer starts the investigation process. Depending on the type of complaint, for cognizable offence the police can file the FIR with appropriate reasons. The FIR or the reason for discarding will be stored on the blockchain network. After the proof's verification, case is handed over by officials and they will solve it and the accused gets punished. In the whole process the identity of victim is only revealed to the investigator who is working on case.

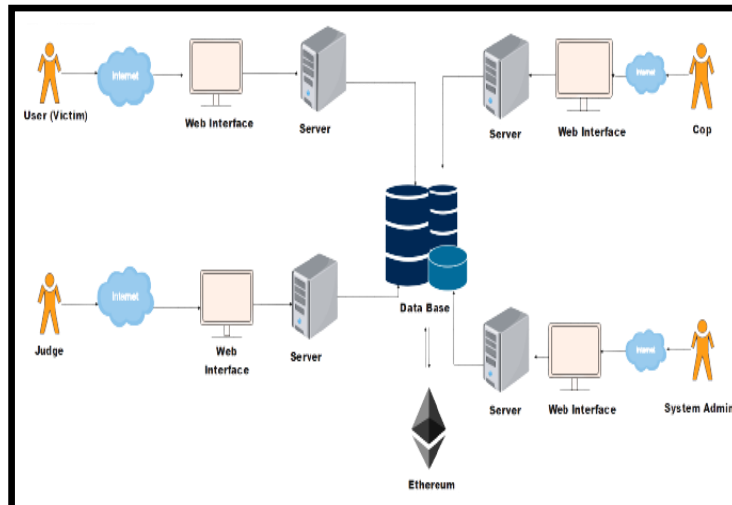


Figure 2: Architecture of proposed system

IV. CONCLUSION

An important aspect of our nation is the Indian Police Services. The Indian Police System has not adopted web technology, and the majority of tasks are still completed on paper and pen. There are more than 50 lakh complaints against offences that are cognizable each year. Even if there are processes in place to handle complaints online, police officers still have to submit handwritten reports, and society still views filing a complaint as being scary. Because police complaints contain sensitive information, managing them effectively and securely is essential. It is essential to have a computerised platform for managing criminal records. Our goal is to create a public complaint management system based on blockchain. With the important characteristics of blockchain like decentralisation, anonymity, immutability, transparency, reliability, and security, the suggested solution aids the victims in submitting their complaints in a trust- and tamper-proof environment. We want to create a fully integrated, small-footprint system that both the general public and law enforcement can use, giving them both something they can benefit from. By allowing them to make complaints without disclosing their identities, it ensures the victims' confidentiality. By maintaining the victim's privacy, it not only improves the security, effectiveness, and simplicity of the complaint management system but also safeguards the victim from the next accuser threat.

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