

# Crime Reporting and Citizen Safety

(A Flutter App for Crime Reporting & All-in-One Safety)

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**Abstract:** The present world is technology-driven as it is employed by many fields in the performance of their operation. In the case of law enforcement agencies, this is evident in the use of automated crime record management systems worldwide to keep a record of crime and criminals involved. Crime being an act against the law of a society is a threat to the well-being of the populace and so, requires efficient and effective monitoring. For this reason, Crime Reporting & Citizen Safety has been developed to achieve this purpose. However, traditionally, the reporting and management of crime records & complaints are majorly manual, which is, with the use of pen and paper. These records are therefore susceptible to destruction from pests and uncensored manipulation by both authorized and unauthorized personnel. This research aims to design and implement a computerized real-time application system. Crime Reporting & Citizen Safety enhances efficiency in correcting the problems earlier stated and it is an effective tool for easy analysis of data which will improve the law enforcement operations.

**Index Terms - Crime reporting, Dart, Firebase, Flutter, Location sharing.**

## I. INTRODUCTION

At present, there isn't a user-friendly app that can be used by both the citizens and police staff for Crime reporting or recording online. There is a lot of paperwork to be done for filing a complaint, maintaining records & evidence, etc. Also, there are no additional features for SoS (emergency) facilities, location tracking, and contacting nearby police stations. This application is used by citizens for reporting and management system that is easy, effective, and efficient to perform the report and management of crimes within Mumbai city.

Since the people do not find it convenient to go to police stations to register a case due to several reasons like security threats or lack of time. Also, some cases are not investigated due to a lack of proper evidence. This system allows the individuals within a city to register complaints and is helpful to the police and security department in identifying criminals. This application can improve the efficiency of the security system in a city and case solving procedures could be enhanced to achieve better results. Crime Reporting and Citizen Safety is a smartphone application that can allow individuals within Mumbai city to report their complaints to Police officials. It can provide the management of crimes for the Police at any time from any place in the world. Thus, it's a useful comprehensive crime reporting system to the public, police, and government agencies that offer more quick, proactive, and responsive results to fight crime and criminals. Previously, this has been a paper-based process, and paper records were easily manipulated or lost. The procedure includes receiving an online complaint followed by routine investigation and gathering of evidence online/offline by a unit of the police force.

This proposed system aims to develop an application in such a way that it will help the Police to maintain the record of complaints efficiently and it will be helpful for the citizens to submit a complaint through their smartphone from anywhere in the city rather than going to the police station.

Some of the main objectives of the project are as follows:

1. Reducing time taken to report a crime.
2. Fast and thorough complaint registration by citizens is possible.
3. Police officials can easily access and monitor the received complaints.
4. Data is safely stored in the backend Google database- Firebase, thus being secure.
5. App consists of a User-friendly interface.
6. Emergency SoS feature allows user to send their location to family and friends swiftly, in times of emergency.

## II. LITERATURE SURVEY

The paper [1] published by Dr. Kahkashan Tabassum provides features such as – Interface & Client-side Implementation, Server-side & Database implementation, Authentication Implementation, Performance & Compatibility testing, etc.

The paper [2] published by Peter Stephenson provides the following information - Evidence is, often, difficult to isolate and attribute to a specific individual. As storage becomes cheaper and average users tend to have larger and more diverse storage devices, the task of the digital forensic investigator becomes increasingly difficult. Thus, large-scale and secure database storage services such as Firebase prove useful in such scenarios. This paper also covers topics such as - Cybercrime assessment construct & process, Cyberstalking, Misuse of a company computer/cell phone, Application of crime assessment in the physical world, etc.

The paper [3] published by Teddy Mantoro explains in detail about utilizing mobile phone technology as a means of detection of the crime scene that can be read by the central police station and the information that comes into the office can be forwarded to the police station nearest to the scene of the crime. It also explains Location-Based Pull & Push Services.

The paper [4] published by Alicia Iriberry reports on the evaluation of a crime reporting and investigative interview system, i-recall. i-recall emulates a police officer conducting a cognitive interview (CI). It incorporates CI techniques to enhance witness memory retrieval and leverages natural language processing technology to support understanding of witness narratives. Thus, this project proposed an application for efficient Crime Reporting & All-In-One Safety purposes.

The paper [5] published by Aderonke Busayo Sakpere presents a system developed to enable residents of a university community situated in a technology resource-constrained environment to facilitate secure and covert crime reporting. They focus primarily on the usability of the application. The system was developed based on a user-centric iterative approach.

The paper [6] published by Kefilwe Mkhwanazi proposes an automatic crime reporting and immediate response system that is developed based on system integration which combines Raspberry Pi, Microsoft IoT, mobile application, and web application. The automatic crime reporting system has an incredible potential to assist informers to report crime anonymously or by providing their details using mobile phones. It also assists police to provide proper security and reduces the manual work in crime reporting.

The paper [7] published by Worapot jakkhupan proposes the web-based criminal record system aims to improve the traditional system of Hat Yai police station. The proposed application facilitates the police to record the location of crime using location-based services embedded in the mobile device. Moreover, police can capture the files such as images using a camera or sound using sound recording. The crime record can be submitted to the data center through a secure network connection using HTTPS.

This proposed system has taken inspiration from [8] Problem Statements released by Smart India Hackathon 2020.

### III. PROPOSED SYSTEM



#### DESCRIPTION:

Fig 1: System Architecture

The proposed system includes two parts- Client Section & Admin Section. The client Section includes the front-end user interface of the application. Whereas the Admin Section includes the backend architecture using Firebase.

#### CLIENT/USER SECTION:

Step 1: User Have to Start the Mobile Application. After this user will be taken to the welcome screen of the app

Step 2: User has to first register in-app and then following this user have to login as well

Step 3: User must enter username and password to login into the Application. Users can Sign In through a google account as well.

Step 4: After logging in successfully the user will be taken to the home screen of the application from where users can use the following functions which are as follows:

1. Complaint Registration: Citizens can submit a complaint through the app.

2. Mumbai Police e-complaint website: Official Mumbai Police website is available in the app so that users can also access that site through the app and can register a complaint.
3. Children and Women safety website: A dedicated button for children and women's safety is added to the app. So, by clicking on this button users are directed to their official websites.
4. Lost and Found: He /She can either register a complaint and upload photos, proof, or evidence of any lost and found object.
5. Mumbai Police Station Contacts: The list of police station contacts in Mumbai city will be provided for the user from which they can call the police stations near them. And when the user will press on the contact it will be redirected to the caller app.
6. SoS: In this proposed system there is an SoS button in the app, by pressing it the user details along with the user's location can be provided to the police.
7. Fire Store DB: This is the backend of the proposed system which will be used for storing the users' data.
8. My Emergency Contacts: The user must enter his/her family or friend contact info. These contacts will receive an SoS message when you tap on the SoS button when you tap on emergency.

#### ADMIN SECTION:

Step 1: Admin can log in through his/her custom E-mail id.

Step 2: Then the admin is directed to a home screen page where there are two tabs - Registered Complaints List and Lost and Found List.

Step 3: Admin in the Registered Complaints List tab can review the complaints which are registered by citizens and act accordingly.

Step 4: In the lost and found tab admin can review the lost items that are registered by citizens

Step 5: They can make online case registration for any complaint received. They can view the information about who has submitted cases and whether sufficient evidence is provided by the complainant so that further investigation can be done.

Step 6: Admin can download images using the download button.

#### IV. METHODOLOGY

Crime Reporting & Citizen Safety App is designed in such a way to eliminate the need of submitting complaints by physically being present in the police station. Thereby, reducing the time required for the overall process and increase the efficiency of existing complaint submission processes. The project is divided into the following modules:

##### MODULE I: A MOBILE APPLICATION (USER INTERFACE)

The frontend is built with Flutter Framework and for the database, Firestore DB is used. Dart is the programming language used to code Flutter apps. Fast Development – Helps to bring the app to life in milliseconds with Stateful Hot Reload. Uses a rich set of fully customizable widgets to build native interfaces in minutes. Expressive and Flexible UI - Quickly ship features with a focus on native end-user experiences. The layered architecture allows for full customization, which results in incredibly fast rendering and expressive and flexible designs.

1. On starting the app, the user is greeted with the Welcome Screen.
2. After that Intro Screen is displayed to help the user get a better understanding of how the app functions.
3. Then, the login screen is displayed, where the citizen has to enter a username and password to sign in to the application. A citizen can sign in to the application using their Google account also, or can also register a new account.
4. Also, user can reset their password.
5. After Sign in user can see the Home Screen of the app, which contains the core functionalities and services, such as – Lost & Found tab, E-complaint tab, Emergency contacts tab, SoS button, etc.
6. Admin can log in with their email id, then they can check complaints registered by the citizens and have the authority to accept or reject the complaint.
7. Admin after sign in can see the home screen of the app which contains features like the Registered Complaint List tab and Lost and Found Tab.
8. A carousel slider is placed at the top of the home screen, which contains images that act as helpful tips, reminders, notices to citizens.
9. There is a navigation drawer placed at the top left of the home screen; which contains the User Profile & Mumbai Police Website features.

**MODULE II: CLOUD STORAGE – GOOGLE FIREBASE**

Google Firebase is used for backend cloud- storage service. Its features are as follows: -

Build – Accelerate and scale app development without managing infrastructure.

Release & Monitor - Release with confidence and monitor performance and stability.

Engage - Boost engagement with rich analytics, A/B testing. and messaging campaigns.

Execute CRUD operations on the database.

Receive real-time updates of data that is pushed to the database.

Data from the backend can be easily fetched and then used for further processing. User's authentication details are saved in the database in a secure and structured manner.

**MODULE III: EMERGENCY LOCATION SHARING**

The app includes location services with the help of geolocation, geocoder packages, which enable to get the user's current location coordinates continuously while using the app at limited accuracy to save power. These coordinates in turn help to identify the user's current address, which can then be later used for sharing directly to emergency contacts such as family and friends in case of emergencies.

1. Geocoder package - Forward and reverse geocoding.

2. Geolocator package - A Flutter geolocation plugin that provides easy access to platform-specific location services.

**V. CONCLUSION**

Crime Reporting and Citizen Safety application provide a simple and user-friendly interface. This paper discusses the development of the interface that will help citizens in Mumbai city to communicate with security services (police departments) quickly and easily. Users can report a crime or a complaint from anywhere online. The police officials can view the reports and take appropriate actions against the crimes or complaints by applying a systematic, quick and easy approach.

As an extension of this, more features can be added for the Citizens for personal protection, the latest announcements made by Police Officers, etc. The latest rules & regulations or news can be posted by Police Staff. An intelligent AI chatbot for basic queries related to safety concerns and Support for handicapped people can be added in the future. Analysis of the crime in the city can be displayed in the proposed system in the future.

**VI. REFERENCES**

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