

FIR - EXPERT SYSTEM FOR FAST REPORTS FILING INCLUDING IMAGE PROCESSING, FACE DETECTION AND LOCATION TRACKING

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Abstract---First Information Report(FIR) is a written document prepared by the police when they receive information about the commission of a cognizable offence. It is a report of information that reaches the police first in point of time and that is why it is called the First Information Report. It is generally a complaint lodged with the police by the victim of a cognizable offence or by someone on his/her behalf. Anyone can report the commission of a cognizable offence either orally or in writing to the police. Even a telephonic message can be treated as an FIR. An FIR is a very important document as it sets the process of criminal justice in motion. It is only after the FIR is registered in the police station that the police takes up investigation of the case. Anyone who knows about the commission of a cognizable offence can file an FIR. It is not necessary that only the victim of the crime should file an FIR. A police officer who comes to know about a cognizable offence can file an FIR himself/herself. In this software application, While installing the main details of the person using the system is stored and an instant send message button is given in which certain complaints suggestions are given. User can use that in emergency otherwise create its own when click on send button, the message is sent to the nearby police station as a FIR and further actions are taken.

I. INTRODUCTION

The Commonwealth Human Rights Initiative (CHRI) is an international, independent non-profit organisation headquartered in India. Its objectives are to promote the practical realisation of human rights in the Commonwealth. CHRI educates on human rights issues and advocates for greater adherence to human rights standards. Presently it is working in the following areas:

- Police Reforms
- Prison Reforms
- Human Rights Commissions
- Right to Information
- Human Rights Advocacy
- Constitutionalism
- Biennial Report to the Commonwealth heads of Government meeting on Human Rights Issues.

All this areas are cover while filing First Information Reports.

II. ONLINE MEDIUM AVAILABLE

Currently, User can file FIR online using webiste :

<http://ncsc.nic.in/pages/display/135-how-to-file-a-police-fir-complaint-online>

S. No.	State	Online Police Complaint/FIR Portal
1	New Delhi	https://www.delhipolice.nic.in/
2	Uttar Pradesh	https://uppolice.gov.in/
3	Haryana	https://haryanapoliceonline.gov.in/Login
4	Rajasthan	https://police.rajasthan.gov.in/citizen/login.htm?
5	Maharashtra	https://citizen.mahapolice.gov.in/Citizen/MH/index.aspx
6	Madhya Pradesh	https://www.mppolice.gov.in/en/complaint-0
7	Gujarat	https://gujhome.gujarat.gov.in/portal/webHP
8	Tamil Nadu	https://eservices.tnpolice.gov.in/CCTNSNICSDC/Index?6
9	Himachal Pradesh	citizenportal.hppolice.gov.in:8080/citizen/login.htm
10	Bihar	biharpolice.in/OnLineRegisterComplaint.aspx
11	Jharkhand	https://jofs.jhpolice.gov.in/

III. PROBLEM STATEMENT

As discussed earlier, there were lots of expert systems developed, but there is no proper focused expert system for filing reports with all the important details available.

As described in law:

- When information about the commission of a cognizable offence is given orally, the police must write it down.
- The complainant or supplier of the information has a right to demand that the information recorded by the police be read to him or her.
- Once the information has been recorded by the police, it must be signed by the person giving the information.

- The complainant can get a free copy of an FIR.

An FIR includes the date, time, place, incident details, and a description of the person(s) involved.

So, We have to design the system using which we can get current location, and a record video button will be given to user so that 5second video can be recorded and image processing is done to detect faces and the information is filed on those detected persons.

IV. OBJECTIVE

The key objectives of this expert system are as follows:

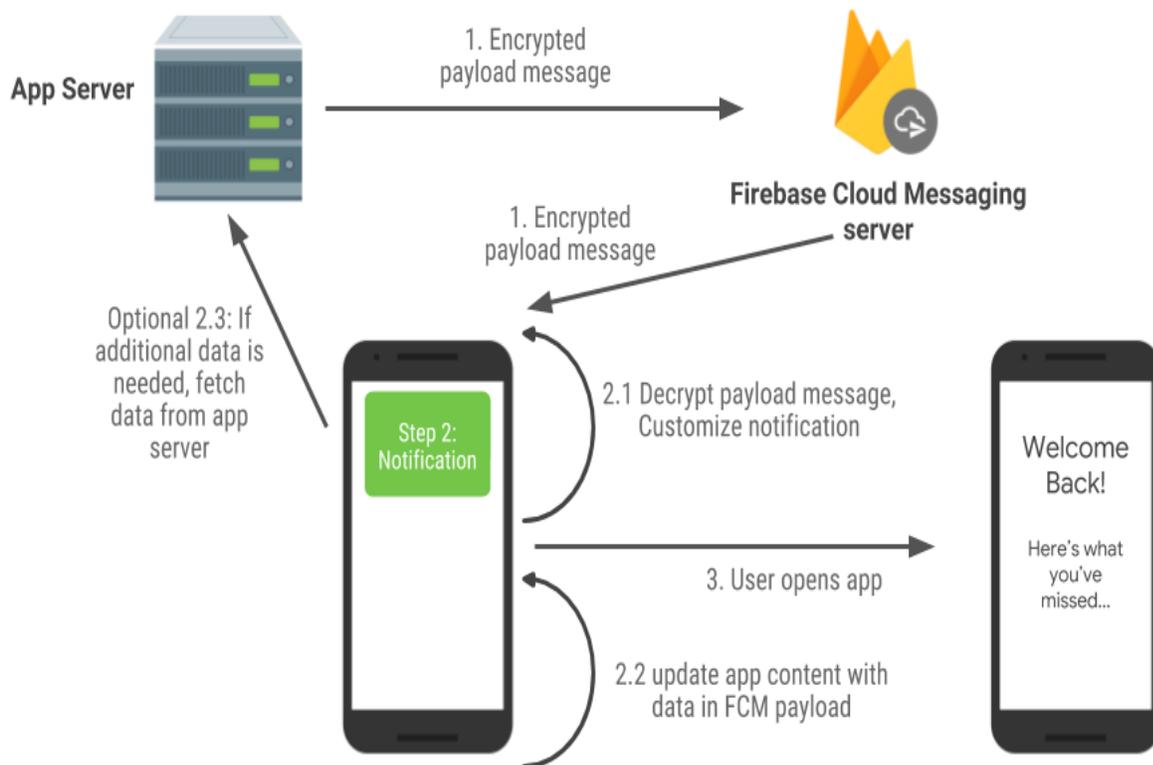
1. Store the contacts of the police station and when any emergency report is to be filed can be filed using send message button to the nearby police station.
2. To gather the details of the complainant. it includes gathering of data at starting while setting it up and gathers data including complainant's name,

complainant's father's/mother's name, complainant's address, complainant's Mobile number and email ID.

3. To gather other information at incident time including date, time, location, incident details, etc.
4. To do image processing , if video is uploaded and detect face and take screenshot of faces detected.
5. To design and build an Expert system that sends an message with image files and all details gathered.

V. PROPOSED SYSTEM

The proposed expert system files the complaints 99% faster as compared to manual task,i.e. Go to police station and give information orally which is then written by police and signed by complainant. The system only takes 1 minute maximum to send a message as a first information report by hitting send button and also small messages as a reports are also added for an emergency to make police investigation fast. Let us see working of send message functionality used in this system.



There are many work done for this and some screenshots are as follows:

New Delhi: Like many services, where you get confirmation and details through text messages, the [Delhi Police](#) have also started a new service for the complainants where they will get a system-generated text message informing them about the details of their FIR. It will be sent to the complainant as soon as the [FIR](#) is uploaded in Delhi Police's record. The initiative has been started in the central and north district. It will soon be implemented in other districts too, a senior police officer said. The text message will read, "On your complaint dated 01/09/15, a case vide FIR no ABC u/s XYZ has been registered" followed by the name of the police station. The text message will also contain the name of the investigating officer and his mobile phone number. The complainant can get in touch with the officer. The message will also tell if the FIR copy has been dispatched or not. A senior police official said that it is the next step after what was started three years ago under "Aapka Update". Police personnel, under "Aapka Update", were asked to write down all the basic information of the complainants, including their mobile phone number and the email ID. The updates were sent to the complainants only if the he/she wished to know about the progress of the case. "Many a times, the complainants keep running from door to door to get an FIR copy. Sometimes they don't even know where to go. This service has been started to sort out such problem. The detail of the case would come in handy to the complainants and they will not have to roam around," said DCP, central, Parmaditya.

VI. IMPLEMENTATION

First Step to do after installing this application is to fill information which the user has to fill up while filing FIR:

- Enter the complainant's name: Fill the name of the person who wants to lodge the e-FIR
- Enter the father's/mother's name: Fill the complainant's parents' name
- Enter the complainant's Address- Enter the full address
- Enter complainant's mobile number- complainant's working mobile number.
- Enter complainant's email ID: Email-ID is important because a copy of your e-FIR will be sent to you via email for verification.

Name	<input type="text"/>
Father's/mother's Name	<input type="text"/>
Address	<input type="text"/>
Mobile Number	<input type="text"/>
E-mail ID	<input type="text"/>

Email Id is compulsory because E-FIR will be sent to you Email Provided here.

This is setup process of our system. This information is taken only once in the system and whenever the user get in offence condition can file FIR using this.

In this system the information related to police station and location with mobile number is stored to send message to nearby location police station. The police Station details includes data input as follows:

Police verification is an important part of the FIR filing procedure to ensure the applicants are who they say they are and reside at the address provided.

Police Station name	<input type="text"/>
Address/Location	<input type="text"/>
Police members	<input type="text"/>
Contact number/s	<input type="text"/>

Next, When any offense happened then user can send message by clicking on Send Message button and also can record video of 5 second only using which Image processing is done and face is detected and those detected face screenshot is sent to police as image.

Kotlin

Java

```
val imageAnalysis = ImageAnalysis.Builder()
    .setTargetResolution(Size(1280, 720))
    .setBackpressureStrategy(ImageAnalysis.STRATEGY_KEEP_ONLY_LATEST)
    .build()

imageAnalysis.setAnalyzer(executor, ImageAnalysis.Analyzer { image ->
    val rotationDegrees = image.imageInfo.rotationDegrees
    // insert your code here.
})

cameraProvider.bindToLifecycle(this as LifecycleOwner, cameraSelector, imageAnalysis, preview)
```

Image Processing implementation in android:

Implementation

Images are processed by passing an executor in which the image analysis is run and an `ImageAnalysis.Analyzer` parameter to the `setAnalyzer()` method.

The code example in this topic shows how to do this, as well as how to bind the image analysis use case and a preview use case to the `LifecycleOwner`. To read about creating preview use cases, see [Implement a preview](#).

Image analysis can work in two modes: blocking and non-blocking. Blocking mode is enabled by calling `setBackpressureStrategy()` with `STRATEGY_BLOCK_PRODUCER`. In this mode, the executor receives frames from the camera in sequential order; this means that, if the `analyze()` method takes longer than the latency of a single frame at the current framerate, the frames may no longer be current since new frames are blocked from entering the pipeline until the method returns.

Non-blocking mode is enabled by calling `setBackpressureStrategy()` with `STRATEGY_KEEP_ONLY_LATEST`. In this mode, the executor receives the last available frame from the camera at the time that the `analyze()` method is called. If the method takes longer than the latency of a single frame at the current framerate, some frames might be skipped so that the next time `analyze()` receives data, it gets the last frame available in the camera pipeline.

Before returning from `analyze()`, close the image reference by calling `image.close()` to avoid blocking the production of further images (causing the preview to stall) and to avoid potentially dropping images. The method must complete analysis or make a copy instead of passing the image reference beyond the analysis method.

Face Detection is done using ML kit:

Detect faces with ML Kit on Android

You can use ML Kit to detect faces in images and video.

See the [ML Kit quickstart sample](#) on GitHub for an example of this API in use.

There are two ways to integrate face detection: a bundled model which is part of your app and an unbundled model that depends on Google Play Services. The two models are the same. If you select the unbundled model your app will be smaller.

Feature	Unbundled	Bundled
Implementation	Model is dynamically downloaded via Google Play Services.	Model is statically linked to your app at build time.
App size	No impact.	About 16MB model size.
Initialization time	Might have to wait for model to download before first use.	Model is available immediately

And after that an email and message is sent to police as a FIR. For this SMS Manager API is used:

```
SmsManager smsManager = SmsManager.getDefault();
smsManager.sendTextMessage("phoneNo", null, "sms message", null, null);
```

and needs SEND_SMS permission:

```
<uses-permission android:name="android.permission.SEND_SMS" />
```

Sr.No.	Method & Description
1	ArrayList<String> divideMessage(String text) This method divides a message text into several fragments, none bigger than the maximum SMS message size.
2	static SmsManager getDefault() This method is used to get the default instance of the SmsManager
3	void sendDataMessage(String destinationAddress, String scAddress, short destinationPort, byte[] data, PendingIntent sentIntent, PendingIntent deliveryIntent) This method is used to send a data based SMS to a specific application port.
4	void sendMultipartTextMessage(String destinationAddress, String scAddress, ArrayList<String> parts, ArrayList<PendingIntent> sentIntents, ArrayList<PendingIntent> deliveryIntents) Send a multi-part text based SMS.
5	void sendTextMessage(String destinationAddress, String scAddress, String text, PendingIntent sentIntent, PendingIntent deliveryIntent) Send a text based SMS.

VII. VERIFICATION AND VALIDATION

Verification and Validation is a process which carried out throughout the development process to ensure the correctness of the system. For validation and verification, I have used my details and used a custom number as a police station number using which I have send message with suspects video from which image processing is done and after face detection the screenshot of detected faces was sent with that message. All this functionality takes only 1 minute to complete which reduces time and also helpful for social safety.

VIII. CONCLUSION

This system gives ease of access to handle the situation fast and main advantage of this system is for woman as they can make alert police immediately if any offence or injustice faced by them. While Verification the functionality only takes 1 minute and this system gives 99% immediate investigation and alert to police. The interface of the application is very easy to use and does not need intensive training to be used.

IX. FUTURE WORK

In future this application will be attached with the user's social media account like Facebook, Tweeter and so on and if any post will suspect and user finds some cognizable

offence a message to police as FIR will trigger. So that the police can handle the situation soon and start investigation.

X. REFERENCES

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