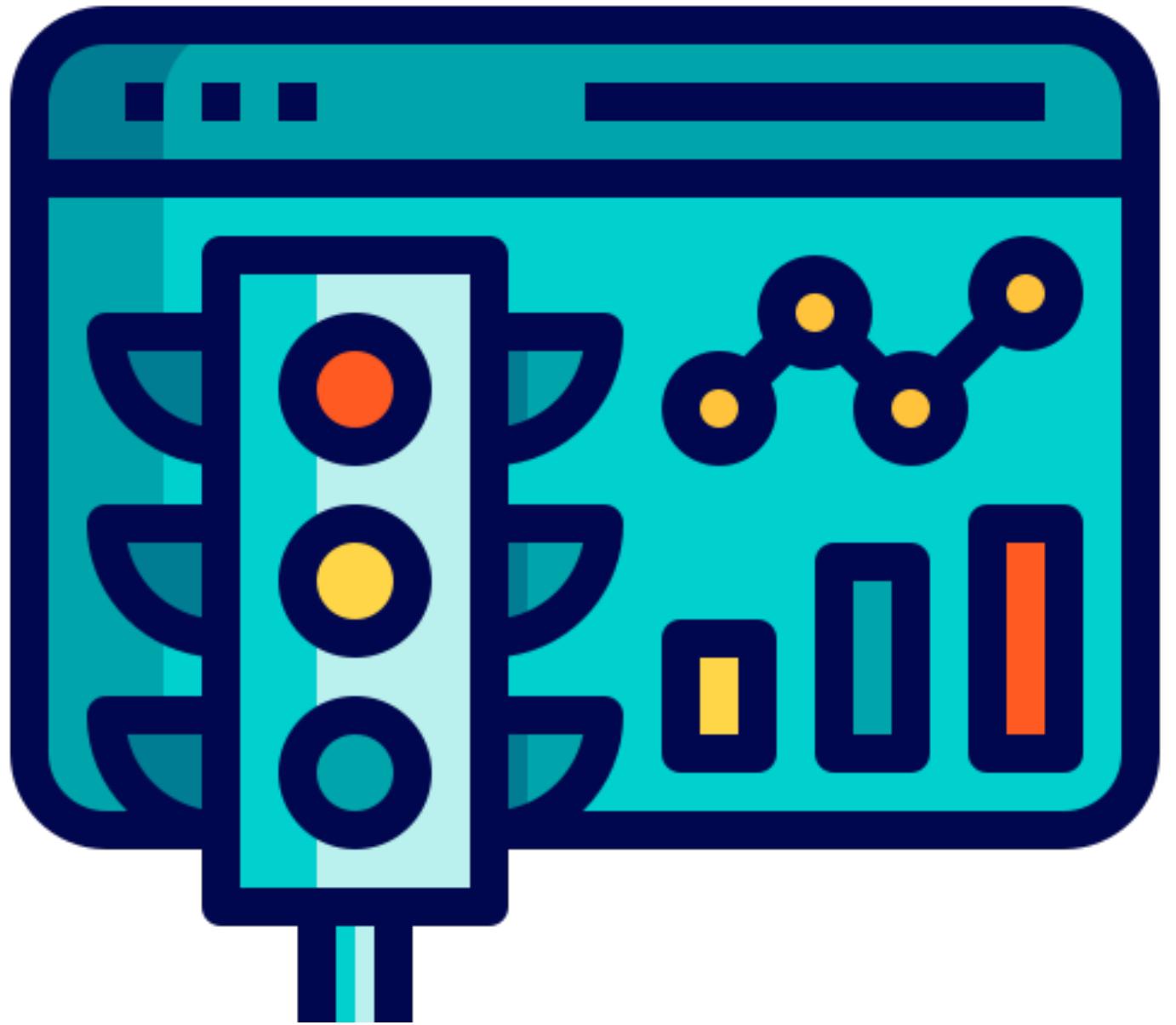




KAVACH 2023

Team Name: Coding Brigades  
Problem Statement: KVH-005  
Idea ID: IDEA1513

# ADVANCED ANPR AND FRS SOLUTION



Team Leader: Dhruvkumar Rakeshbhai Patel

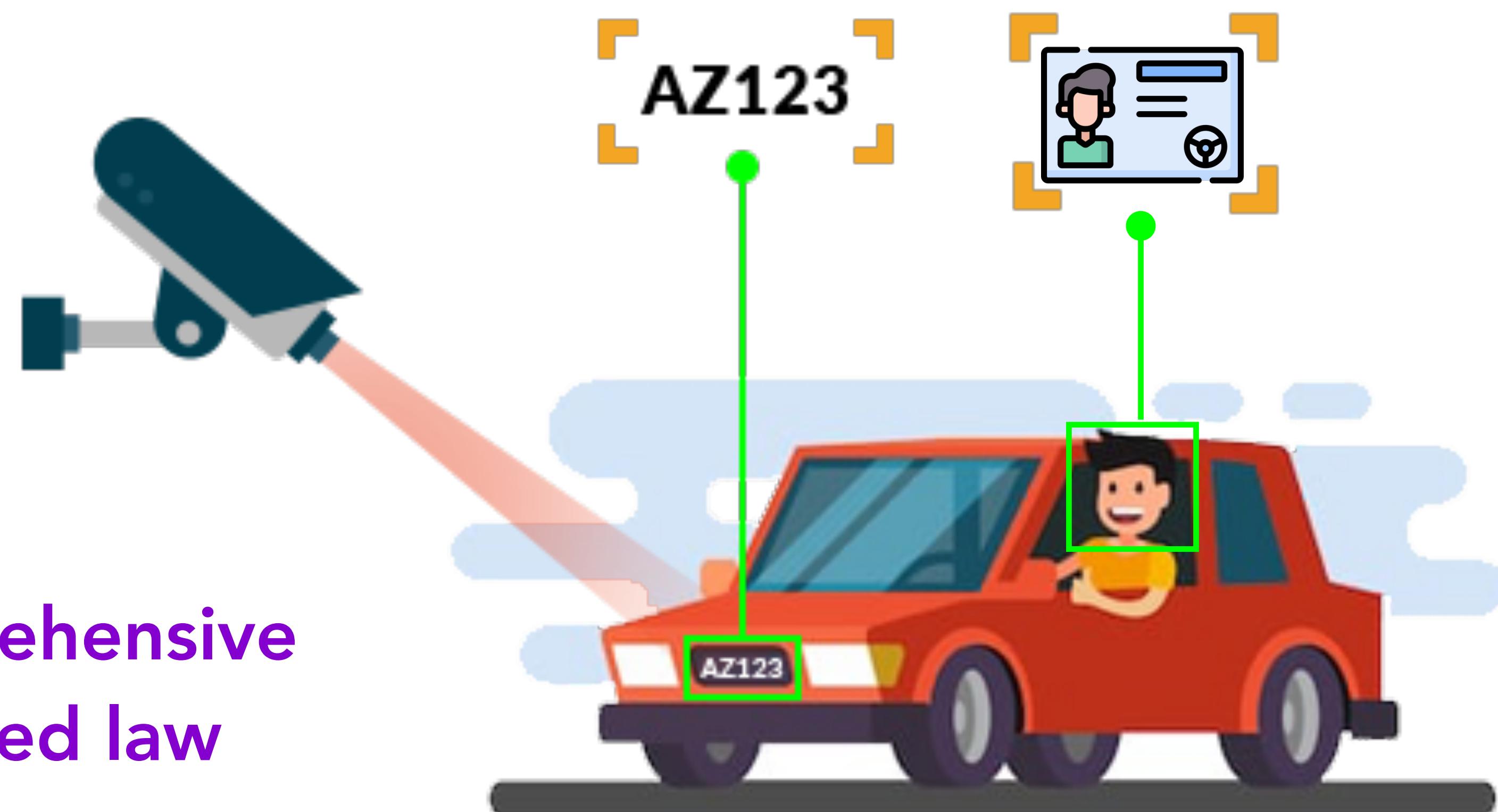
Team Mentor: Prof. Himani Trivedi Ma'am

# Problem Statement

<b>PS ID:</b>	KVH-005
<b>Title of PS:</b>	Advanced ANPR and FRS solution
<b>Domain Bucket:</b>	Video analytics/CCTV
<b>Description:</b>	<p>Design and develop a technological solution that can accurately perform the Automatic Number Plate Recognition (ANPR) along with Facial Recognition from the available CCTV feeds. The solution should be <u>able to recognize number plates that are written in typical non-standard ways using varying font styles, sizes, designs, symbols, languages etc., i.e. difficult to recognize by existing ANPR Systems.</u></p>

# INTRODUCTION

- ANPR with FRS plays a vital role in bolstering security and combating crime in India.
- That exemplifies its prowess through multi-dimensional identification.
- Our solution embodies comprehensive analytics reports for streamlined law enforcement and surveillance.



# Loopholes of the existing system



ANPR:

◆ <https://shorturl.at/zRXY9>

**THE TIMES OF INDIA**

EDITION IN DELHI 33°C

CITY Mumbai Mumbai Region Delhi Bengaluru Hyderabad Kolkata Chennai Agra Agartala Ahmedabad Ajmer Allahabad ...

NEWS / CITY NEWS / MUMBAI NEWS / Plan To Plug E-Challan Loopholes

TRENDING STORIES

IN CITY ENTIRE WEBSITE

- Haryana violence live: Schools in Gurgaon, Faridabad shut today
- Communal clashes in 4 NCR districts, 2 homeguards killed
- 40 mins of terror as RPF constable roamed train, opening fire
- Manipur Violence News Live Updates: Supreme Court to hear Manipur...
- Parliament Monsoon Session Live Updates: Amit Shah to introduce NC...

YOU'RE READING

# TOI

Plan to plug e-challan loopholes

George Mendonca / TNN / Updated: Aug 23, 2014, 05:52 IST

187 PTS SHARE AA FOLLOW US

LATEST FROM BUSINESS NEWS

- India & the Global South are rewriting the US-led world order
- 'Time right for India to create global norms'
- Hyundai to launch more electric vehicles in India

NAVI MUMBAI: Taking cognizance of the drawbacks in the e-challan system for traffic offences, the RTO plans to rectify errors. A TOI report on August 22 highlighted how flaws in the RTO record-keeping were hampering the e-challan system.

highlighted how flaws in the RTO record-keeping were hampering the e-challan system.

\*

\* <https://shorturl.at/bSX58>

Search Here 08 August, 2023 (Tuesday)

Web Stories Shots Today's E-Paper

Mid-day Gujarati Inquilab

# mid-day

Mumbai News Entertainment Sports Lifestyle Photos Podcast Timepass Sunday Mid-Day Shot Videos Mumbai Guide Videos Brand Media Mid-Day Gold Content Services

City News Monsoon Special News for You Bigg Boss OTT Crime News Health Horoscope 30 Powerlist Rajshree Lottery

Breaking News over 'bias' in initiating legal action Maharashtra: 61-year-old man arrested for making threat call to Mantralaya Mumbai: Third missing person in boat sinking incident

Get Your Mid-Day Gold Yearly Subscription now at Rs 899 Rs 499! SUBSCRIBE NOW

Home > News > Opinion News > Article > Traffic e challan system must be made foolproof

## Traffic e-challan system must be made foolproof

Updated on: 01 July, 2021 07:03 AM IST | Mumbai The Editorial I

The traffic department has pressed the pedal on recovering pending dues from errant motorists and two-wheeler users.

Traffic cops check vehicles at Dahisar. File pic

Traffic e-challans have become problematic for police and those fined alike after a spate of errors have occurred in these challans. According to a report in this paper, a Ghatkopar resident has been sent 13 e-challans for his Activa scooter but out of that only one belongs to him, the others are of vehicles not belonging to him.

More Stories

- Made in Heaven: Time to refresh your memories before Season 2 drops!
- Getting A Hair Transplant In Turkey Can Really Change Your Life
- Examining Roger Federer's clay-court legacy Premium
- PUCL Maharashtra urges action against hate speech, communal propaganda
- IN PHOTOS: July was the hottest month on record by far, say European scientists

13 e-challans for his Activa scooter but out of that only one belongs to him,

# Loopholes of the existing system



## FRS:

- Currently FRS in India is used in four domains by Govt.

### 1. Digi Yatra :

The screenshot shows the India.gov.in homepage with a banner for 'Digi Yatra - A New Digital Experience for Air Travellers'. Below the banner, there's a section titled 'Digi Yatra Enrollment Process' with instructions for passengers to create a Digi Yatra ID. The URL is <https://shorturl.at/kpyFO>.

### 2. ASTR :

The screenshot shows an article from GK Today titled 'Artificial Intelligence and Facial Recognition powered Solution for Telecom SIM Subscriber Verification (ASTR)'. It discusses how the Department of Telecommunications has developed a groundbreaking artificial intelligence-based facial recognition tool known as Artificial Intelligence and Facial Recognition powered Solution for Telecom SIM Subscriber Verification (ASTR). The innovative technology aims to detect and prevent fraudulent mobile connections, significantly reducing cyber fraud. The URL is <https://shorturl.at/hjmtX>.

### 3. UIDAI Face Authentication :

The screenshot shows the myAadhaar.uidai.gov.in website with a banner 'myAadhaar One portal for all online services'. It features a search bar and various service links. The URL is <https://shorturl.at/afRV3>.

- The utilisation of a **FRS for Challan generation through ANPR by the Govt.** remains untapped, despite its potential to significantly **enhance traffic violation detection** and **elevate accuracy in identifying the true offender.**

# Loopholes of the existing system

## 1. There is lack of centralised Database.

Welcome to Ahmedabad Traffic Police, Challan payment system

Protection and safety of the citizens of Ahmedabad having population about more than 60 lakh is the prime responsibility of Ahmedabad City Police Force. Please insert your Vehicle no below

**GJ01UV9043**

Enter Vehicle No.  
Ex: GJ1XX1234

Enter Total of 3 + 74 in below box =  
70

GO!

04/03/2022 Notice Number: DIA115\_20220304154115\_D1EB4 ₹ 500

\*License No. GJ0112345601

Violation Type: Red Light Violation  
Place: DIAMOND-DIAMOND\_P2\_L1

Total : ₹ 0

Note: If challan amount deducted from your Bank account and challan showing unpaid, then please wait at least for 4 hours before paying again  
નોંધ: તમારા બેંક ખાતામાંથી ચલાનની રકમ ક્યાત થઈ ગઈ હોય પણ ચલાન ખૂલ્યાણી બાકી મા દરાવિતી થાયે, તો કુપા કરીને ફરી ખૂલ્યાણી કરતા પડેણા 4 કલાક માટે રાખ જુદ્ધો

Disclaimer : You may see some Challan as unpaid even if it is paid at police station in offline mode. Kindly confirm the notice number in receipt and don't select those Challan while making payment.

Note : If challan amount deducted from your Bank account and challan showing unpaid, then please wait at least for 4 hours before paying again  
નોંધ: તમારા બેંક ખાતામાંથી ચલાનની રકમ ક્યાત થઈ ગઈ હોય પણ ચલાન ખૂલ્યાણી બાકી મા દરાવિતી થાયે, તો કુપા કરીને ફરી ખૂલ્યાણી કરતા પડેણા 4 કલાક માટે રાખ જુદ્ધો

Notice Board

Information related challan payment

Challan Details

After getting challan details you can further go for online payment

Challan Number: GJ01UV9043

Vehicle Number: GJ01UV9043

OR Engine No. Last 5 Characters: fb8

Challan Status: Challan Not Found

OK

Vehicle Number GJ01UV9043

Challan Status

Challan Not Found

Challan Not Found

• These Screenshots are from two different official websites ([mparivahan](http://mparivahan.gov.in) and [payahmedabadchallan](http://payahmedabadchallan.com)).

## 2. One nation, One challan is implemented in just few cities (Ahmedabad, Rajkot, Gandhinagar, Vadodara and Surat) of Gujarat where this Act has been initiated.

દસ્તાવેજ જપ્ત કરવામાં આવ્યા/Document Impounded (હા/ના) : (No) અગાઉનો ગુનો અને તારીખ/Previous Offence & Date :			
ક્રમ / S.No.	ગુનાનું વર્ણન / Offence Description	ગુનાની કલમ / Applicable Section	દંડની રકમ / Fine amount (Rs.)
1.	motor cycle to be driven carrying more than one person in addition to himself/એક કરતા વધારે વ્યક્તિઓને મોટર સાયકલ ઉપર બેસાડે	( 194C )	100
ટોટલ ઈ-ચલણની રકમ રૂ. / Total Compounding challan (In Rs)			100

• MoRTH, ભારત સરકારના તા. ૨૫/૦૮/૨૦૨૦ ના નોટીફિકેશન અન્વયે ઈ-ચલણ અંગે થયેલ કાર્યવાહી સંદર્ભે જનરેટ થયેલ ઈ-ચલણ પેટેની દંડ ની રકમ ૬૦ દિવસની અંદર દર્શાવેલ લીક ઉપર ડીજિટલ પેમેન્ટ કરવાનું રહેશે. ઈ-ચલણ પેટેની દંડ ની રકમ નજીક ના પોલીસ સ્ટેશન મા પણ જમા કરાવી શકાશે.

• જો ૬૦ દિવસ સુધી ઈ-ચલણ પેટેની રકમ ભરપાછ નહી થાય તો ૬૦ દિવસ બાદ V-Court દ્વારા કાનુની કાર્યવાહી થશે.

ઓનલાઈન પેમેન્ટ માટે/For Online Payment <https://echallan.parivahan.gov.in>

### One Nation, One Challan in Gujarat

The One Nation, One Challan initiative has been operational in three commissionerate areas of Ahmedabad, Rajkot, and Surat since January 16, 2023, and is currently being implemented in Vadodara. The Gujarat government also submitted to the Gujarat HC that its maintenance contract with L&T for the CCTV network at Vadodara is undergoing renewal.

### Virtual Traffic Courts in Gujarat

Virtual traffic courts are designed to eliminate the need for litigants to appear in person at court. If a challan amount is not paid within 90 days, the challan is automatically forwarded to a virtual court, and proceedings are initiated. Summons are sent to the offender's mobile phone, and if the fine remains unpaid, legal action will follow.

### Designation of Virtual Courts in Gujarat

One court, namely court number 16 of Ahmedabad city sessions court, is in the process of being designated as a virtual court for the whole of Gujarat, which will handle 'One Nation, One Challan' cases exclusively.

### 3. There is **no follow-up of the challans generated** before the implementation of 'one nation, one challan' Govt. scheme.

Violation Date Challan Date	21-07-2023 12:28:00 21-07-2023 12:28:00	Challan No. GJ4171692230721024061	
<ul style="list-style-type: none"> <li>MoRTH, ભારત સરકારના તા.૨૫/૦૮/૨૦૨૦ ના નોટીફિકેશન અન્વયે ઈ-ચલણ અંગે થયેલ કાર્યવાહી સંદર્ભે જનરેટ થયેલ ઈ-ચલણ પેટેની દંડ ની <u>રકમ ૬૦ દિવસની અંદર</u> દર્શાવેલ લોક ઉપર ડીજિટલ પેમેન્ટ કરવાનું રહેશે. ઈ-ચલણ પેટેની દંડ ની રકમ નજીક ના પોલીસ સ્ટેશન મા પણ જમા કરાવી શકાશે.</li> <li>જો ૬૦ દિવસ સુધી ઈ-ચલણ પેટેની રકમ ભરપાછ નહીં થાય તો ૬૦ દિવસ બાદ V-Court દ્વારા કાનુની કાર્યવાહી થશે.</li> </ul>			
ઓનલાઈન પેમેન્ટ માટે/For Online Payment <a href="https://echallan.parivahan.gov.in">https://echallan.parivahan.gov.in</a>			

<b>GJ27BC9767</b> VEHICLE CHALLAN DETAILS		
Unpaid Challans Details		
<input type="checkbox"/>	31/10/2021    Notice Number: DIA115_20211031162729_6A666    ₹ 500	
<p>*License No. GJ0112345601</p> <p>Violation Type: Red Light Violation Place: DIAMOND-DIAMOND_P3_L1</p>		
Please fill below detail to make payment		
*Mobile No:	Please Enter Your Mobile No.	Email ID: Please Enter Your Email Id.
<p>નોંધ: તમારા બેંક ખાતામાંથી ચલણની રકમ કપાત થઈ ગઈ હોય પણ ચલણ ચૂકવણી બાકી મા દર્શાવતી હોય, તો કૃપા કરીને ફરી ચૂકવણી કરતા</p>		
<input type="checkbox"/>	31/10/2021    Notice Number: DIA115_20211031162729_6A666    ₹ 500	

✿ These Screenshots have challans generated after and before the implementation of the 'one nation, one challan' respectively.

## 4. Challan system is unable to cover all types of traffic violations and offences.

The image displays three separate screenshots of the Ahmedabad Traffic Police Challan payment system. Each screenshot shows a different e-challan for a 'Red Light Violation' issued at a specific location. The screenshots are arranged in a triangular layout, with a large green bracket underneath them grouping them together. Each screenshot includes a green box highlighting the 'Violation Type: Red Light Violation' field.

**Screenshot 1 (Left):** A screenshot of the 'Unpaid Challans Details' page for a vehicle with license number GJ01UV9043. It shows an unpaid challan from 04/03/2022 with a notice number DIA15\_20220304154115\_D1EB4 and a total amount of ₹ 500. The violation type is listed as 'Red Light Violation' at the place 'DIAMOND-DIAMOND\_P2\_LT'. Below the form, there is a note in Gujarati about payment methods.

**Screenshot 2 (Middle):** A screenshot of the 'Unpaid Challans Details' page for a vehicle with license number GJ27BC9767. It shows an unpaid challan from 31/10/2021 with a notice number DIA115\_20211031162729\_6A666 and a total amount of ₹ 500. The violation type is listed as 'Red Light Violation' at the place 'DIAMOND-DIAMOND\_P3\_LT'. Below the form, there is a note in Gujarati about payment methods.

**Screenshot 3 (Right):** A screenshot of the 'Unpaid Challans Details' page for a vehicle with license number GJ27DA0034. It shows an unpaid challan from 19/09/2022 with a notice number DIA115\_20220919153435\_07964 and a total amount of ₹ 500. The violation type is listed as 'Red Light Violation' at the place 'DIAMOND-DIAMOND\_P2\_LT'. Below the form, there is a note in Gujarati about payment methods.

**Text Labels:**

- Violation Type: Red Light Violation** (highlighted in green)
- Violation Type: Red Light Violation** (highlighted in green)
- Violation Type: Red Light Violation** (highlighted in green)

- Existing system frequently generates e-challans for two traffic violations only (*red light jumping and overloading of pillion rider*).

## 5. Challan generation Discrepancy in specific areas

The diagram illustrates a discrepancy in the geographical location of generated challans across three specific areas, indicated by the highlighted 'Place' fields in the screenshots.

**Screenshot 1 (Left): Ahmedabad City, Challan System**

- Challan ID: GJ01UV9043
- Date: 04/03/2022
- Notice Number: DIA115\_20220304154115\_D1EB4
- Amount: ₹ 500
- Violation Type: Red Light Violation
- Place: DIAMOND-DIAMOND\_P2\_L1
- Total: ₹ 0

**Screenshot 2 (Middle): Ahmedabad City, Challan System**

- Challan ID: GJ27BC9767
- Date: 31/10/2021
- Notice Number: DIA115\_20211031162729\_6A666
- Amount: ₹ 500
- Violation Type: Red Light Violation
- Place: DIAMOND-DIAMOND\_P3\_L1
- Total: ₹ 0

**Screenshot 3 (Right): Ahmedabad City, Challan System**

- Challan ID: GJ27DA0034
- Date: 19/09/2022
- Notice Number: DIA115\_20220919153435\_07964
- Amount: ₹ 500
- Violation Type: Red Light Violation
- Place: DIAMOND-DIAMOND\_P2\_L3
- Total: ₹ 0

❖ Saturation of challans based on geographical areas.

## ◆ 6. Biased Law Enforcement system

Tweet

anand mahindra    
@anandmahindra

What a terrific pic; Not even one vehicle straying over the road marker. Inspirational, with a strong message: it's up to US to improve the quality of our lives. Play by the rules... A big shoutout to Mizoram. 

Sandeep Ahlawat  @SandyAhlawat89 · Mar 1, 2022  
I have seen this kind of discipline only  in Mizoram. There are no fancy cars, no big egos, no road rage, no honking and no तू जानता नहीं है मेरा बाप कौन है.... no one is in a tearing hurry...there is calm and serenity all around...



12:50 PM · Mar 1, 2022

anand mahindra    
@anandmahindra

What a terrific pic; Not even one vehicle straying over the road marker. Inspirational, with a strong message: it's up to US to improve the quality of our lives. Play by the rules... A big shoutout to Mizoram. 

Sandeep Ahlawat  @SandyAhlawat89 · Mar 1, 2022  
I have seen this kind of discipline only  in Mizoram. There are no fancy cars, no big egos, no road rage, no honking and no तू जानता नहीं है मेरा बाप कौन है.... no one is in a tearing hurry...there is calm and serenity all around...

### Chandigarh: Half of 2.9 lakh challans in 2023 for jumping red light alone



\*

Hindustan Times

Sunday, Aug 06, 2023 | New Delhi 30°C

Home Latest News Cricket Education India World Cities Entertainment Lifestyle Astrology Editorials Shop Now

[TOP NEWS]

INDIA NEWS Tremors felt in Delhi-NCR, J&K as 5.8 magnitude earthquake hits Afghanistan Updated 4 hours ago

INDIA NEWS 'He is endorsing Pak corruption' BJP leader slams Karti on Amarni arrest remark Published 4 hours ago

INDIA NEWS Government to bring Delhi Services Bill in Rajya Sabha for passage on Monday Updated 6 hours ago

INDIA NEWS Chandrayaan-3 successfully enters Moon orbit: ISRO Published 6 hours ago

[TRENDING TOPICS]

Chandrayaan-3 LIVE  
Rain News Today  
Happy Birthday Kai!

Chandigarh: Half of 2.9 lakh challans in 2023 for jumping red light alone

By Nikhil Sharma  , Chandigarh

Apr 27, 2023 02:29 AM IST    FOLLOW ON Google News

As many as 1.43 lakh commuters have been fined for jumping the red light in Chandigarh in the first four months of the year



Red light jumping is the top traffic violation in Chandigarh. The challans were mainly generated after violators were captured violating traffic rules in the wide network of CCTV cameras across the Chandigarh. (HT File Photo)

For speed devils in Chandigarh, red means "go" as evident in the high number of challans for jumping the red light.

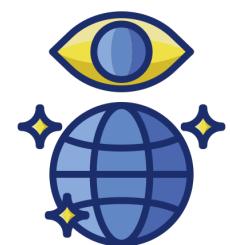
In the first four months of 2023, as many as 2,96,213 challans have been issued by the Chandigarh Traffic Police for various traffic violations. Of these, a whopping 1,43,802 commuters were fined for not stopping at the red light, risking collisions, thereby endangering lives.

◆ <https://rb.gy/Opjzc> (Mizoram)

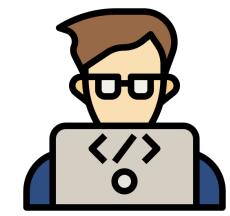
\* <https://rb.gy/vnbge> (Chandigarh)

# Data Gathering and Management

We have collected real world data for providing a novel and robust solution of ANPR with FRS with low complexity and high accuracy.



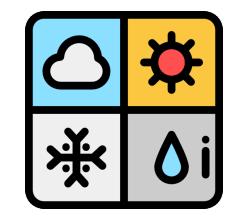
- ◆ **Real world dataset:** CCTV feed dataset from “Honourable Additional Commissioner of Police, East-West Traffic Control Room, Ahmedabad”.



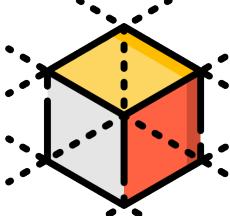
- ◆ **Hand Crafted dataset:**
  - \* **ANPR:** 7,412 annotated images and 16,972 images after augmentation are used to test and train the model
  - \* **FRS:** 16,234 manually annotated faces on 801 images for Face Detection and images of 38 individuals for Face Recognition are captured.



- ◆ **Various resources:** CCTV feeds, college campus and parking lots and housing complex seeds.



- ◆ **Distinct lighting and weather conditions:** varied brightness, contrast and shadow(dusk-dawn conditions, night-vision camera).



- ◆ **Multifaceted dataset:** License plate captured with different angles and perspectives.

# Proposed Dataset on ANPR



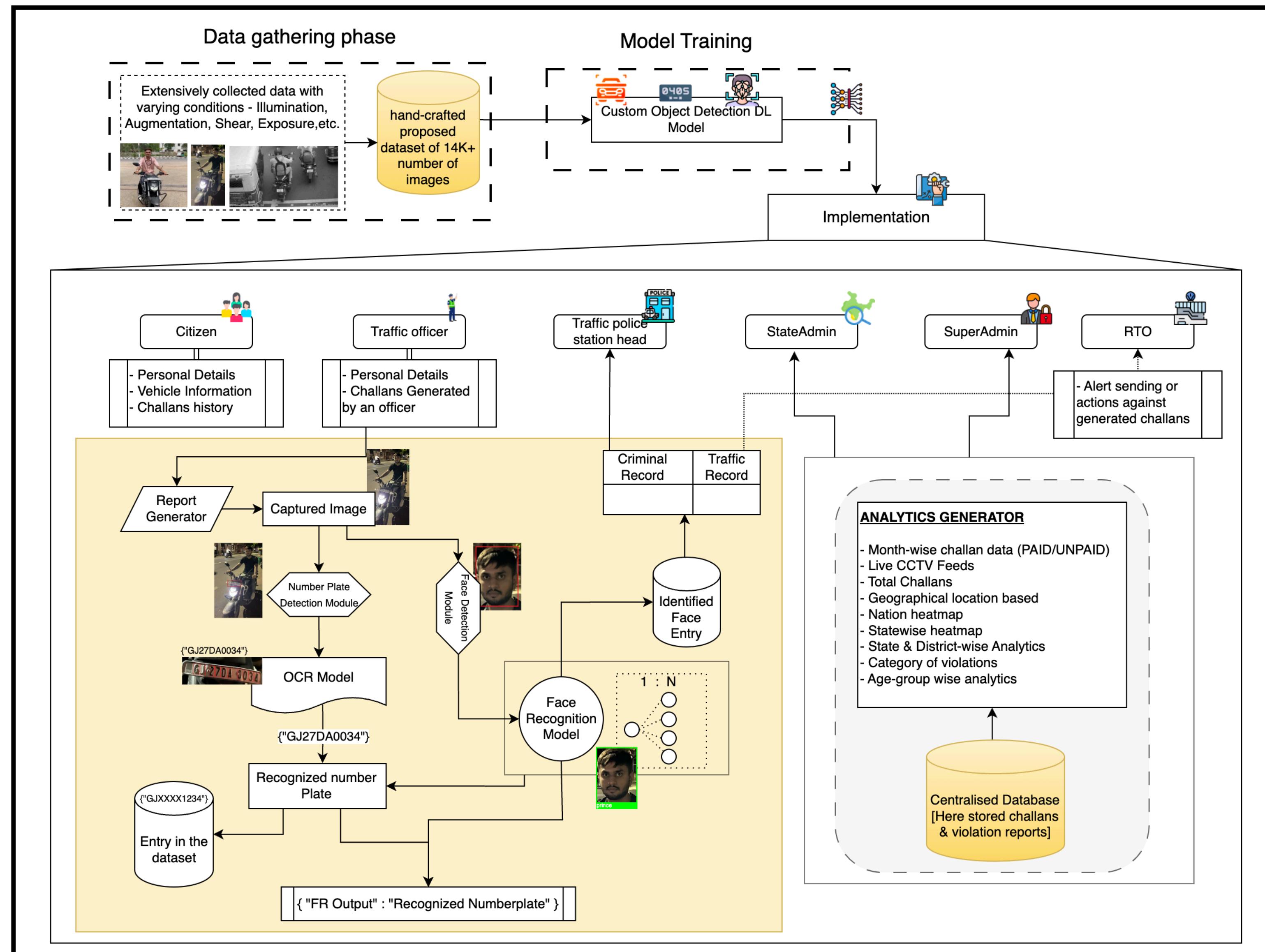
# Proposed Dataset on FRS



\* Real-world dataset gathered by the permission of Additional Commissioner of Police, Ahmedabad and also hand-crafted manually captured dataset.

\* Showcasing variegating light conditions, illumination & orientation

# PROPOSED ARCHITECTURE



# Performance Measures

## ANPR:

Model	YOLOv8_N	YOLOv8_S
<b>Box Loss</b>	1.1686	1.2357
<b>Class Loss</b>	0.62012	0.70066
<b>DFL Loss</b>	1.0634	1.1259
<b>Precision</b>	0.93087	0.92965
<b>Recall</b>	0.94739	0.96292
<b>map@50</b>	0.97019	0.97084

## Face detection & Recognition:

Model	YOLOv8_S	YOLOv8_M	Face Recog.*
<b>Box Loss</b>	1.0014	1.236	0.01
<b>Class Loss</b>	0.39244	0.4481	0.004
<b>DFL Loss</b>	0.93407	1.034	-
<b>Precision</b>	0.94373	0.9556	98%
<b>Recall</b>	0.95664	0.9775	98%
<b>map@50</b>	0.9637	0.9775	0.99

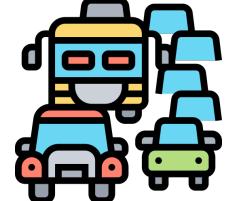
\* FR Metrics: <https://face-recognition.readthedocs.io/en/latest/readme.html>

## Hardware Specifications:

### ◎ Trained on “Param Shavak” super-computer

- **GPU(Quadro P400 accelerated by Quadro GP100)**
- **CPU(Intel XEON phi - 2.2 TFLOPS - 18 cores each \* 2)**

# USE-CASES

ANPR	FRS	COMBINED
  Old license Plate	 No Helmet	 Over-speeding
 Detect unauthorised License Plate	 Using mobile while driving	 No seatbelt
 Vehicle density	 Snatch and run	 Hit and Run
 Tracking of criminal	 Vehicle Theft	 Driving without License
 Accident detection	 Assess overcrowded Area	
	 Travel check-in verification	
	 Identification of Driving Test examinee	

# FEATURES COMPARISON

Features	Existing Challan system	Proposed Challan system
Unified nationwide system	✗	✓
Centralized database	✗	✓
Identification of Driver through FR	✗	✓
Followup of PAID/UNPAID challans	✗	✓
Challans generated on License plate	✗	✓
Alert generated after crossing fixed threshold challans	✗	✓
Autonomous system: Alert generated by any unusual pattern by ML	✗	✓
Challans of different categories of traffic offences	✗	✓
Analysis reports(age group, paid/unpaid challans, STD/NON-STD NPs, male-female, vehicle density, challan generated density, old-new NP, categories of challans)	✗	✓
User application(superadmin, stateadmin, Head of police station, RTOs, traffic policemen, citizens)	✗	✓
User friendly GUI design	✗	✓



# Strengths

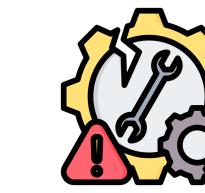
- **Multiple Beneficiary options:** Citizens as well as Govt. authorities (Superadmin, Stateadmin, RTOs, Head of police department) can report certain challans.
- **For ANPR,** a new manually hand-crafted dataset was collected and annotated **7,412 images** and **for FR, a new dataset with images of 38 individuals** is used to train Deep Learning model.
- The ANPR Deep Learning model succeeds to achieve significant **accuracy under highly low illuminated conditions.**
- **One nation, One Challan:** challan of same format will be generated across nation with centralized system.
- It will provide **comprehensive analysis reports** (male/female, old/new NPs, challan generation density, categories of challans, STD/NON-STD NPs, paid/unpaid challans, vehicle density, age group).
- **Follow up can be taken for unpaid through real-time alert**
- **Autonomous system:** Alert generated by any unusual pattern seen in traffic law violation, using ML.

S	W
---	---



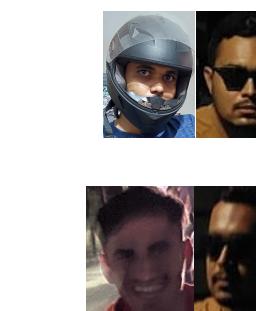
# Opportunities

- **Non-Biased Law enforcement**
- **Better record keeping**
- **Traceability of culprit/law violator** using technology of **FRS**
- **Better governance**
- **Improved security**



# Weaknesses

- **ANPR:**
  - Obscured license plates
  - Inference complexities in variegated environments (i.e. Rainy weather).
- **FRS:**
  - Partial occlusions (i.e. Mask, Sunglasses, Scarf) & Complete occlusions (Helmet)
  - Variegating Lighting conditions and illumination conditions
  - Different face gestures
  - Age variation



# Threat

- **Security Breach:** Centralised data is not encrypted

# AGE VARIATION(weakness)



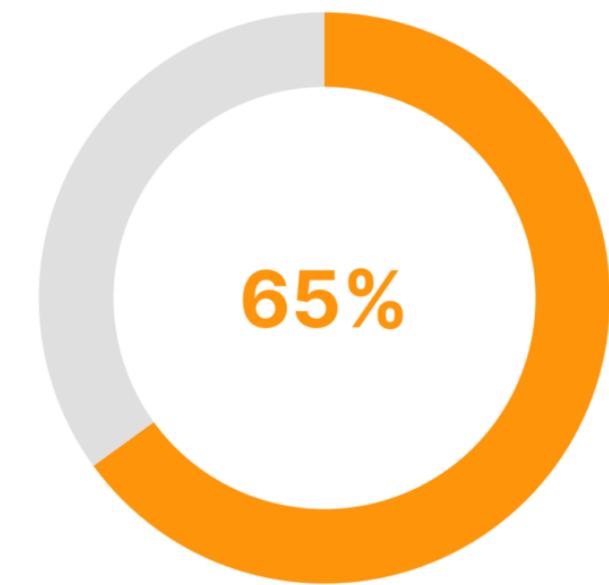
- **Age discrepancies** in Aadhar cards **without biometric updates** allow easy acquisition of **new government IDs mandating Aadhar card enrolment**.
- Hence, a significant issue of **inaccurate and irrelevant datasets** for ML models due to **outdated and invalid biometric data, impacting reliable identification and verification**.



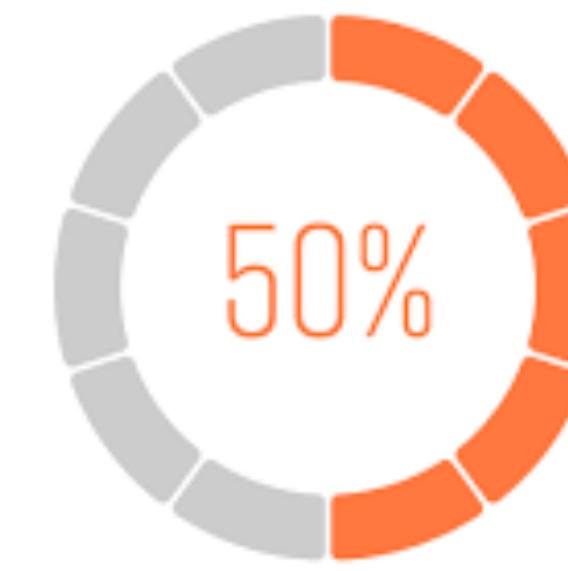
- This may lead to **reduced accuracy** and **false positives** (misidentification of a person as someone else) and **false negatives** (failure to recognize a person correctly) in the ML model.

❖ Side-by-side comparison of the two images of the same individual(Aadharcard and current appearance).

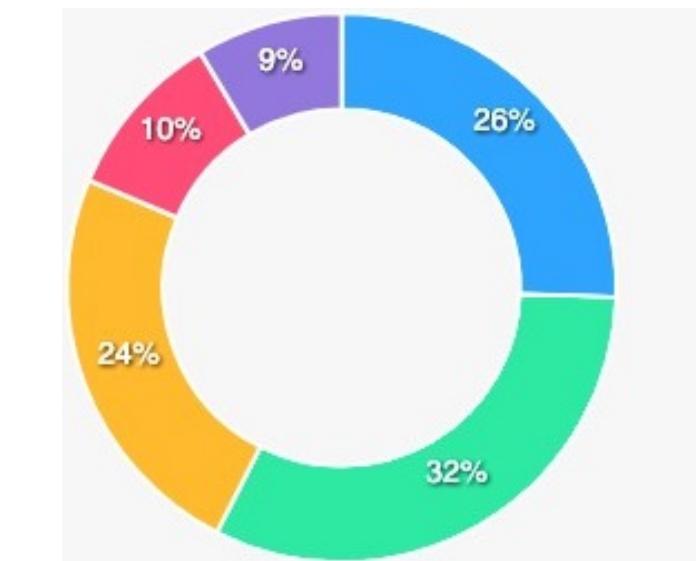
# Analytics on Challans



Old and New NPs



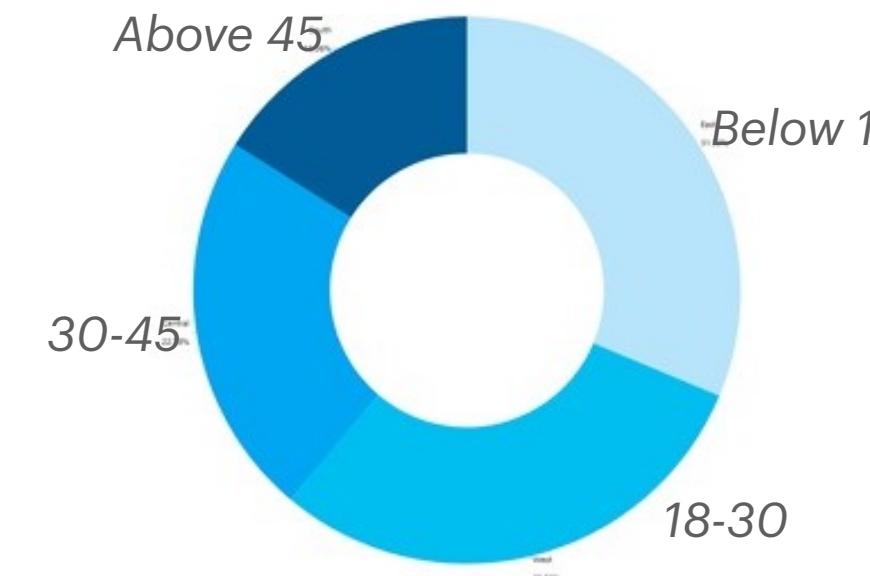
Male and Female



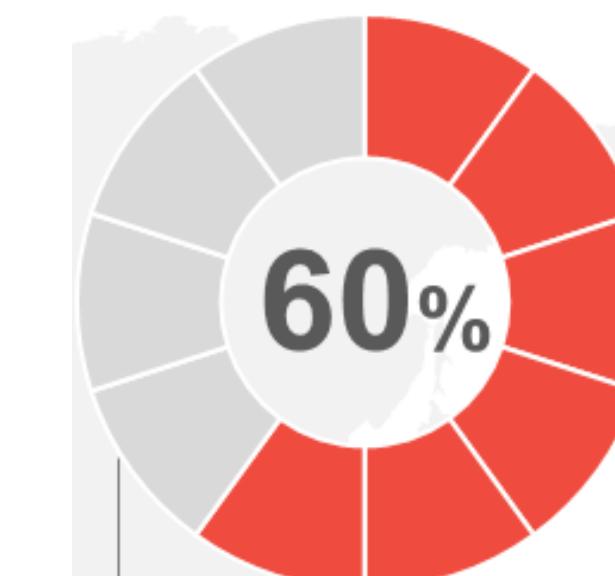
Categories of Challans



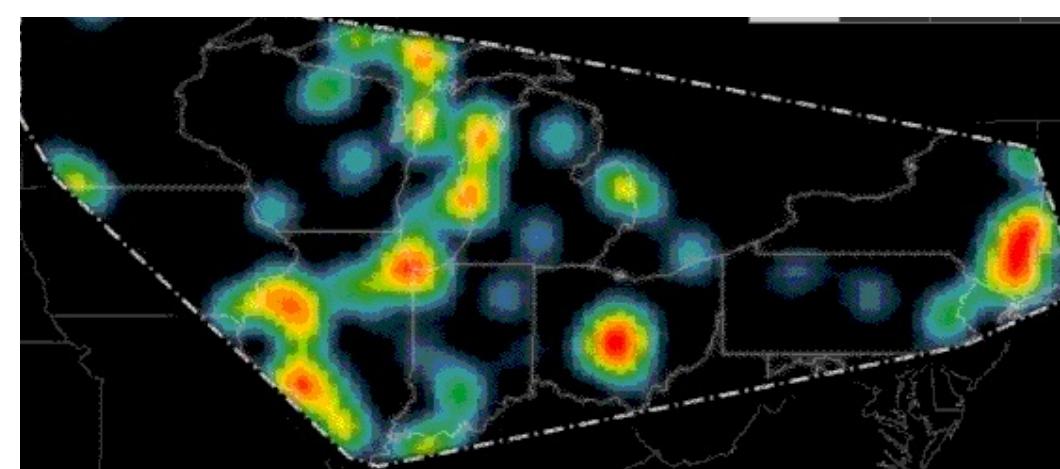
STD and Non-STD NPs



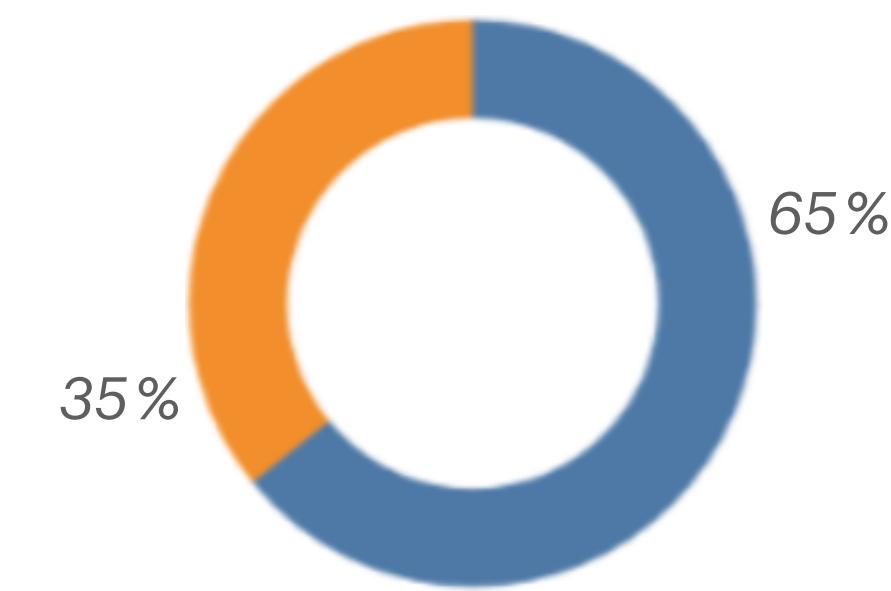
Age group



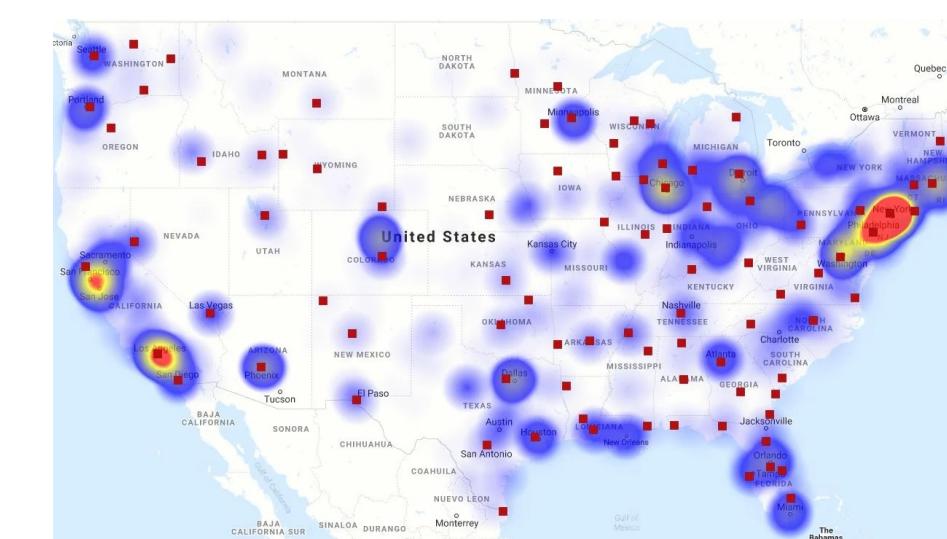
Paid and Unpaid Challans



Vehicle Density



Two-wheeler and Four-wheeler



Challan Generation Density