

INNOVATIVE PRODUCT DEVELOPMENT

Enhancing Safety in Public Spaces

**Advanced Object Detection and
Anomaly Monitoring**

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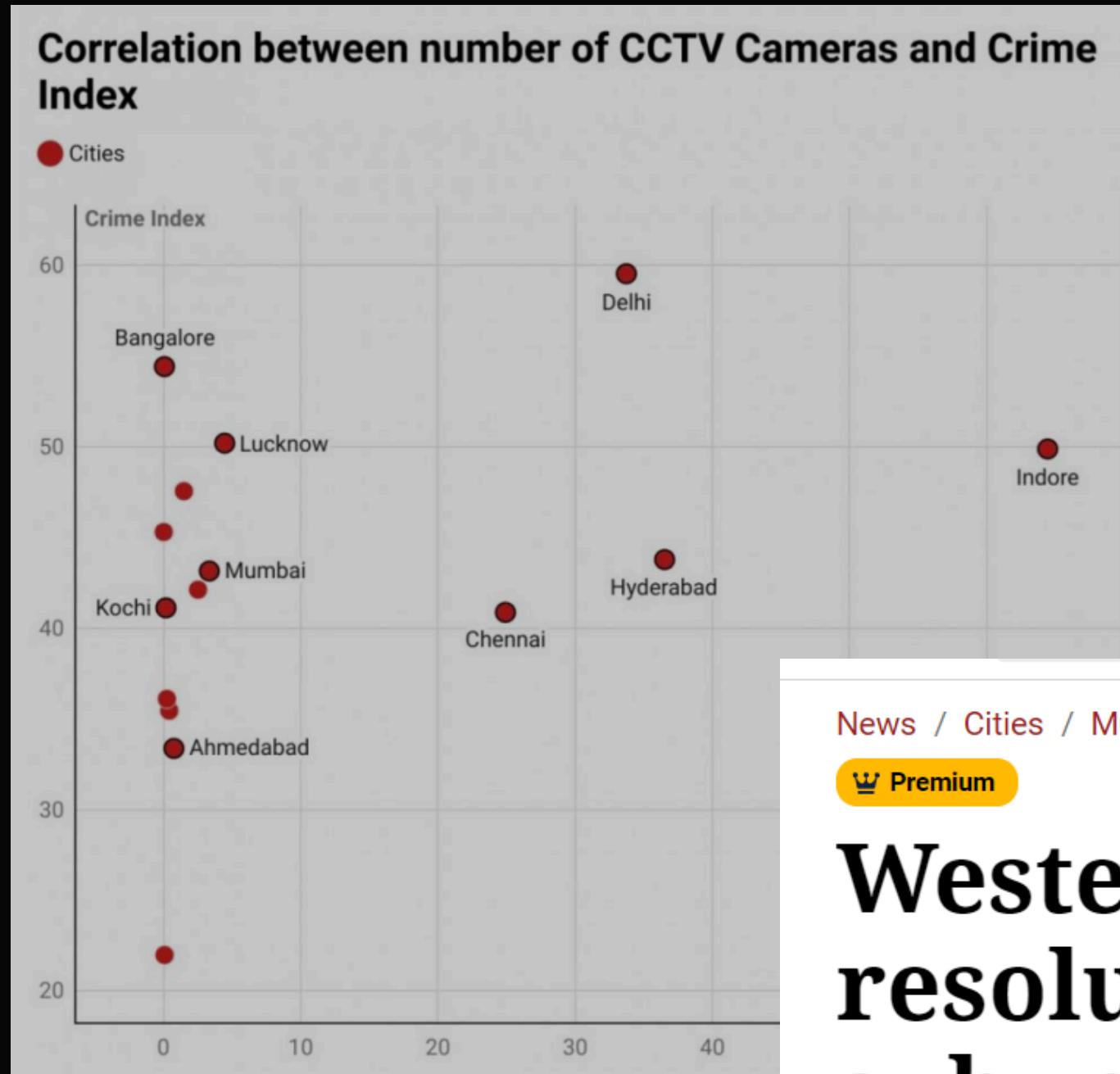


Presentation summary

Key topics covered
in this presentation

- Need for the product
- Survey
- Problem Formulation
- Proposed design
- Proposed GUI
- Implementation
- Future Scope

Need for the Product



News / Cities / Mumbai News / Suburban trains record four-fold rise in railway ac...

Suburban trains record four-fold rise in railway accident fatalities

By Megha Sood

Jan 23, 2023 12:42 AM IST

The accident data provided by the Government Railway Police (GRP) revealed the four-fold increase in fatalities on railway tracks in the MMR, with an average of about seven people losing

News / Cities / Mumbai / Western Railways installs 2,729 high-resolution cameras across 30 Mumbai suburban stations

Premium

Western Railways installs 2,729 high-resolution cameras across 30 Mumbai suburban stations

Of these high-resolution cameras, 450 are equipped with face-recognition technology which could help the authorities identify and trace criminals.

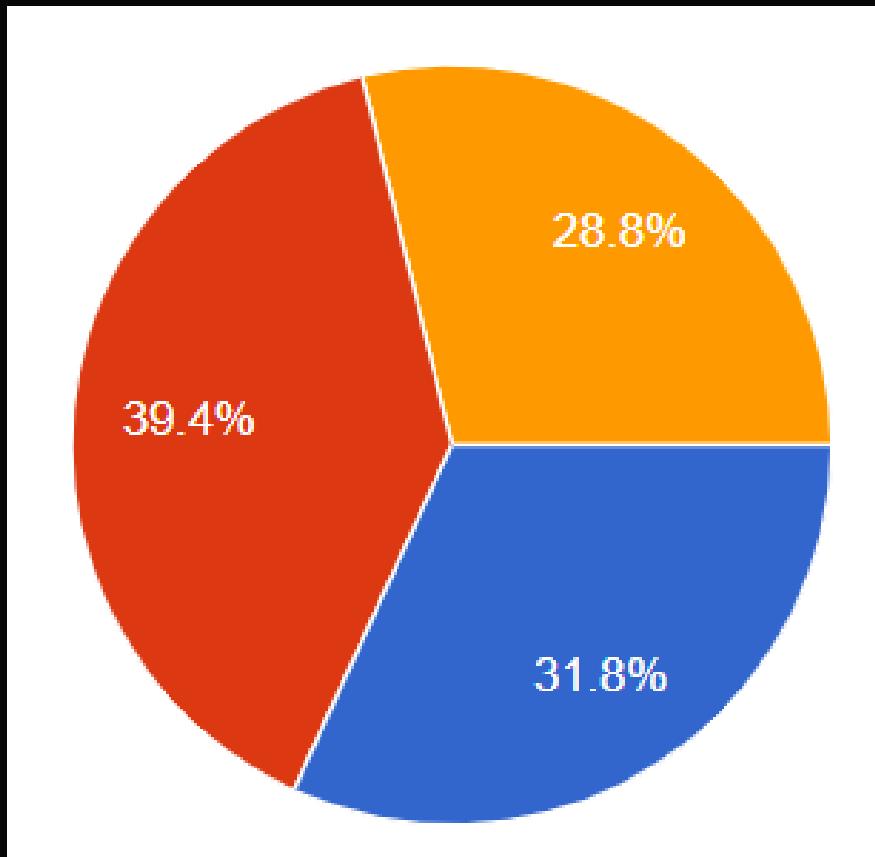
Survey Report



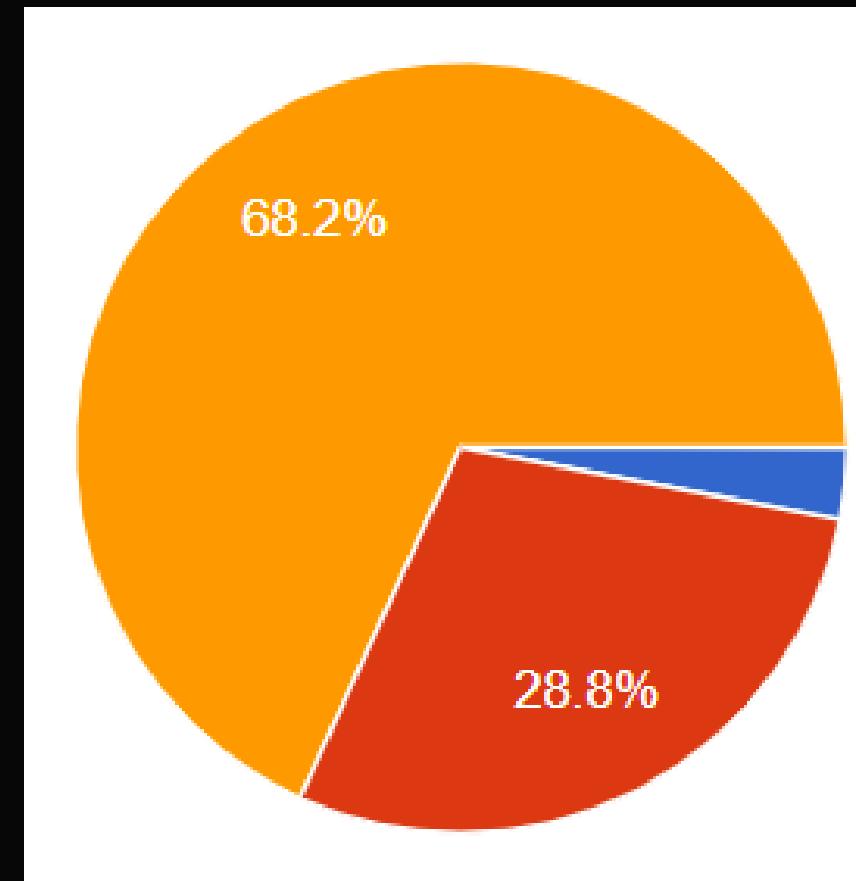
How often have you witnessed such incidents?

- Rarely (Once or twice)
- Occasionally (A few times a month)
- Frequently (Several times a week)

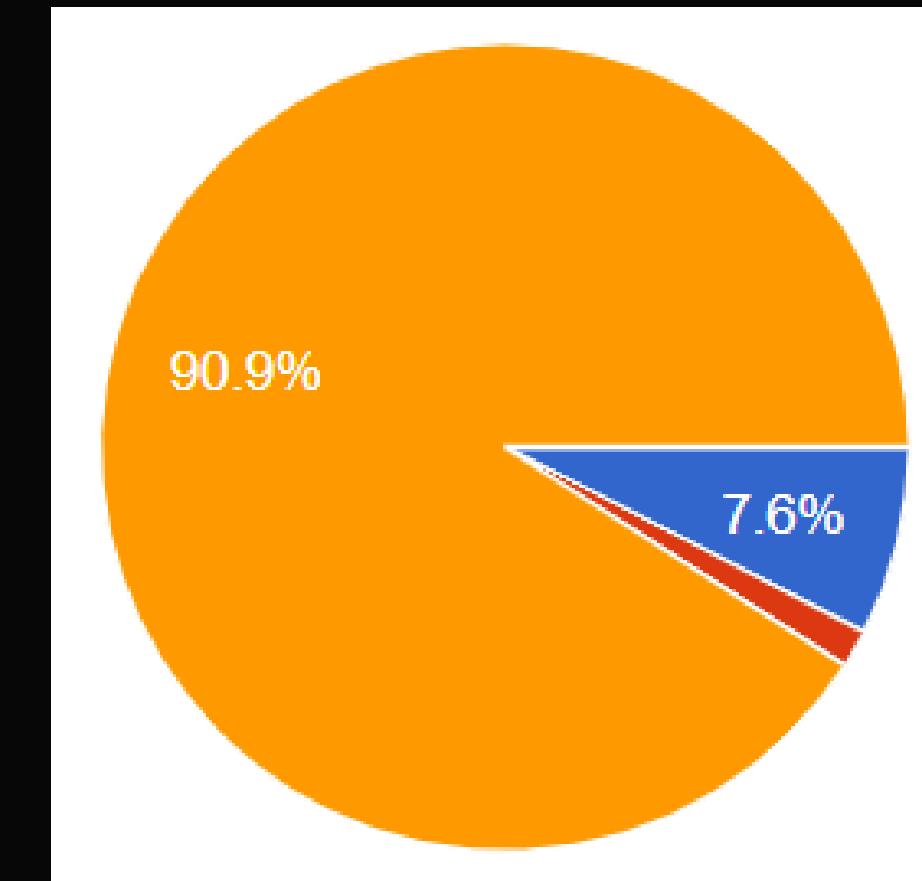
Abandoned Objects



Trespassing / Track crossing



Overcrowding

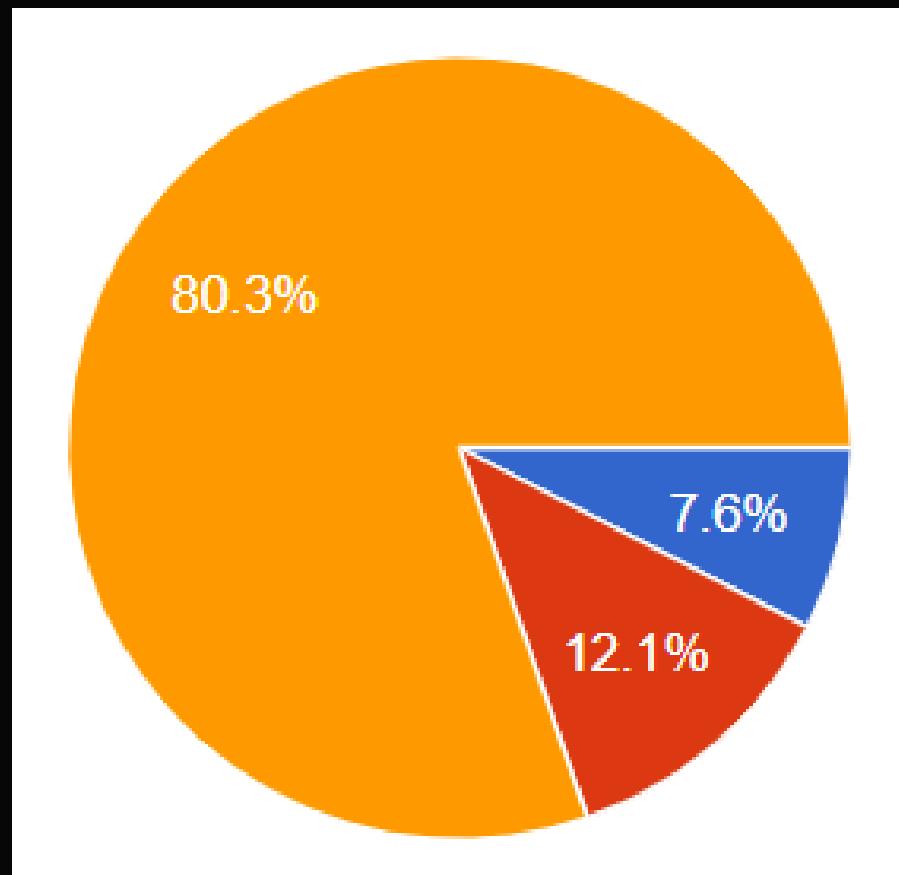


Survey Report

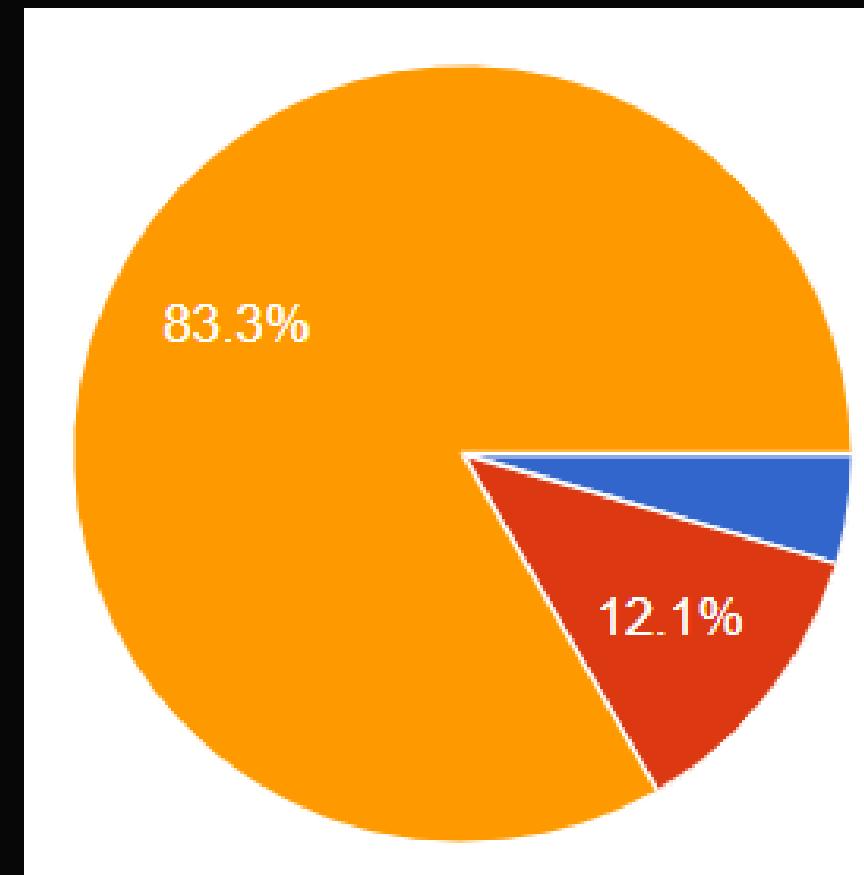
How often are such incidents reported by the passengers?

- Yes, frequently
- Occasionally
- Rarely or never

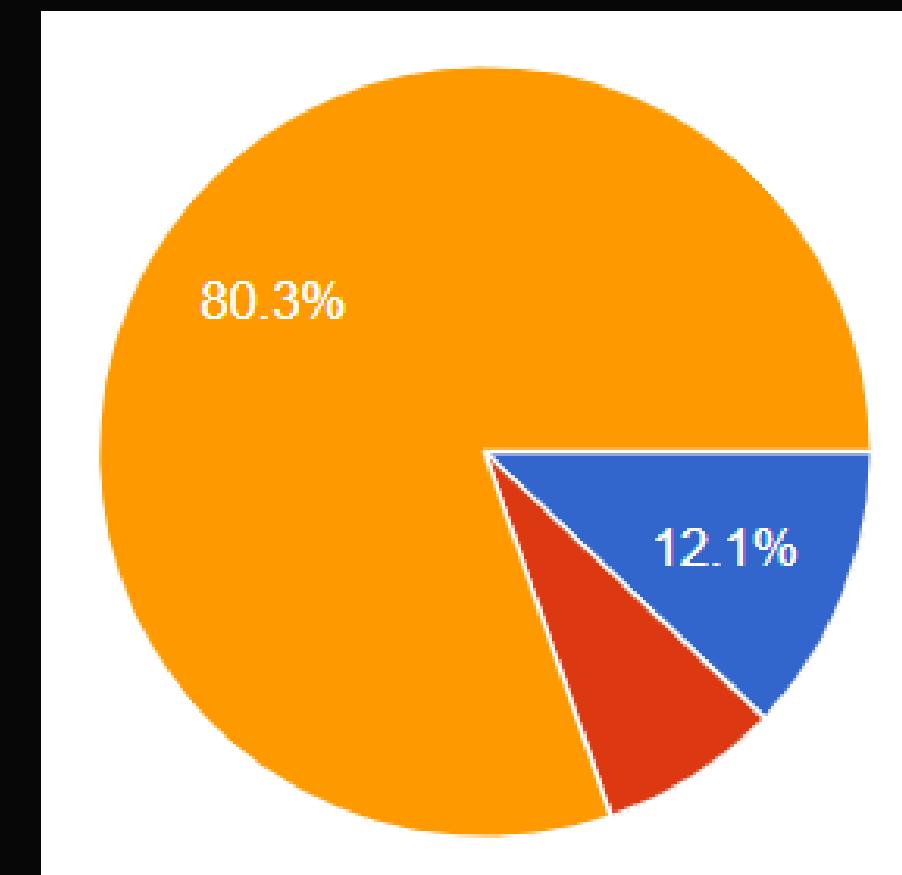
Abandoned Objects



Trespassing / Track crossing



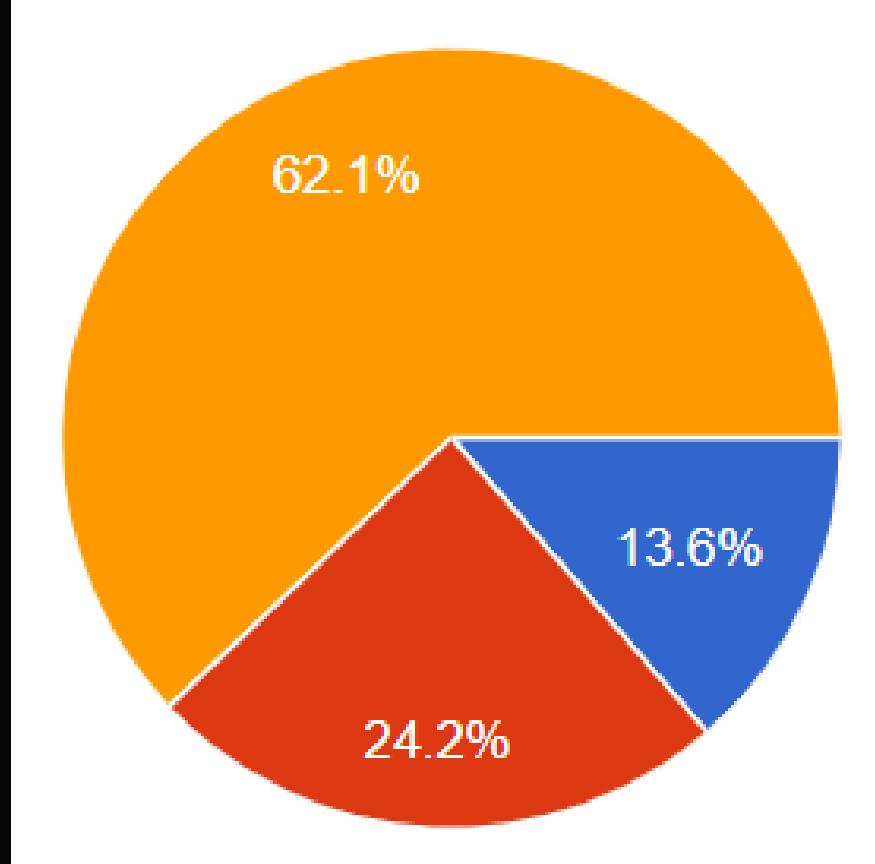
Overcrowding



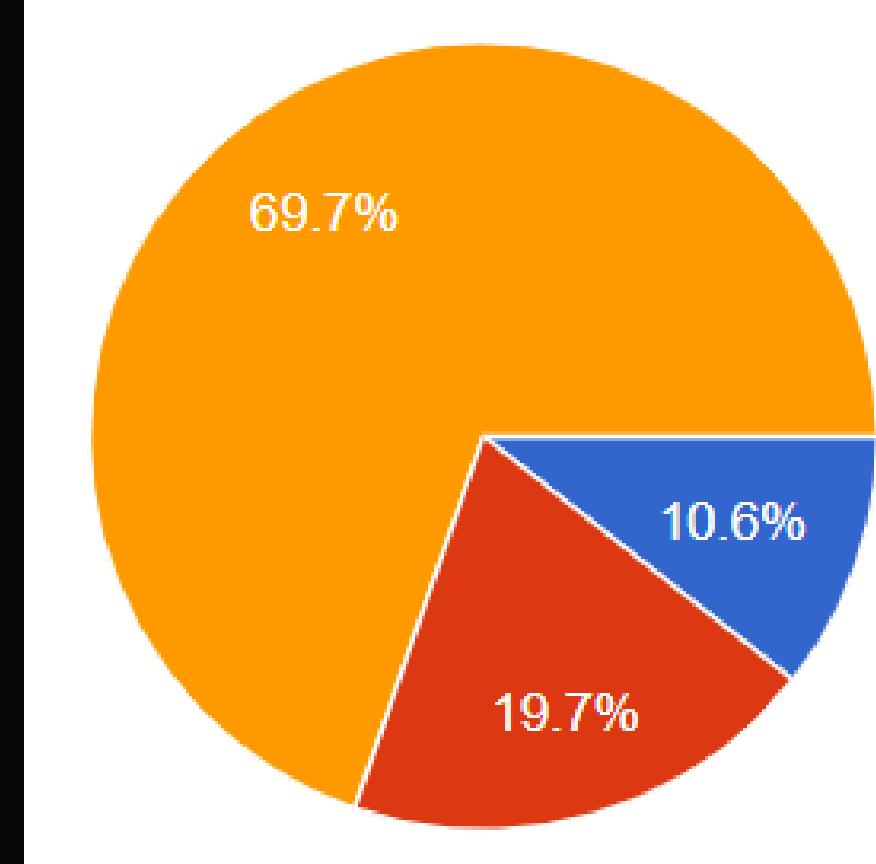
Survey Report

Are actions promptly taken upon reporting such incidents?

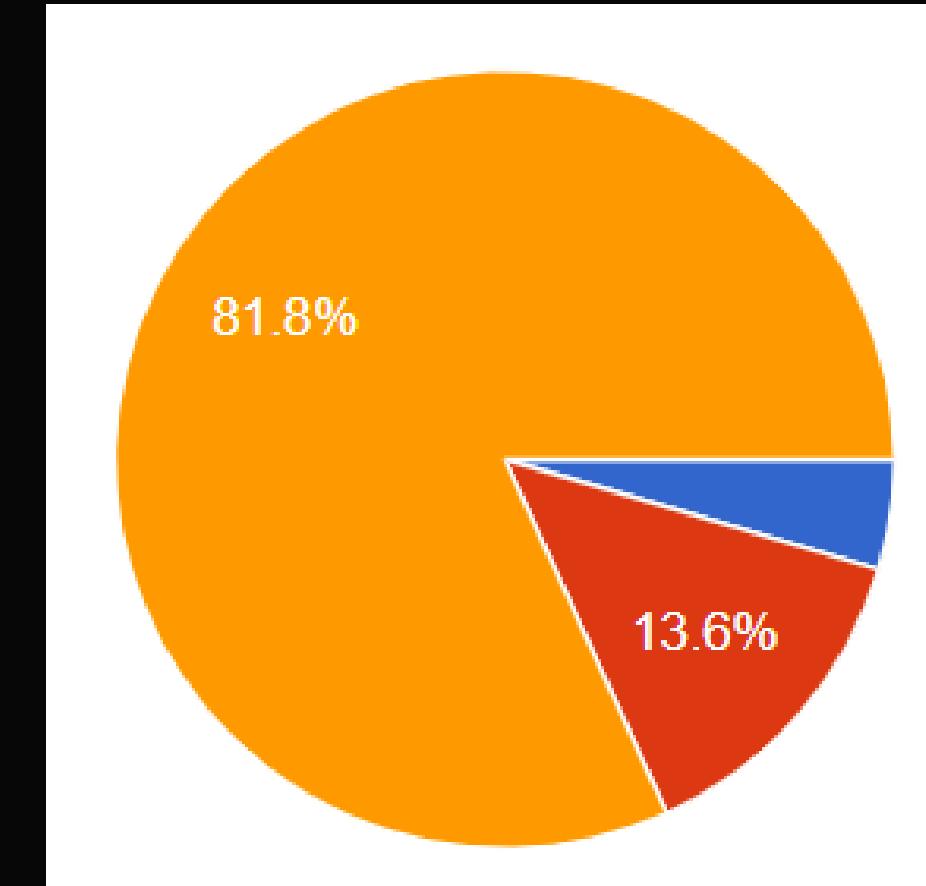
Abandoned Objects



Trespassing / Track crossing



Overcrowding



Problem Formulation

INEFFICIENCY OF
MANUAL
MONITORING

HUMAN VIGILANCE
LIMITATIONS

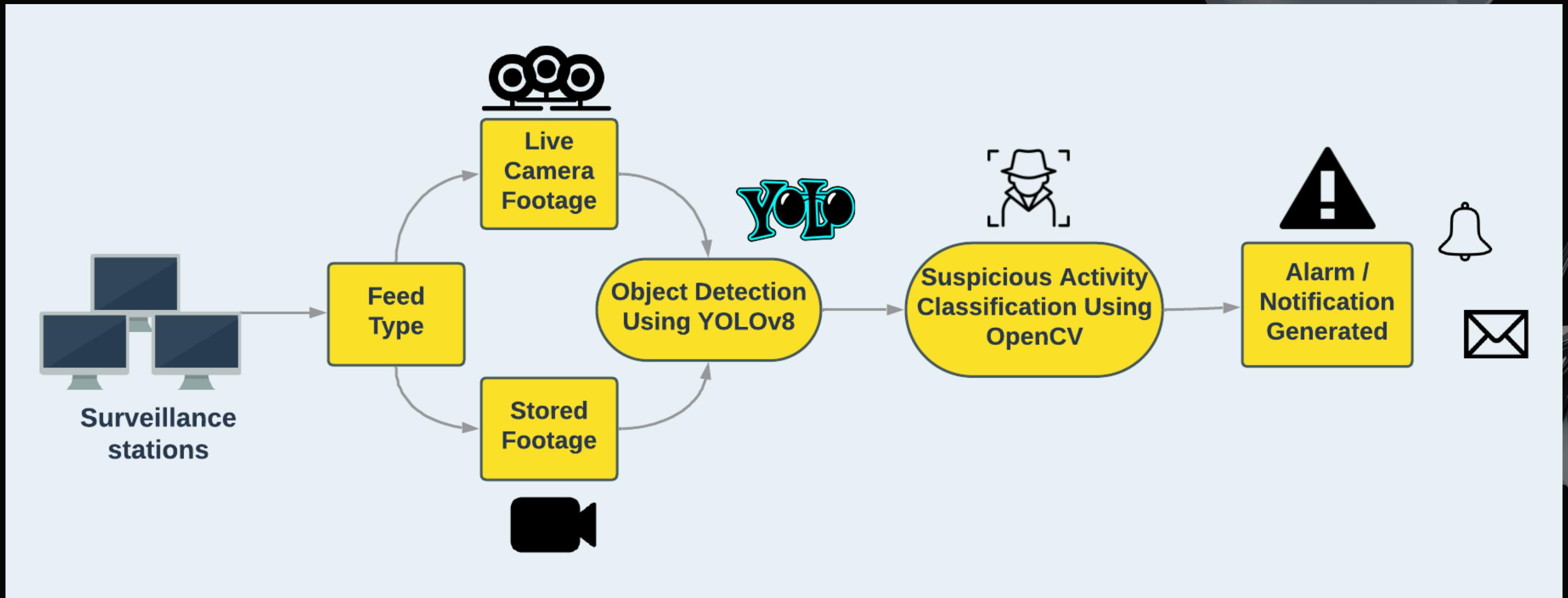
REDUCED
DEPENDENCE ON
MANUAL
MONITORING

UTILIZATION OF
YOLOV8 MODEL

IMPROVED
RESPONSE TIMES

UTILIZATION OF
HIGH-RESOLUTION
CAMERAS

Proposed Solution



Proposed GUI



Anomalies +3

Platform 1

- ENTRY | CAM 0918 05:23 PF 1 HIGH Fighting detected in platform
- BACK | CAM 0458 03:13 PF 4 LOW Over crowd detected in platform
- EXIT | CAM 0448 12:34 PF 3 MID 5 people rushing in platform
- UPSIDE | CAM 1124 23:12 PF 1 LOW Violence detected in platform
- ENTER | CAM 0945 16:2 PF 5 HIGH

Platform 2

- CAM 1
- CAM 2 1 ALERT
- CAM 3 0 ALERT

Platform 3

- CAM 1
- CAM 2 3 ALERT
- CAM 3 1 ALERT

Fighting Detected

Notification +3

Live Crowd Count

PF 1 230+ ↑	PF 2 124+ ↓	PF 3 60+ ↓	PF 4 246+ ↑	PF 5 230+ ↓	PF 6 230+ >
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Forecasted Crowd Count showing results for next 1hr

PF 1 230+ ↑	PF 2 124+ ↓	PF 3 60+ ↓	PF 4 246+ ↑	PF 5 230+ ↓	PF 6 230+ >
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Crowd Trend | Live

select date ▾ select platform ▾

Announcements

- Crowd standing ahead of yellow line Announce in PF 3
- Crowd standing ahead of yellow line Announce in PF 2
- Crowd standing ahead of yellow line Announce in PF 5
- Crowd standing ahead of yellow line Announce in PF 1

Auto announce

Crowd Trend

Time	Green Line (Crowd)	Orange Line (Crowd)
0:00 AM	200	120
2:00 AM	150	130
4:00 AM	130	80
6:00 AM	180	120

ATTENTION

- WET Floor**
- Need 2 Security Guards**

Cleanliness: 20% (WET)

Est. time to onboard: 3 Minutes

Alerts: Cleanliness | Crime | Work

Crime Rate: Safe (19%)

Notification +3

- CAM 1**: ENTRY | CAM 0918 | 05:23 PF 1 HIGH | Dirty floor detected | Quality check required
- CAM 2**: BACK | CAM 0458 | 03:13 PF 4 LOW | Wet floor detected
- CAM 3**: EXIT | CAM 0448 | 12:34 PF 3 MID | UPSIDE | CAM 1124 | Resource allocation alert
- CAM 4**: ENTER | CAM 0945 | 23:12 PF 1 LOW | Resource allocation alert

Platform 1

- CAM 1**: Productivity Rate 40%
- CAM 2**: Productivity Rate 10%
- CAM 3**: Productivity Rate 40%

Recommended Worker Count: showing live results

Assign Duties to workers: select platform | select worker name | Assign | Send Alert

Work Monitoring

Notification +3

- CAM 1**: Fighting detected in platform | 05:23 PF 1 HIGH
- CAM 2**: Over crowd detected in platform | 03:13 PF 4 LOW
- CAM 3**: Violence detected in platform | 12:34 PF 3 MID
- CAM 4**: 5 people rushing in platform | 23:12 PF 1 LOW
- CAM 5**: Announce in PF 3
- CAM 6**: Announce in PF 2
- CAM 7**: Announce in PF 5

Recommended Guard Count: showing live results

Assign Duties to guard: select platform | select guard name | Assign | Send Alert

Emergency Announcements: Auto announce:

- Fire detected, need evacuation
- Person detected on rail track
- Gun detected in person hand
- Fire detected, r evacuation

Rewarded +3

- PLATFORM 1**: 5200+ Points Rewarded
- PLATFORM 2**: 4234+ Points Rewarded
- PLATFORM 3**: 650+ Points Rewarded
- PLATFORM 4**: 6510+ Points Rewarded
- PLATFORM 5**: 534+ Points Rewarded

Today's Rewarded

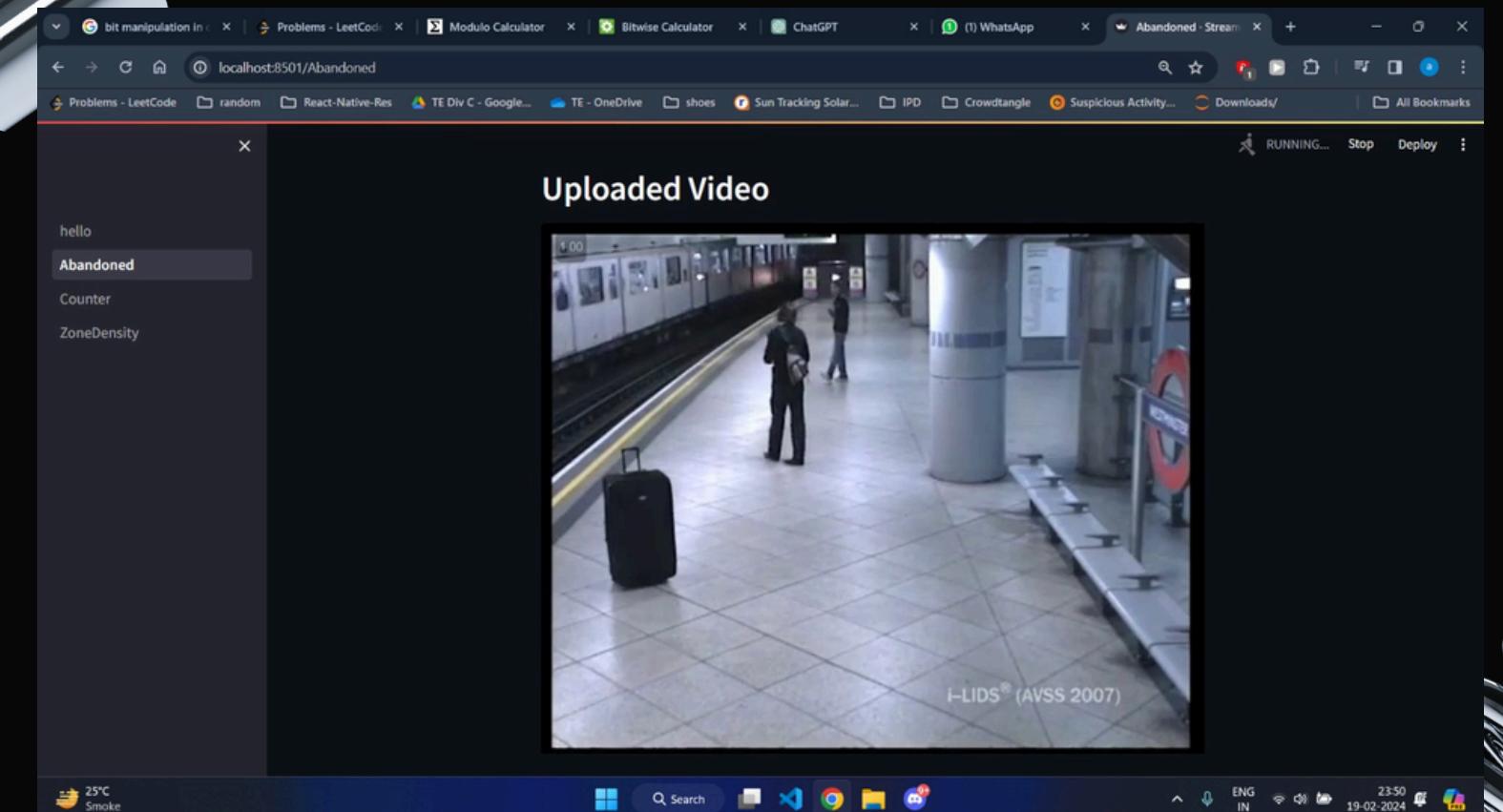
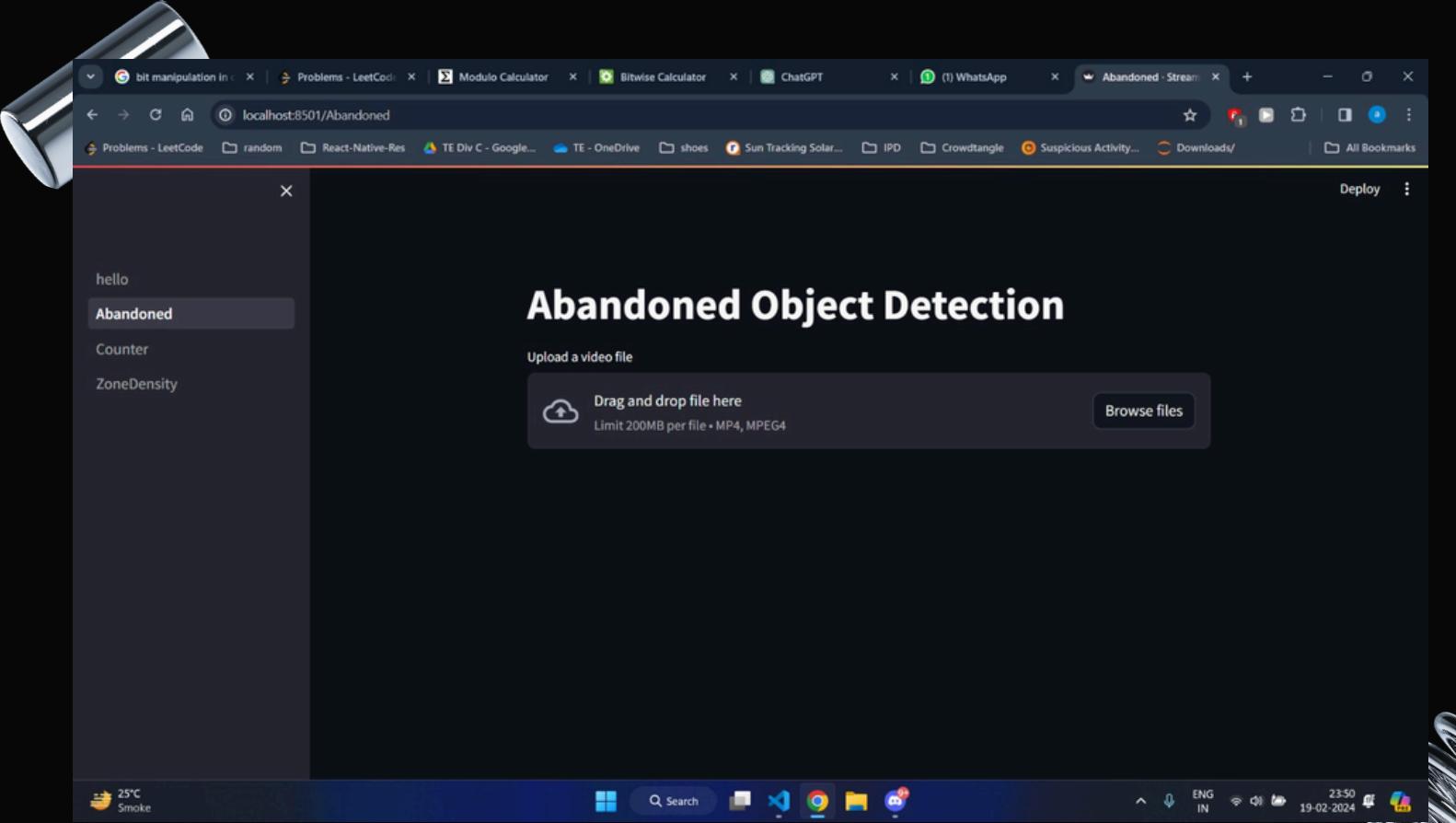
Platform	Points Rewarded
Platform 1	5200
Platform 2	2100
Platform 3	634
Platform 4	2300
Platform 5	4298

Monthly Rewarded

Platform	Percentage
Platform 1	30%
Platform 2	14%
Platform 3	26%
Platform 4	17%
Platform 5	13%

Implementation





localhost:8501/Abandoned

Abandoned Objects: 0

hello

Abandoned

Counter

ZoneDensity

Processed Video

Abandoned Objects: 0

25°C Smoke

Search

IPD

Crowdtangle

Suspicious Activity...

Downloads/

All Bookmarks

RUNNING... Stop Deploy

i-LIDS® (AVSS 2007)

23:51 19-02-2024 ENG IN

localhost:8501/Counter

RUNNING... Stop Deploy :

Coach Occupancy estimation

hello

Abandoned

Counter

ZoneDensity

Upload a video file

Drag and drop file here
Limit 200MB per file • MP4, MPEG4

Browse files

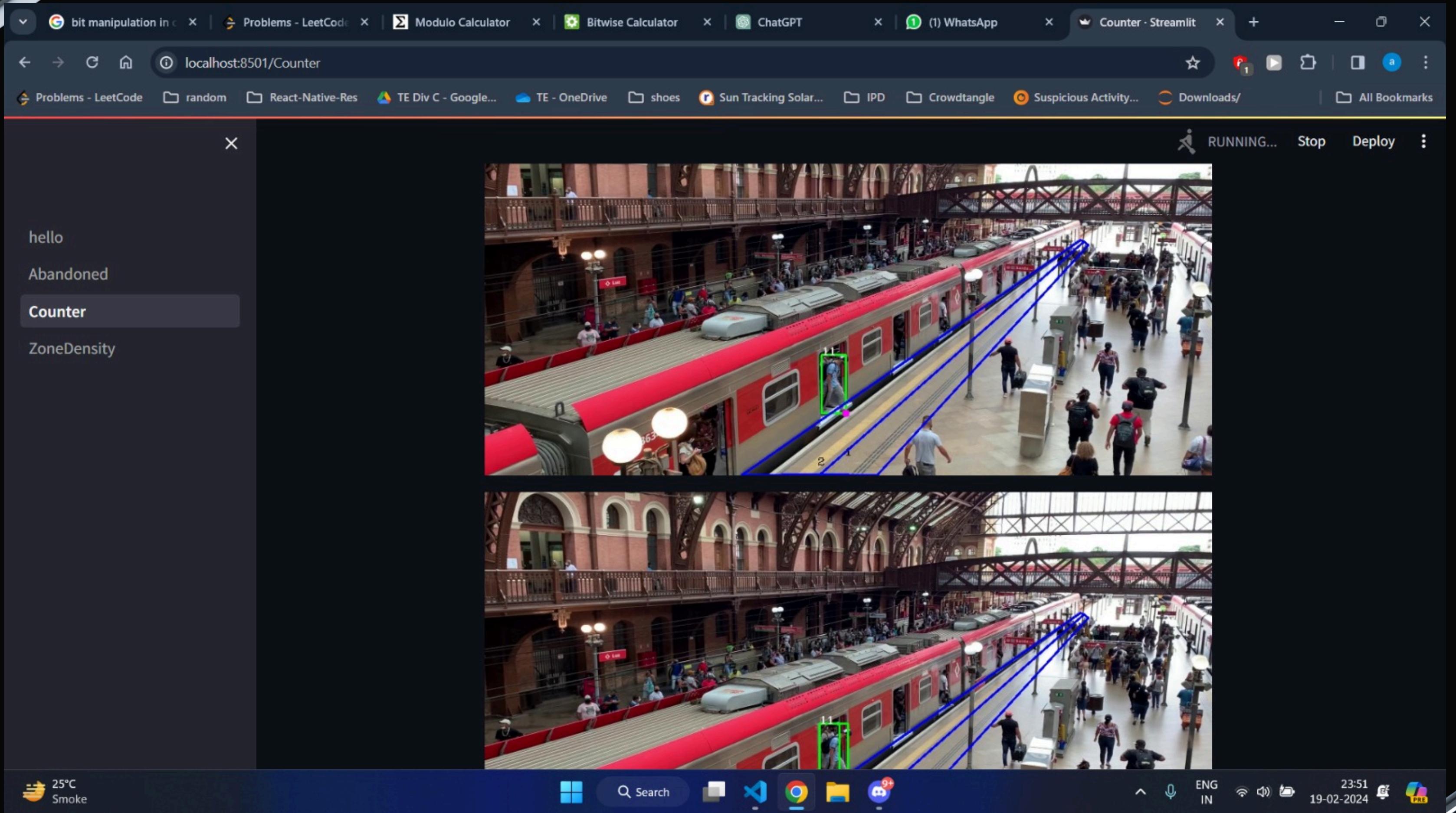
train-video.mp4 6.1MB

25°C Smoke

Search

ENG IN

23:51 19-02-2024 PRE



25°C
Smoke



Search



ENG
IN



23:51
19-02-2024



localhost:8501/ZoneDensity

Drag and drop file here
Limit 200MB per file • MP4, AVI, MPEG4

Browse files

hello

Abandoned

Counter

ZoneDensity

classroom.mp4 7.6MB

2015-06-27 1.00

Zone Counts:

25°C Smoke

Search

9+

ENG IN

23:52 19-02-2024 PRT

localhost:8501/ZoneDensity

RUNNING... Stop Deploy :

hello

Abandoned

Counter

ZoneDensity

Zone Counts:

A classroom scene with various zones and their counts overlaid. The zones are represented by colored boxes (red, purple, yellow, blue) around specific areas or objects. The counts are as follows:

- Red boxes: 19, 16, 11, 9, 62.
- Purple boxes: 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0.
- Yellow box: 60.
- Blue box: 28.
- Orange box: 56.

IPC 2018-06

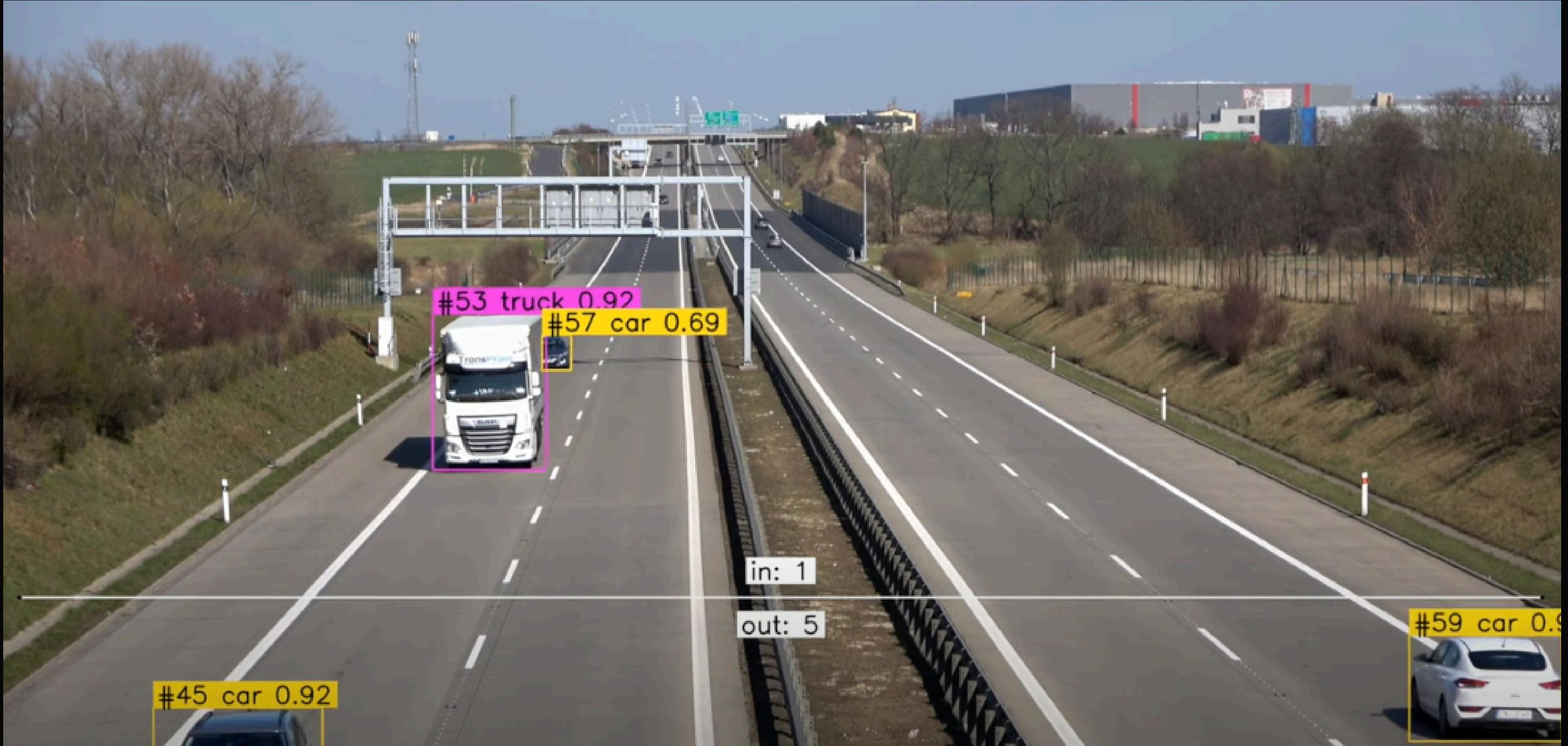
25°C Smoke

Search

ENG IN

23:53 19-02-2024 PRT







/content



Future Scope

- Detection for More Suspicious Activities
- Integrating Facial Recognition Systems
- Expanding beyond Mumbai Suburban Railway Stations
- Unified Platform for Passengers and Authorities