ATCC - TOLL
Automatic Traffic Counting and classification

COS AI

Adhering to

MORTH
Government of India

NHAI
National Highways Authority of India

IHMCL
Indian Highway Management Company Limited

Guidelines

Why AI based ATCC for Toll Plaza?

AI-powered traffic counting and classification systems outperform traditional sensors, providing precise real-time data. They seamlessly integrate with toll plaza management software, offering cost-effective solutions and improved operational efficiency with minimal maintenance.

Why choose COS AI ATCC?

COS AI provides customized solutions for toll plazas, with adaptable hardware and software tailored to diverse vehicle types and axle counts. Its user-friendly interface integrates seamlessly with existing systems, enhancing toll plaza management efficiency.

How ATCC works?

The camera on the gantry near the toll plaza transmits video through optical cables, and with the assistance of COS AI software, an LPU kit in the toll office performs analytics. The real-time traffic data is then showcased on a separately provided computer interface.

Key Features:

★ Detects more than 17 classes, covering most of the NHAI Mapper Vehicle Classes (20 classes).

★ Achieves 95% classification accuracy and 98% counting accuracy.

★ Validation of the toll plaza traffic is done using other installed methods.

★ Flexible post-editing options and an excellent report format for comprehensive toll management.

ATCC Dashboard

Instant Vehicle Classification on Dashboard
★ Provides a real-time overview of the current vehicle classifications.
★ Allows users to instantly view the vehicle types present.

Hourly Reports with In-Front Vehicle Images:
★ Generates detailed reports every hour, including information on vehicle classifications.
★ Includes images of vehicles taken from the front for evidence or additional analysis.

Real-Time Monitoring

Visual Data's

Hourly, Weekly, and Monthly Count-Based Reports:
★ Offers flexibility in reporting with options for hourly, weekly, and monthly counts.
★ Enables users to track trends and patterns over different time frames.
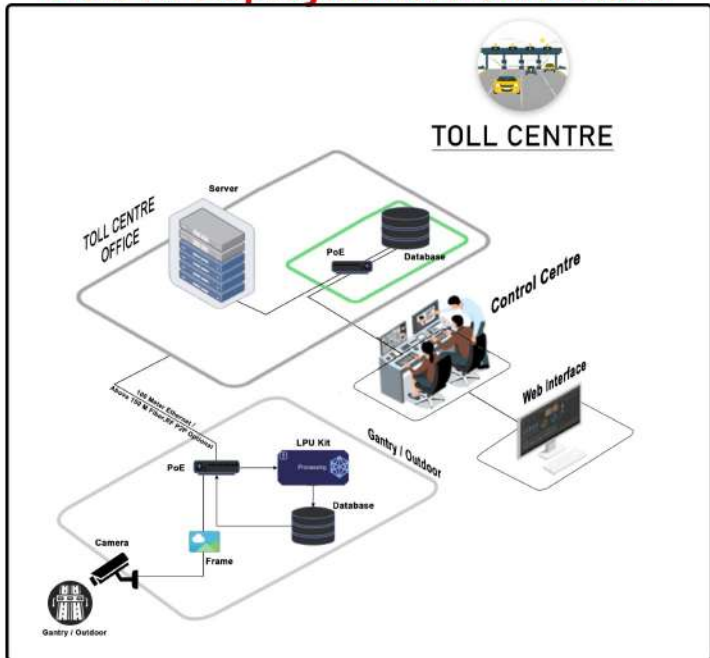
Downloadable Reports:
★ Users can download reports for further analysis or record-keeping.
★ Provides a convenient way to share or store historical data.

API Integration for ATMS/Toll Software:
★ Offers APIs for seamless integration with existing Advanced Traffic Management Systems (ATMS) or Toll Software.
★ Enables customers to incorporate the vehicle classification data into their existing infrastructure.

This system could be beneficial for various applications, such as smart city initiatives, transportation management, toll collection, and traffic monitoring. It provides both real-time insights and historical data for more in-depth analysis and decision-making.
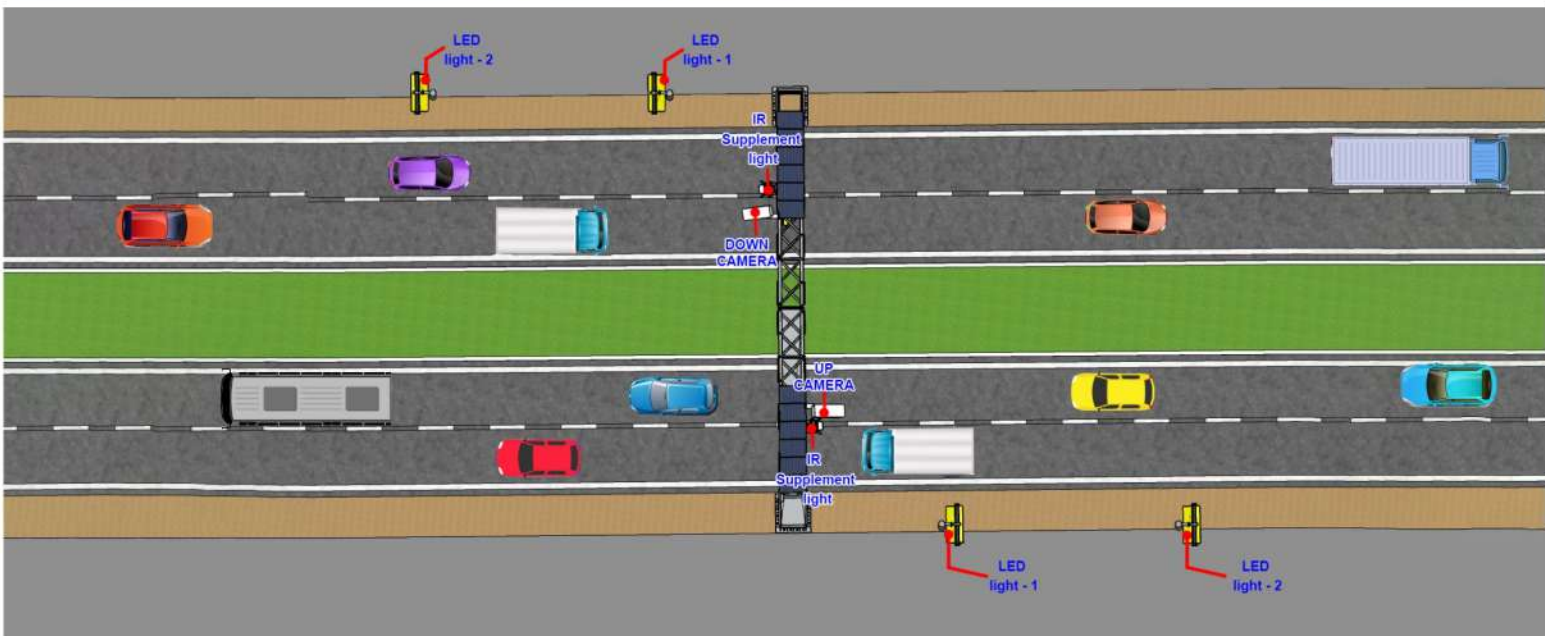
COS AI Deployment Architecture

Mapper Vehicle Classes vs COS AI Classes

TOLL CENTRE

1. Two wheeler
2. Three – Wheeler Passenger
3. Three - wheeler Freight
4. Car / Jeep / Van
5. MLCV
6. LCV 2 - axle / 3 - axle ⭐
7. Mini-Bus / Bus 2 - axle ⭐
8. Truck 2 - axle
9. Bus 3 - axle
10. Truck 3 - axle
11. Truck 4 - axle
12. Truck 5 & 6 - axle ⭐
13. Truck Multi axle
14. EMM
15. HCM
16. Tractor
17. Tractor (w) trailer

Capable of Classifying 17+ Categories of Vehicles

⭐ The combined class will be segregated during the post-audit

Welcome to Toll Plaza

UP CAMERA
DOWN CAMERA
IR Supplement light
IR Supplement light
LED light - 1
LED light - 2

LED light - 2
LED light - 1
IR Supplement light
DOWN CAMERA
UP CAMERA
IR Supplement light
LED light - 1
LED light - 2

COS AI 's Indicative ATCC Toll Components
(For 4 / 6 lane Highway section)

Sl.No	ATCC Toll Components	Qty.	Unit	Remarks
1	COS AI ATCC Toll Software	1	No.	COS AI
2	Hardware of COS AI LPU Kit	2	Nos.	COS AI
3	IP Camera 2MP / 5MP - HIKVISION / DAHUA	2	Nos.	Client
4	ARMOURED Ethernet CAT6 Cable (Camera to POE switch connectivity)	2	Nos.	Client
5	Lighting Pole for 8.0m Pole with 1m Arm @ 5.5m each 2 poles (LHS & RHS).	4	Nos.	Client
6	PoE Switch D-Link 5 Port	1	No.	COS AI
7	FIBER Cable & Media Converter, RF P2P to connect 2 Cameras from the gantry to Toll Centre LPU Kit. Because gantry/camera pole to toll centre more than 400 metres. (Optional)	As per site		Client
8	If Place the camera near the toll centre (less than 150m) Instead of gantry/camera pole ARMOURED CAT6 cable is preferable.	As per site		Client
9	LED Focus Lamp 1000W / 500W as per the Plan Diagram	6	Nos.	Client
10	To viewing the real time scenario - Desktop (Specs.:i5/ 16GB RAM / 1 TB SSD)	1	No.	Client
11	COS AI ATCC Toll Software	1	No.	Client

Terms & Conditions

- The client is responsible for covering the costs associated with Uninterrupted Power Supply, lighting, Internet Broadband line, Nework Cabling, Camera mounting, and any other miscellaneous works.

- Camera installations must be positioned at a minimum height of 18 feet above the surface.

- FIBER Cable & Media Converter, RF P2P connectivity to connect 2 Cameras from the gantry/camera pole to Toll Centre LPU Kit. Because the gantry to toll centre more than 400 metres. (Optional) are the responsibility of the client.

- If Place the camera near the toll centre (less than 150m) Instead of gantry/camera pole ARMOURED CAT6 cable is preferable for the connectivity establishment.

- Two lights will be installed, necessitating the placement of two poles in front of the camera pole. A minimum space of 20 meters between each pole is required on both LHS and RHS.

  Additionally, a third light will be installed near the camera with a road-focused beam.

- The video coverage area must not have stationary vehicles parked within it. Only through-traffic is preferred.

- For Toll Plaza installations, it is recommended that only through-traffic be accommodated.

- Usage in areas with mixed traffic, such as road crossings, traffic signals, or leakage roads, is not recommended.

- If a customer requests usage on road crossings, service roads, leakage roads, etc., a separate product should be explored .

Dr.T.Mayilvahanan
Founder Chairman & Managing Director

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ATCC MOVABLE
Automatic Traffic Counter and Classifier

BUS

UP   CAR

COS AI

Exclusively for Traffic Mangers & DPR Consultants

Adhering to

MORTH
Government of India

NHAI
National Highways Authority of India

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Indian Highway Management Company Limited

Guidelines

Why AI based ATCC Movable?

The ATCC Movable system comprises a smart GPU-powered kit, Camera with batteries and other essential accessories, making it highly effective for vehicle detection at any time and in any location. This system is particularly valuable for Traffic Managers and DPR (Detailed Project Report) consultants, aiding them in efficient traffic management and planning.
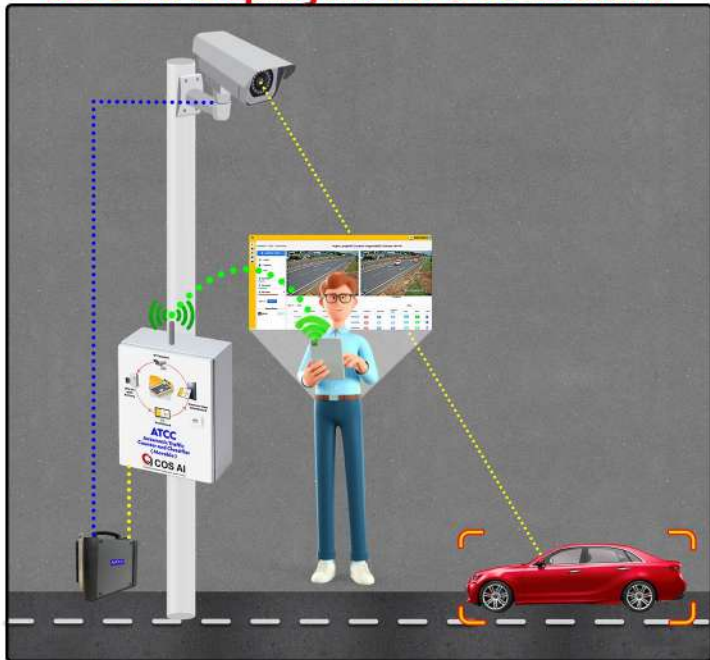
How ATCC Movable works?

Our supplied cameras are strategically placed at suitable angles to ensure without occlusion of vehicles. A GPU kit, installed alongside the cameras, processes the video data using advanced analytics for accurate detection and classification. The results are displayed in real-time on a dashboard and can be shared with your customers, providing valuable insights into traffic patterns.
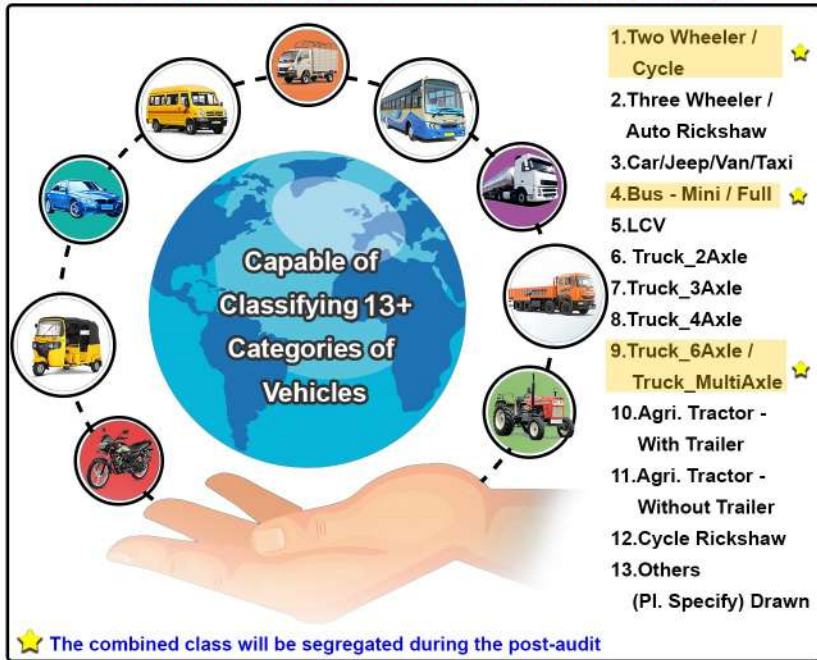
Key Features:

★ Detects more than 13 Classes, covering most of the IRC Classes(16 Classes).

★ Achieves 95% classification accuracy and 98% counting accuracy after post audit.

★ Portable and easily transported to any location.

★ Designed specially for Indian roads.

★ Detects vehicle axle configuration.

★ Free Flow Traffic Count & Classification up to 4 lanes.

COS AI Deployment Architecture

IRC Vehicle Classes vs COS AI Classes

Capable of Classifying 13+ Categories of Vehicles

1. Two Wheeler / Cycle ⭐
2. Three Wheeler / Auto Rickshaw
3. Car/Jeep/Van/Taxi
4. Bus - Mini / Full ⭐
5. LCV
6. Truck_2Axle
7. Truck_3Axle
8. Truck_4Axle
9. Truck_6Axle / Truck_MultiAxle ⭐
10. Agri. Tractor - With Trailer
11. Agri. Tractor - Without Trailer
12. Cycle Rickshaw
13. Others (Pl. Specify) Drawn

⭐ The combined class will be segregated during the post-audit

COS AI 's Indicative ATCC Movable Components - (One location One kit for 2-lanes)

Sl.No	ATCC Movable Components	Qty.	Unit	Cost per unit + Tax	Remarks
1	COS AI ATCC Movable Software	1	No.	Contact	COS AI
2	Hardware of COS AI LPU Kit	1	No.	Contact	COS AI
3	IP Camera 2MP / 5MP - HIKVISION / DAHUA	1	No.	Contact	Client
4	8m Telescopic tube	1	No.	Contact	Client
5	PoE Switch TP Link / HIKVISION	1	No.	Contact	COS AI
6	Internet Dongle	1	No.	Contact	COS AI
7	To viewing the real time scenario				
	Laptop (Specs.: i5/ 8GB RAM / 512 GB SSD) - Optional	1	No.	Contact	Client
	Tab (Windows / Android)	1	No.	Contact	Client
8	APPA Portable Lithium-ion battery for LPU Kit and Camera power supply (Up to 10 hours backup)	1	No.	Contact	Client / COS AI
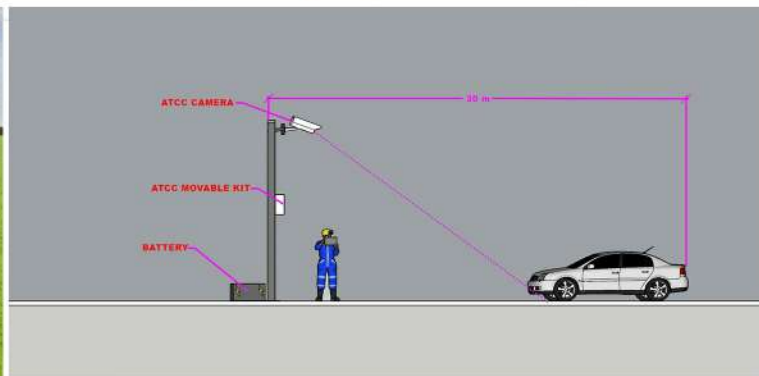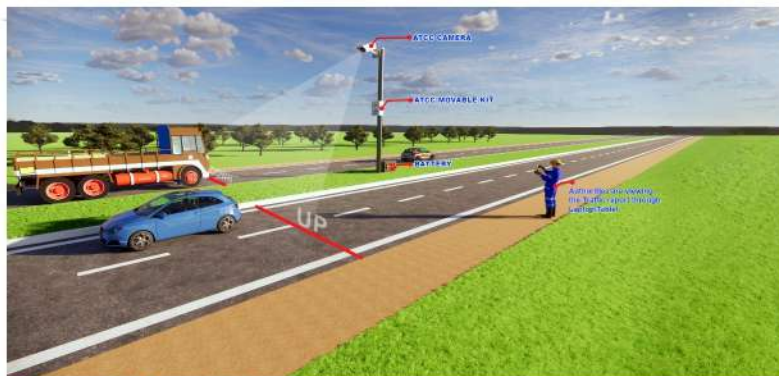
Terms & Conditions

★ The client is responsible for covering the costs associated with Uninterrupted Power Supply, lighting, Internet facilities, Network Cabling, Camera mounting, and any other miscellaneous works.

★ Camera installations must be positioned at a minimum height of 12 feet above the surface.

★ The video coverage area must not have stationary vehicles parked within it. Only through-traffic is preferred.

★ Usage in areas with mixed traffic, such as road crossings, traffic signals, or leakage roads, is not recommended.

★ If a customer requests usage on road crossings, service roads, leakage roads, etc., a separate product should be explored.

COS AI – AI Powered Intelligent Transportation System Provider

Please visit other similar ATCC products:
- **ATCC Toll** - Exclusively for Toll Managers..
- **AI based Traffic Camera** - Smart and economical system, Installed Our camera and kit and upload video in cloud for and share the result to the customer.
- **ATCC+ANPR** - Premium product both ATCC & ANPR analytics done in single unit.
- We also provide customized AI-based services in ITS for our clients.

Please contact us or visit **www.cosai.in** for more information.

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Branch Office : Bangalore,Chennai
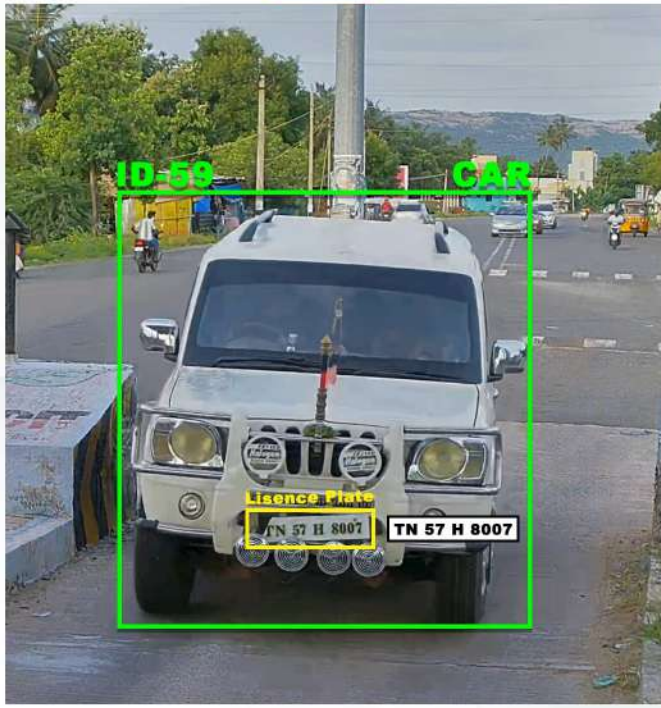
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🌐 www.cosai.in

ATCC with ANPR
Automatic Number Plate Recognition

COS AI

AA 000 ZZ

CAR

TN 58 HD 3886

ID-59   CAR

Lisence Plate
TN 57 H 8007   TN 57 H 8007

ATCC with ANPR Overview:

Combining Automatic Traffic Counting and Classification (ATCC) with Automatic Number Plate Recognition (ANPR) technology, proposed by NHAI, enables vehicle counting, classification, and precise number plate recognition. It streamlines tolling for highway efficiency, supports the Travel Time Measurement System (TTMS) for accurate travel time analysis, and optimizes traffic management, safety, and law enforcement, offering a holistic transport solution.
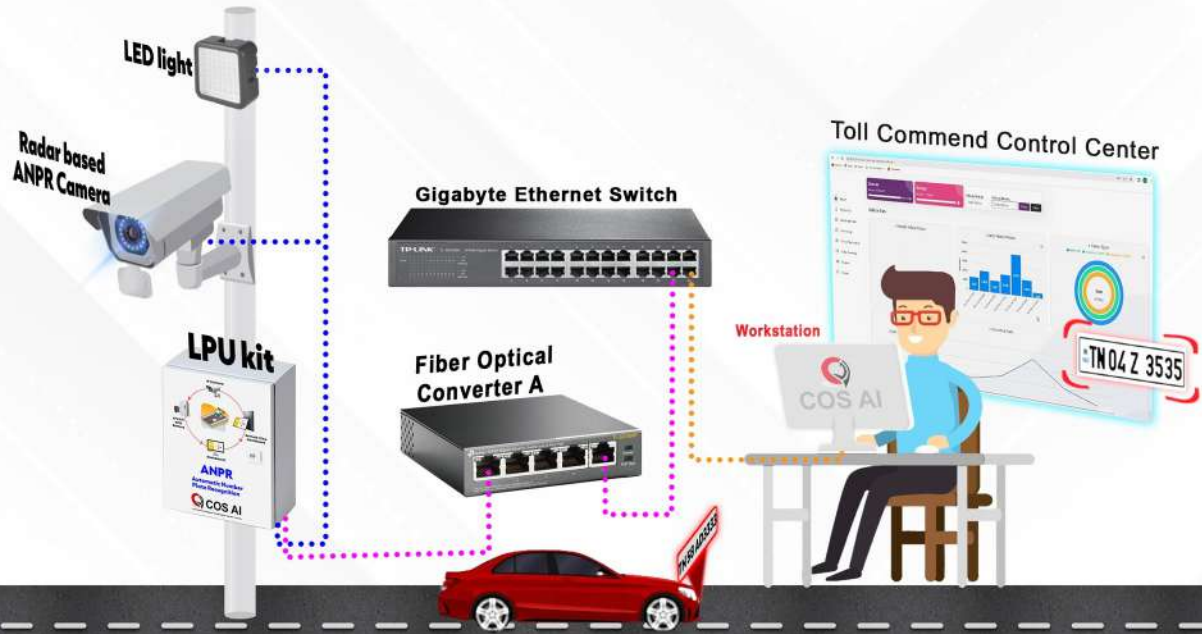
How ATCC with ANPR works?

The integrated system uses cameras, ANPR, and a GPU unit along highways to capture vehicle details, process them in real-time, and automate toll collection for congestion-free flow through toll points.

Key Features:

★ License Plate Detection
★ Character Segmentation
★ Optical Character Recognition (OCR)
★ Image Preprocessing
★ Specialized Cameras
★ Database Integration
★ Real-Time Processing
★ High Accuracy
★ Scalability
★ Data Storage and Retrieval
★ Privacy and Data Protection
★ Alerting and Notification
★ Traffic Analysis
★ Integration with Other Systems.

COS AI Deployment Architecture

ANPR

LED light

Radar based ANPR Camera

Gigabyte Ethernet Switch

Toll Commend Control Center

LPU kit

ANPR
Automatic Number Plate Recognition
COS AI

Fiber Optical Converter A

Workstation

COS AI

TN 04 Z 3535

COS AI 's Indicative ANPR Components - (One location One kit for 2-lanes)

Sl.No	ANPR Components	Qty.	Unit	Cost per unit + Tax	Remarks
1	COS AI ANPR Software	1	No.	Contact	COS AI
2	Hardware of COS AI LPU Kit	1	No.	Contact	COS AI
3	ANPR Radar based Camera	1	No.	Contact	Client
4	Lighting Pole for 8.0m Pole with 1m Arm @ 5.5m / Telescopic tube / Gantry	1	No.	Contact	Client
5	PoE Switch TP Link / HIKVISION	1	No.	Contact	COS AI
6	Internet Dongle	1	No.	Contact	COS AI
7	FIBER Cable / Media Converter to connect Camera to Toll Centre Desktop	1	No.	Contact	Client
8	LED Focus Lamp 1000W / 500W as per site condition	3	Nos.	Contact	Client
9	To viewing the real time scenario - Desktop (Specs.: i5/ 8GB RAM / 512 GB SSD)	1	No.	Contact	Client
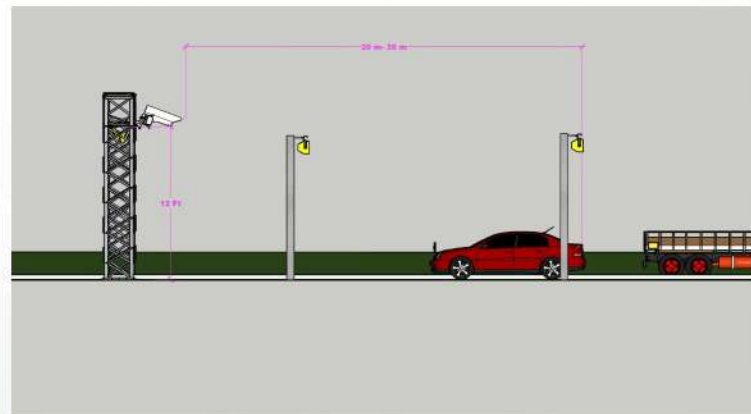
Terms & Conditions

★ Uninterrupted Power Supply, lighting, Internet Broadband line, Network Cabling ,Camera mounting and other miscellaneous works are borne by the client.

★ Camera installation must be at least 12 feet above the surface.

★ Distance from the pole to the desktop fiber connectivity is required are borne by the client.

★ 3 lights will be installed. There must be two poles in front of the camera pole. We need a 20 meter space between each pole. A Third light will be installed close to the camera with a road-focused beam.

★ Standing vehicle should not be parked in the video coverage area. Thro-traffic only preferable.
For TOLL Plaza, through traffic only, not advised for Service road, Road crossing, Traffic Signal, and Leakage Roads, ATCC Toll is recommendable.

★ If a customer requests a service road, leakage road, etc., we are unable to guarantee the accuracy of the counting and classification.

COS AI – AI Powered Intelligent Transportation System Provider

Please visit other similar ATCC products:
• ATCC Toll - Exclusively for Traffic Mangers and Toll Management.
• ATCC Movable - Exclusively for Traffic Mangers and DPR Consultant.
• AI Based Traffic Camera - Smart and economical system. Install our camera and kit, upload videos to the cloud, and share the results with the customer.
• We also provide customized AI-based services in ITS for our clients.

Please contact us or visit www.cosai.in for more information.

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🌐 www.cosai.in

SVDS
Speed Violation Detection System

COS AI

YOUR SPEED 102 Kmh

YOUR SPEED 96 Kmh

Based on ATMS 2021 Manual

CAR

45 Km

CAR

ABC1234
Vehicle Type: Car
Speed: 80km/h
Direction: Approach
Vehicle Color: Orange
Plate: ABC1234
Plate Color: White
Count: +1

• AI-powered LPR Algorithm
• Vehicle Feature Recognition
• License Plate Recognition
• International Plate Support
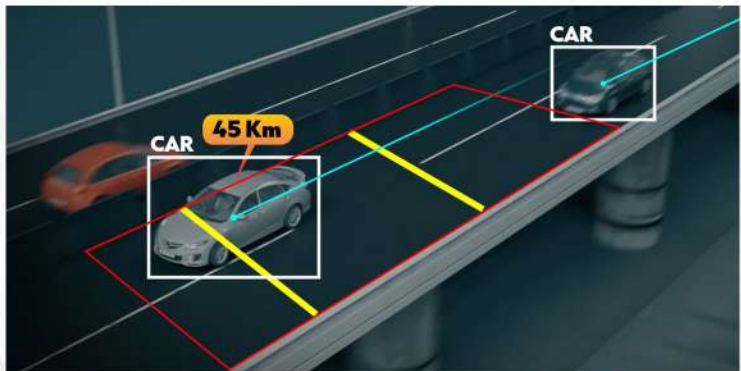
SVDS OVERVIEW:

The Speed Violation Detection System (**SVDS**) consists of an ANPR camera, an LED display, along with a 3D speed radar sensor. It is a comprehensive package compliant with the ATMS 2021 manual and operates in real-time. This project is exceptionally exclusive, boasting high accuracy pared to products from other manufacturers.

How SVDS works?

The ANPR camera captures license plate information, while the 3D speed radar sensor measures vehicle speeds accurately. The collected data is then displayed on the LED screen in real-time.
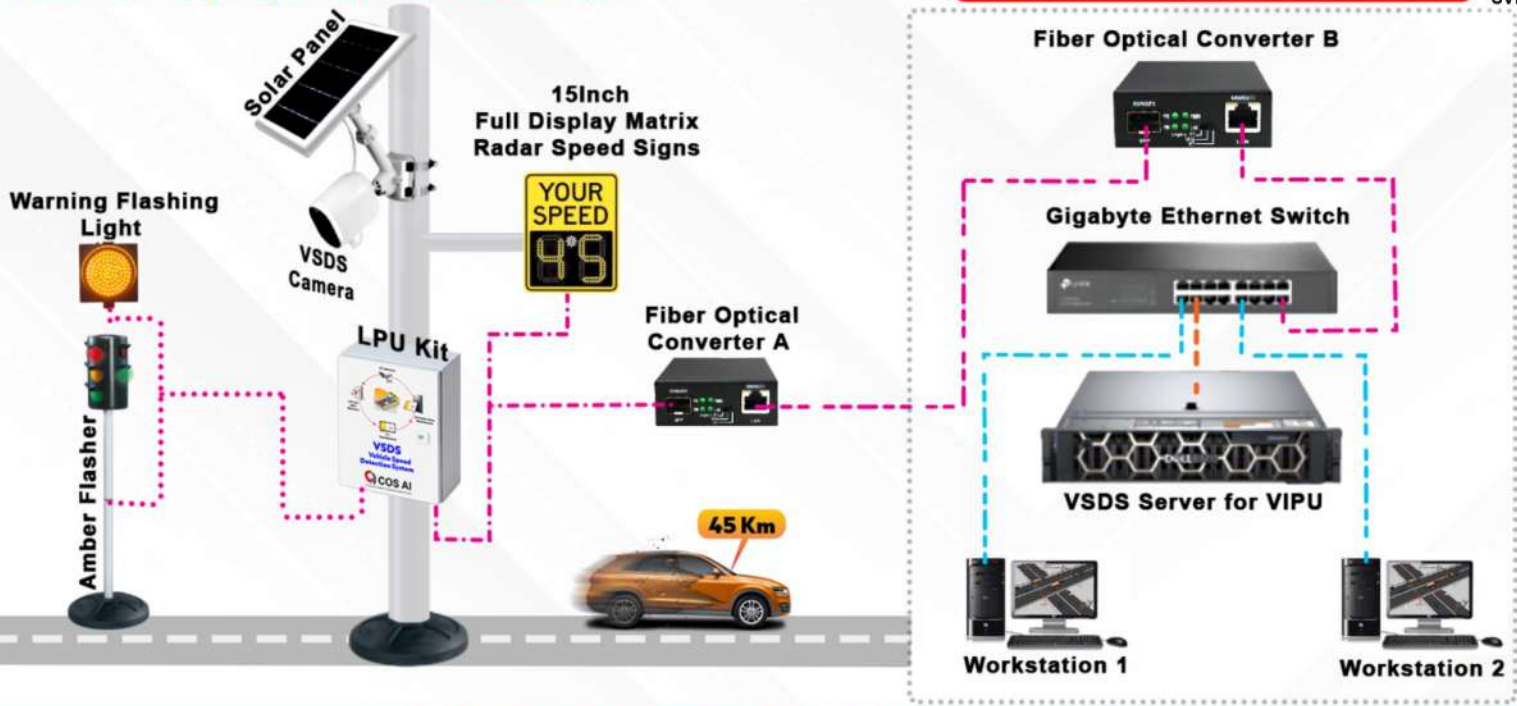
Key Features:

★ **Maximum Speed Limit:** Capable of detecting speeds up to 160 km/h, ensuring comprehensive speed monitoring.

★ **High-Definition Image Capture:** Provides clear and detailed images for accurate identification and evidence.

★ **Automatic Challan Generation:** Automates the process of issuing traffic violation fines, improving efficiency and accuracy.

★ **Customized Reporting:** Offers a fully customizable reporting system to tailor reports to specific business needs and requirements.

★ **Integration with e-Challan Software:** Seamlessly integrates with e-Challan software for streamlined enforcement and record-keeping

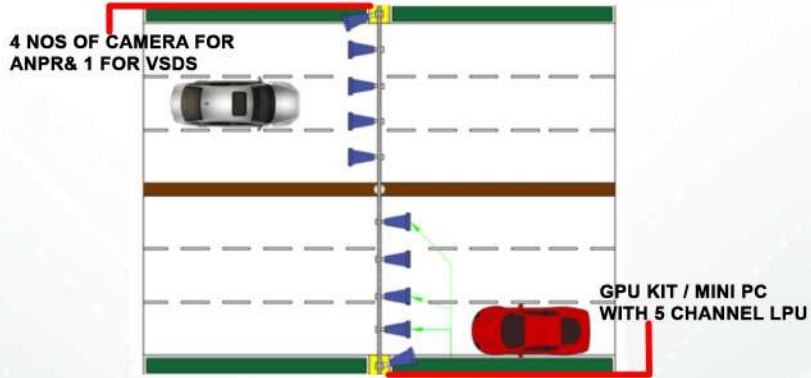# COS AI Deployment Architecture

TOLL MANAGEMENT CENTRE

Fiber Optical Converter B

Gigabyte Ethernet Switch

VSDS Server for VIPU

Workstation 1 — Workstation 2

Solar Panel

15Inch Full Display Matrix Radar Speed Signs

YOUR SPEED 45

Warning Flashing Light

VSDS Camera

LPU Kit

Fiber Optical Converter A

Amber Flasher

45 Km

COS AI 's Indicative SVDS Components

Sl.No	VSDS Components	Qty.	Unit	Cost per unit + Tax	Remarks
1	COS AI VSDS Software	1	No.	Contact	COS AI
2	Hardware of COS AI LPU Kit	1	No.	Contact	COS AI
3	ANPR – Radar based speed detection IP Camera 2MP / 5MP	1	No.	Contact	Client
4	Lighting Pole for 8.0m Pole with 1m Arm @ 5.5m	2	No.	Contact	Client
5	PoE Switch TP Link / HIKVISION	1	No.	Contact	COS AI
6	Internet Dongle	1	No.	Contact	COS AI
7	FIBER Cable / Media Converter for internal connectivity of camera and other network elements	1	No.	Contact	Client
8	LED Focus Lamp 1000W / 500W as per site condition	2	Nos.	Contact	Client
9	To viewing the real time scenario - Desktop (Specs.: i5/ 8GB RAM / 512 GB SSD)	1	No.	Contact	Client
10	15 Inch Full Display Matrix - Radar Speed Signs	1	No.	Contact	Client

4 NOS OF CAMERA FOR ANPR & 1 FOR VSDS

GPU KIT / MINI PC WITH 5 CHANNEL LPU
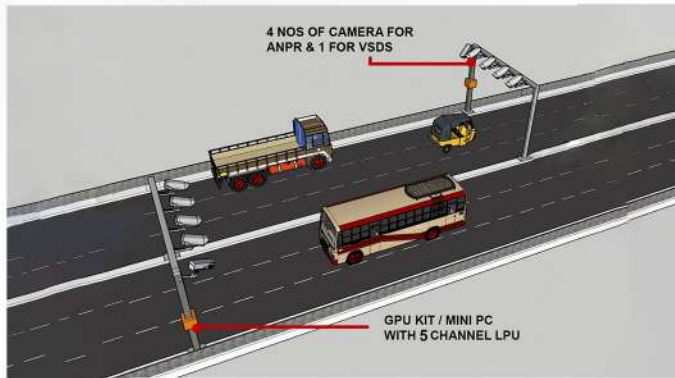
3D - VIEW
VSDS/ANPR CAMERA @ EVERY 10 KMS

4 NOS OF CAMERA FOR ANPR& 1 FOR VSDS

GPU KIT / MINI PC WITH 5 CHANNEL LPU

PLAN
VSDS/ANPR CAMERA @ EVERY 10 KMS

Terms & Conditions

★ The client is responsible for covering the costs associated with Uninterrupted Power Supply, lighting, Internet Broadband line, Network Cabling, Camera mounting, and any other miscellaneous works.

★ Camera installations must be positioned at a minimum height of 18 feet above the surface.

★ Any expenses related to establishing connectivity from the camera pole to the toll center, including fiber connectivity, are the responsibility of the client.

★ Two lights will be installed, necessitating the placement of two poles in front of the camera pole. A minimum space of 20 meters between each pole is required on both LHS and RHS. Additionally, a third light will be installed near the camera with a road-focused beam.

VIDES
Video Incident Detection and Enforcement System

COS AI

STOP VEHICLE

TWO WHEELER

Based on ATMS 2023 Manual

Adhering to

MORTH
Government of India

NHAI
National Highways Authority of India

IHMCL
Indian Highway Management Company Limited

Guidelines

Slow moving Heavy Construction

Van

Car

Car

Car
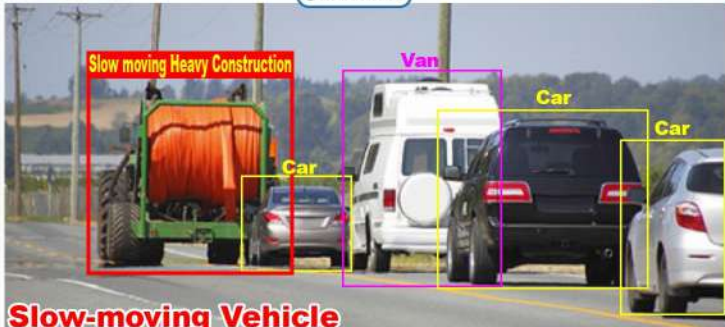
Slow-moving Vehicle

STOPPED VEHICLE

Stopped Vehicle & Poor Visibility

VIDES Overview:

Video Incident Detection and Enforcement System is now mandatory for NHAI concession projects. This product offers a comprehensive solution, including both software and hardware, in accordance with the 2021 manual. The VIDS LPU kit and software also provide excellent integration with the prevailing ATMS system.

How VIDES works?

A Video Incident Detection and Enforcement System combines a GPU kit with cameras to capture and analyze video data. The system processes the footage and identifies incidents, displaying them on operators' screens. Incidents are categorized and presented visually. When an incident is detected, the software raises an alarm and displays the incident image, enabling swift response and enhanced security measures.
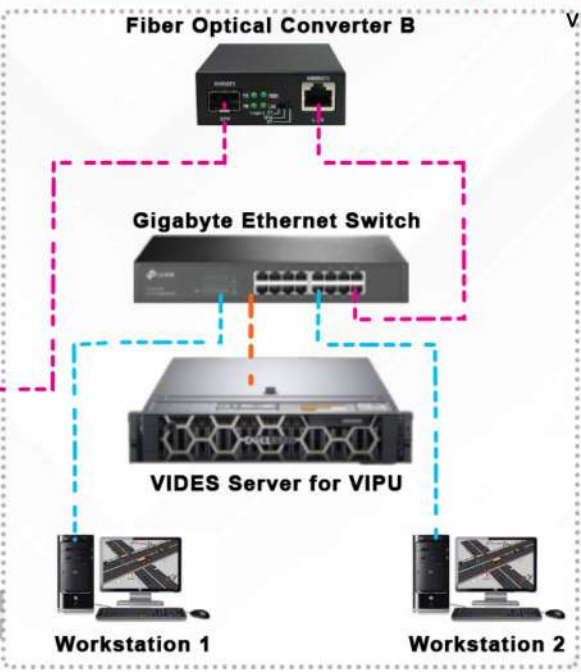
Detected Incidents:

- ★ Vehicle Collisions
- ★ Vehicles Impacting Side Rails or Medians
- ★ Vehicles Emitting Smoke/Fire
- ★ Stalled or Stationary Vehicles
- ★ Fog/Debris/Fallen Objects Detection
- ★ Pedestrian Crossing Monitoring
- ★ Animals on the Carriage Way

- ★ Wrong Lane Driving/Heavy Vehicles in Fast Lane
- ★ Seatbelt Violation
- ★ No Helmet in Two-Wheelers
- ★ Triple Riding in Two-Wheelers
- ★ Banned Vehicles on Expressways
- ★ Opposite Side Traffic Detection
- ★ Over Speeding

COS AI Deployment Architecture

Solar Panel

Warning Flashing Light

VIDES Camera

Amber Flasher

LPU Kit

Fiber Optical Converter A

Fiber Optical Converter B

Gigabyte Ethernet Switch

VIDES Server for VIPU

Workstation 1

Workstation 2

## VIDES scope of work COS AI focusing on mentioned topics:

1. Accident and Incident Detection.
2. Automatic Traffic Counting & Classification (as per ATMS 6 classes).
3. Vision-Based Speed Detection.
4. ANPR - Automatic Number Plate Recognition.

COS AI's Indicative VIDES Components

SI.No	VIDES Components	Qty.	Unit	Remarks
1	COS AI VIDES Software	39	Nos	COS AI
2	Hardware of COS AI LPU Kit	39	Nos	COS AI
3	IP Camera 2MP / 5MP – HIKVISION (Overview, ANPR & Side view)	195	Nos	COS AI
4	PoE 8 Port Switch D Link	39	Nos	COS AI
5	L2 Switch	39	Nos	COS AI
6	To viewing the real time scenario - Desktop (Specs.: i7/ 16GB RAM / 2 TB SSD Hard Disk)	1	Nos	CLIENT

3 NOS OF VIDES / ATCC CAMERA

GPU KIT
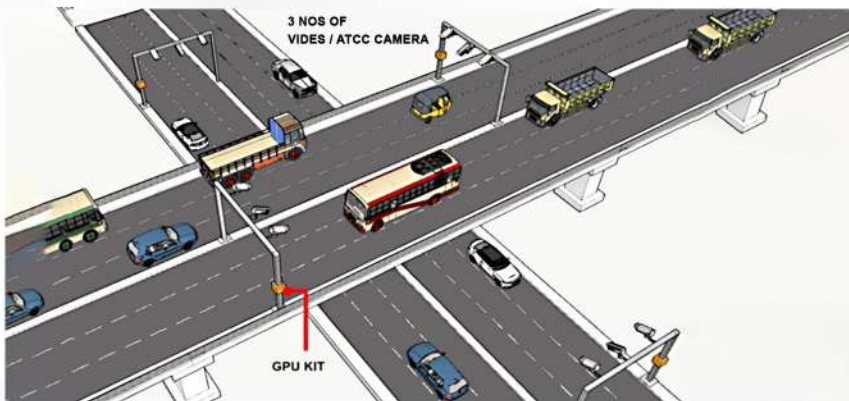
3D - VIEW
VIDES & ATCC CAMERA @ FLYOVER/INTERCHANGE

GPU KIT
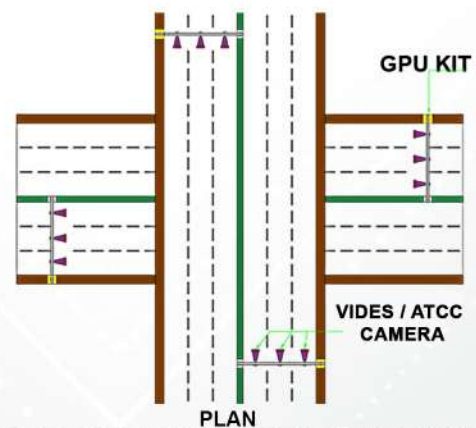
VIDES / ATCC CAMERA

PLAN
VIDES & ATCC CAMERA @ FLYOVER/INTERCHANGE

Terms & Conditions

1. The client is responsible for covering the costs associated with Uninterrupted Power Supply, lighting, Internet Broadband line, Network cabling and any other miscellaneous works.
2. Any expenses related to establishing connectivity from the camera pole/gantry to the toll center, including fiber connectivity, are the responsibility of the client.

COS AI – AI Powered Intelligent Transportation System Provider

Please visit other similar ATMS products:
- **ATCC+ANPR** - Premium product both ATCC & ANPR analytics done in single unit.
- We also provide customized AI-based services in ITS for our clients.

Please contact us or visit **www.cosai.in** for more information.

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🌐 www.cosai.in

AI For SMART POLICING

COS AI

Exclusively Designed for Police Departments

Mobile Vehicle Surveillance System (MVSS)

Mobile Vehicle Surveillance System:

AI Based Mobile Vehicle Surveillance System (MVSS) conducts diverse surveillance tasks like ANPR-based Vehicle Tracking, Helmet Detection, and Intrusion Detection on specialized vehicles for operational departments and intelligence services. It serves as a vigilant road observer for enhanced surveillance and protection.
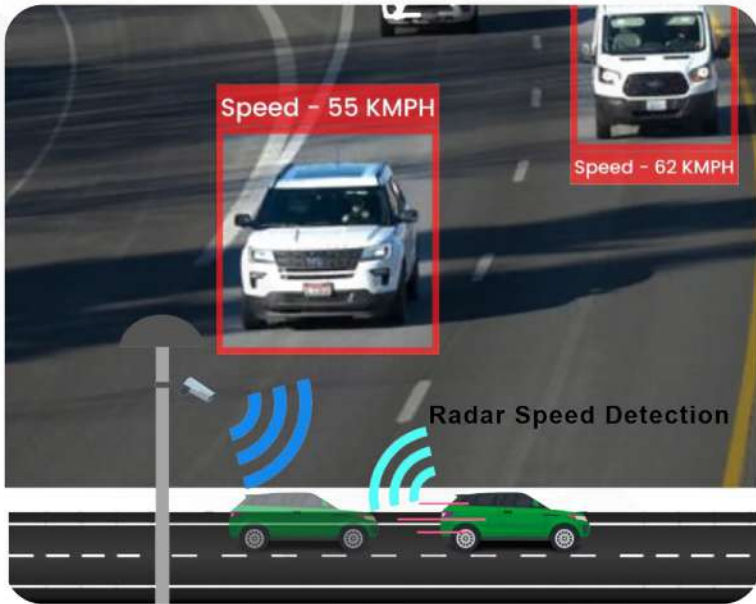
This vehicle-mounted system employs a PTZ camera controlled by a laptop or tablet, enabling operators to adjust the camera's position for targeted surveillance. The user-friendly interface facilitates focus on areas of interest, such as license plates, facilitating effective surveillance and information capture.

Applications:

★ Crime Prevention and Investigation.

★ Patrol and Response Enhancement.

★ Event Security.

★ Traffic Monitoring.

★ Surveillance in Remote Areas.

★ Witness and Evidence Gathering.

★ Undercover Operations.

★ Search and Rescue Operations.

ANPR / ATCC / Traffic Survey

No Helmet Detection

Automate Crowd Counting

Line crossing and intrusion detection

Advanced Surveillance Camera

Vehicle Over Speed Detection System (VOSDS)

AI For SMART POLICING

Vehicle Over Speed Detection System

The Vehicle Speed Detection System (VSDS) is a comprehensive solution, featuring an ANPR camera, LED display, and a choice of either a 3D speed radar sensor or advanced computer vision technology. This integrated package operates in real-time, providing efficient and accurate speed monitoring.

This project stands out for its exceptional exclusivity, offering superior accuracy compared to products from other manufacturers. The VSDS sets a high standard in speed detection, delivering precision and reliability to enhance road safety and ensure compliance with speed regulations.

Tracing Car with Automatic Number Plate Recognition
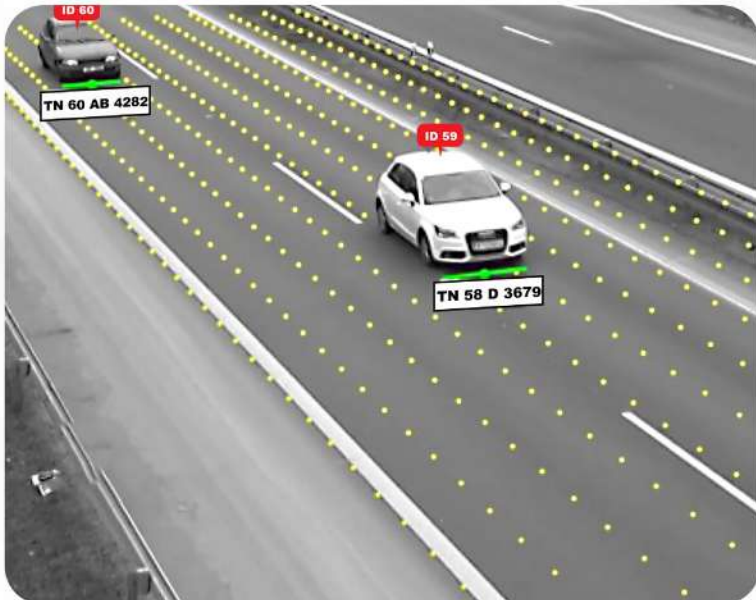
Tracing a Car with ANPR

Police use ANPR (Automatic Number Plate Recognition) technology with specialized cameras for capturing vehicle license plates. Algorithms process images, converting plates to text, and real-time databases flag matches with suspect vehicles, alerting law enforcement instantly. It aids location tracking for investigations and integrates with databases for inter-agency collaboration, strengthening crime prevention efforts. ANPR serves as a deterrent against criminal use of suspicious vehicles, ensuring public safety through effective tracking and identification.

No Helmet Detection

No Helmet Detection

Detecting helmet usage using IP cameras, stationary or vehicle-mounted, use advanced computer vision for helmet detection in safety-critical zones like construction sites and roads. Live video feeds undergo real-time analysis with specialized algorithms, identifying helmets based on unique features. When someone lacks a helmet, instant alerts notify authorities or control centers, enabling effective enforcement of safety rules. This proactive system aids law enforcement and safety personnel in promoting helmet compliance and enhancing overall safety in diverse environments.

Automatic Traffic Counter and Classifier (ATCC)

AI For SMART POLICING

ATCC Mounted Camera

ATCC Pole Camera

Automatic Traffic Counter and Classifier

The AI-Powered Automatic Traffic Counter and Classifier (ATCC) consist of a smart GPU-powered kit , camera with batteries and essential accessories. Positioned on poles or vehicles, provide crucial traffic data for law enforcement. They capture real-time traffic information, enabling AI algorithms to detect vehicle counting and classification, monitor traffic flow, and enhance road safety. When integrated with police systems, they enable rapid responses, ensuring efficient traffic management. Additionally, this information aids police in optimizing traffic routes, managing road closures, and maintaining smooth traffic flow during events or emergencies, thereby enhancing overall public safety and law enforcement efforts.

Automate Crowd Counting

Drone Crowd Counting

Drone Crowd Counting

High - resolution camera drones monitor crowds, sending live video to a central hub. Advanced algorithms count people in real-time, aiding law enforcement decisions for proactive crowd management. Recorded data allows post-event analysis and strategy refinement while adhering to legal and privacy guidelines.


Fixed Crowd Counting
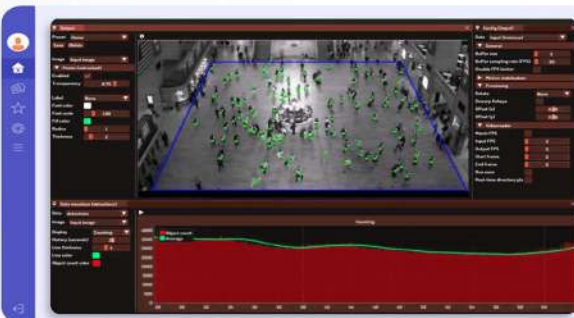
Fixed Crowd Counting

Fixed and vehicle-mounted IP cameras capture and process visual data in crowded areas. Fixed cameras provide real-time footage, while vehicle cameras offer dynamic perspectives. Computer vision algorithms swiftly analyze this data, offering insights into crowd behavior and density. This aids law enforcement and event organizers in efficient crowd management for enhanced public safety at gatherings.

Line crossing and intrusion detection
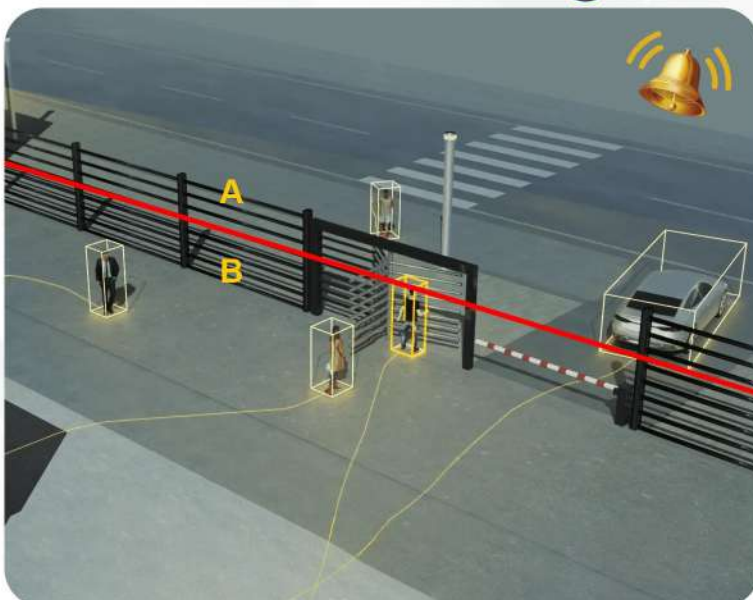
Line crossing and intrusion detection systems are essential tools for law enforcement, offering enhanced security and rapid response capabilities. These systems use virtual lines to monitor specific areas, triggering immediate alerts when unauthorized individuals cross predefined boundaries. Real-time alerts enable swift responses, allowing law enforcement to assess situations accurately. Integrated with surveillance cameras, these systems provide visual verification, aiding in decision-making. Their visible presence acts as a eterrent, dissuading potential intruders. Customizable and adaptable, these systems are invaluable for safeguarding critical areas and maintaining public safety.
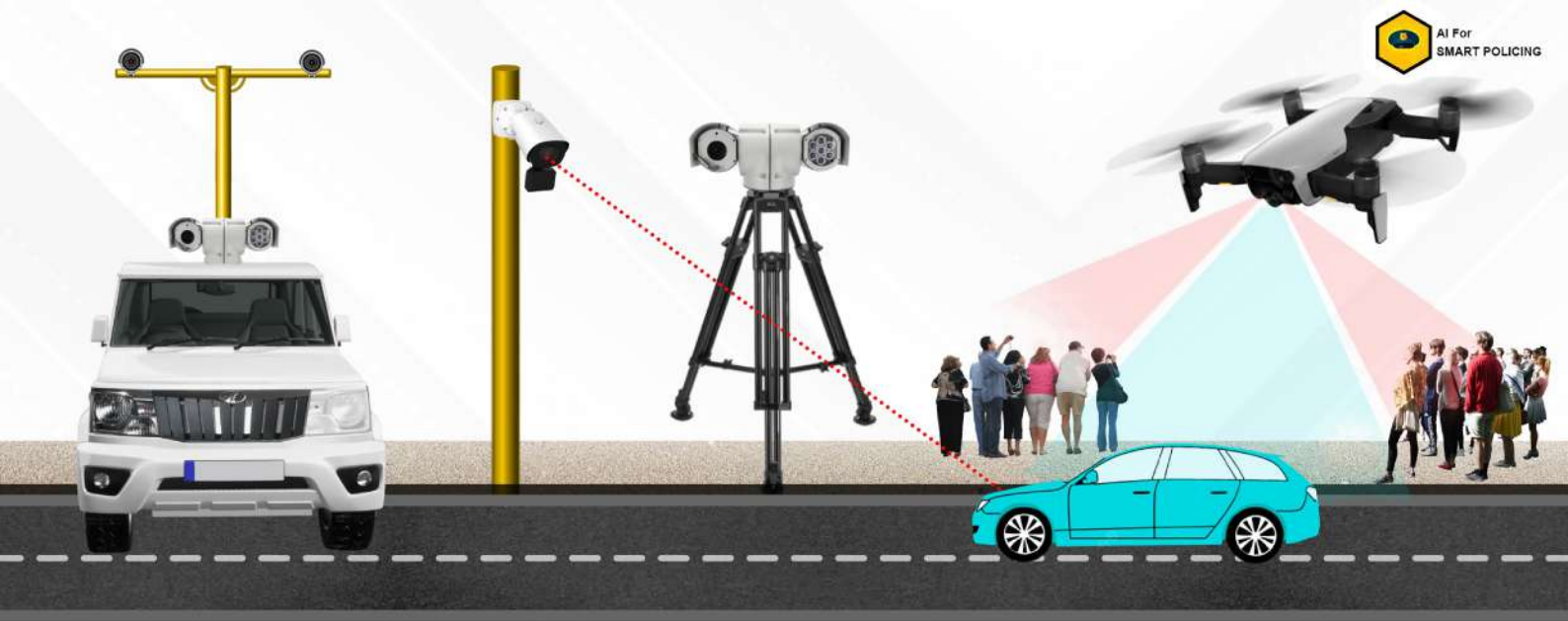
COS AI 's Indicative Components for Smart Policing

Sl.No	AI for Smart Policing Components	Qty.	Unit	Remarks	Pricing
1	COS AI Analytics System Software				
a.	ANPR + ATCC Software **(Module - 1)**	1	No.	COS AI	Contact
b.	ANPR + Helmet Detection **(Module - 2)**	1	No.	COS AI	Contact
c.	Tracing Car with ANPR, Crowd Analysis, Line Crossing & Intrusion Detection **(Module - 3)**	1	No.	COS AI	Contact
d.	Combined above 3 Modules software is **Module - 4**	1	No.	COS AI	Contact
2	Hardware of COS AI LPU / GPU Kit	1	No.	COS AI	Contact
3	Fixed PTZ Camera 20 X Optical Zoom (4.7 – 94 mm) 150 m IR Night Vision IP (Network)	1	No.	COS AI	Contact
4	For IP Bullet / PTZ Cameras, A Telescopic tube is optional to lift the camera to a greater height position for various purposes.	1	No.	COS AI	Contact
5	PoE Switch TP Link / HIKVISION - Optional for more camera's POE is required	1	No.	COS AI	Contact
6	Internet Dongle (To sent the reports to Head Office from the specified spot)	1	No.	COS AI	Contact
7	To viewing the real time scenario - Laptop or Tablet Latest Specifications.	1	No.	Client	Contact
8	APPA Portable Lithium-ion battery for LPU Kit and Camera power supply (Up to 10 Hours Backup) - Optional	1	No.	Contact	Contact

Terms & Conditions

★ The client is responsible for providing the Bolero/Jeep vehicle.

★ All costs related to PTZ camera mounting/engineering works are to be borne by the client.

★ The Kit and PTZ Camera's power supply must be drawn from the Bolero/Jeep battery, including any necessary wiring, which is the client's responsibility.

★ It is important not to park a stationary vehicle within the video coverage area; continuous traffic flow is preferred.

★ Not recommended for use in areas with mixed traffic, such as road crossings, traffic signals, or leakage roads.

★ If a customer requests usage on road crossings, service roads, leakage roads, etc., a separate product should be explored.

APMS
Automatic Parking Management System

COS AI

OPERATING PRINCIPLE OF APMS:

The Automatic Parking Management system (APMS) works with the Aid of the State-of-the-Art AI based deep learning technology by COS AI. In this system IP/CSI camera, Main Display, Occupancy Display, Occupancy Camera, LPU's, etc., is deployed for detection cars. There is Security cabin both at entry & exit point, to address any issues (if occurs) that requires manual intervention. The Central Command Centre (CCC) is Provided with a Server and a Wall mount Display to monitor the entire APMS. The vacant and occupied parking is monitored by the dedicated occupancy cameras, such that one camera for every 4 car parking slots. The parking occupancy is monitored and broadcast on the CCC and LED display simultaneously.
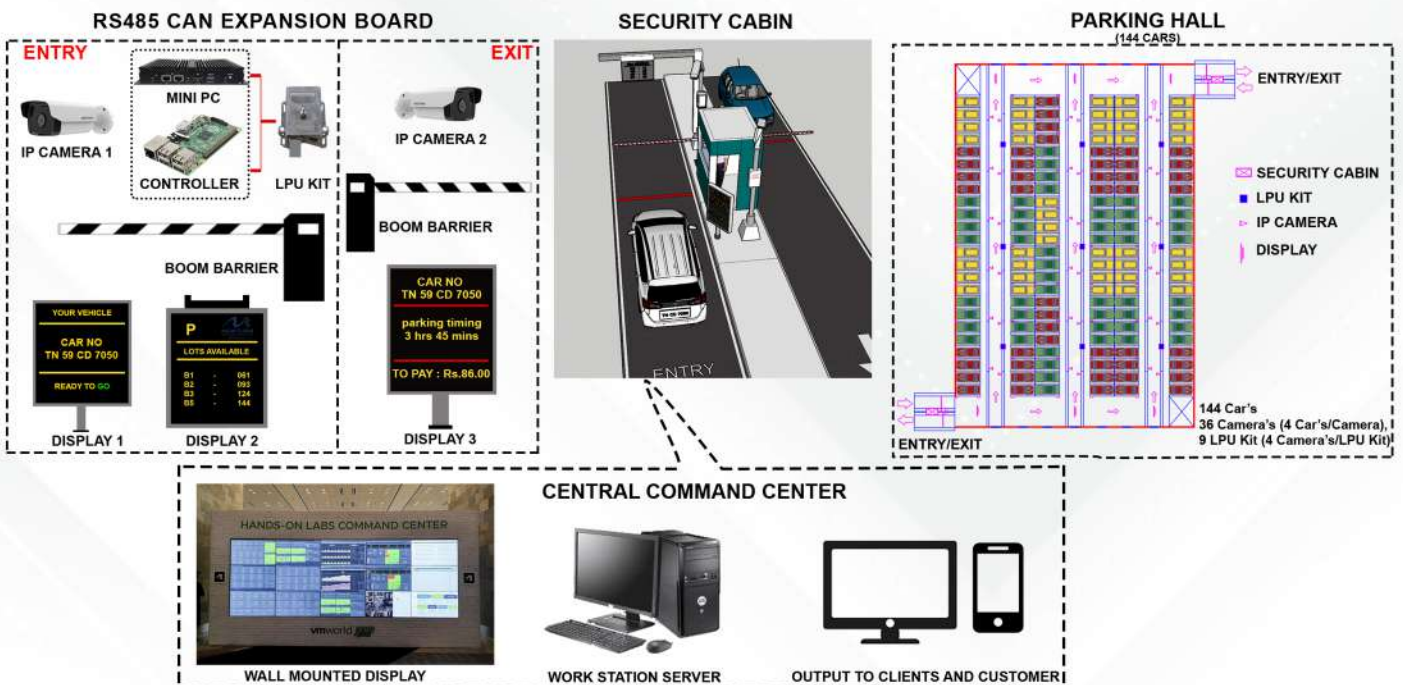
Application - Malls, Residential Apartments, Offices, Hospitals, etc where Parking Fee collection is needed.
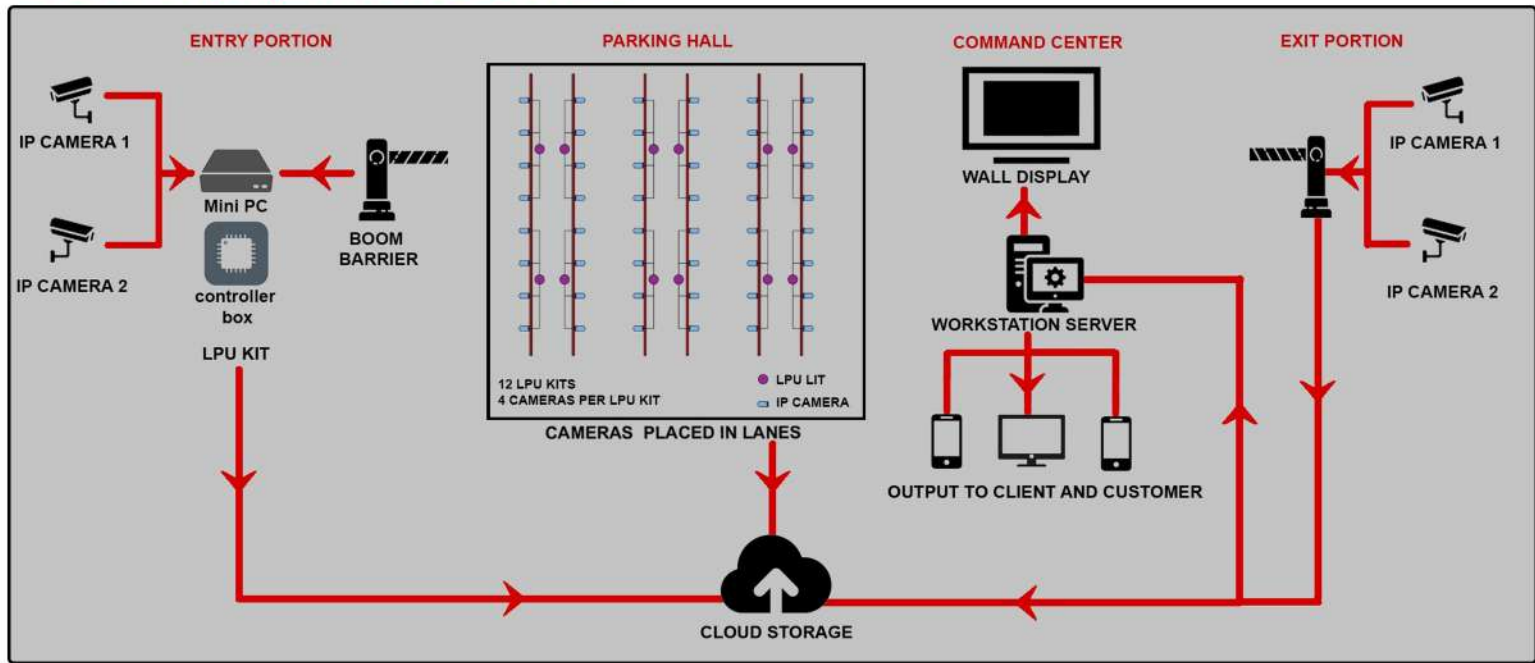
ENTRANCE OPERATION:

In this system, IP/CSI camera is deployed for detection of License plate of the cars, which is processed by the Mini PC (Own ANPR API) and signal is issued to the RS485, for operating the Boom barrier. Once the car enters the parking zone, there is a Large display to show the Number Plate of the vehicle entering the parking area and list all available vacant parking slots, lane-wise. Apart from this, an LED Display is placed at each lane to show the available vacant parking slot specific to that lane alone.

EXIT OPERATION:

Once the Car approach the Exit point, the IP/CSI Camera recognizes the License plate number with the help of Mini PC process and sends the data to the data centre to calculate the parking fee, which is then displayed on the LED screen at the exit point. Parking Fee is collected either through UPI or direct cash. Once fee is paid, server sends signal to the controller RS485, to open the Boom Barrier and the car exits from the parking hazel free.
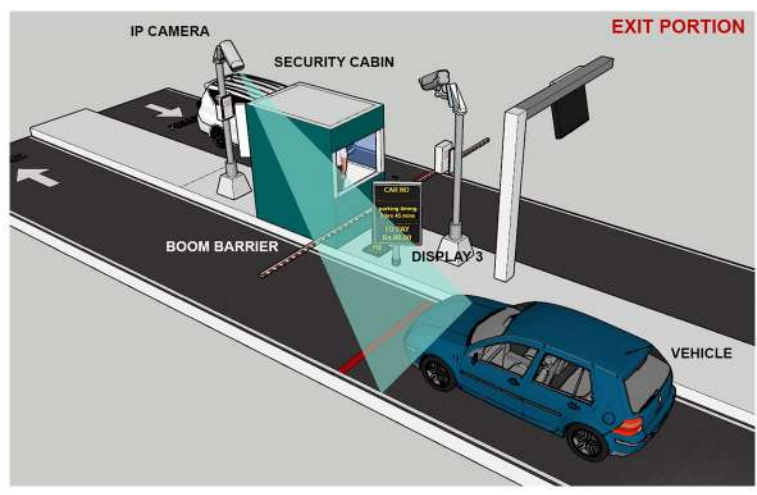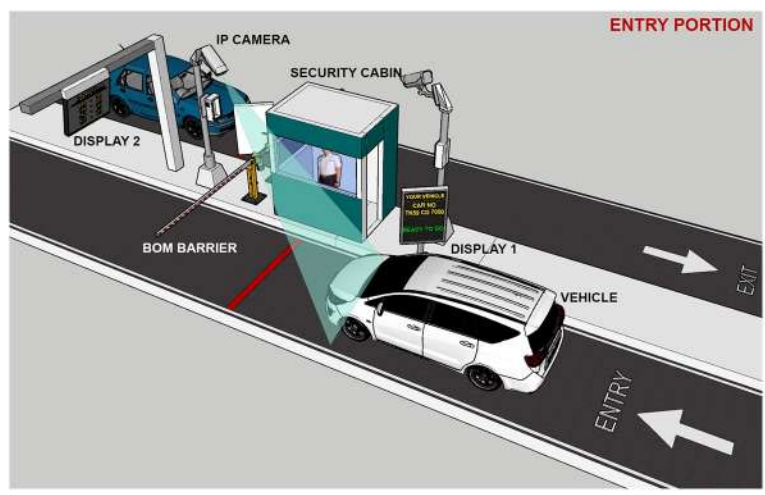
COS AI Deployment Architecture

APMS

ENTRY PORTION

IP CAMERA 1
IP CAMERA 2
Mini PC
controller box
BOOM BARRIER
LPU KIT

PARKING HALL

12 LPU KITS
4 CAMERAS PER LPU KIT
● LPU LIT
▬ IP CAMERA
CAMERAS PLACED IN LANES

COMMAND CENTER

WALL DISPLAY
WORKSTATION SERVER
OUTPUT TO CLIENT AND CUSTOMER

EXIT PORTION

IP CAMERA 1
IP CAMERA 2

CLOUD STORAGE

APMS - INDICATIVE LIST OF KEY COMPONENTS
(Rough Estimation for parking of 144 cars)

SI.NO.	ATMS Components	Units	Qty	Remarks
1	6.0m pole with 1m arm at 5.0m with solar powered Amber flasher light	No's	2	By client
2	4.0k 8.0MP IP Camera (for ANPR)	No's	4	-
3	GPU powered local processing unit for detecting ANPR	No's	2	-
4	Controller (RS485) to Link LPU unit and Boom barrier	No's	2	-
5	Boom barrier	No's	4	By client
6	LED Display	No's	6	By Client
7	Security Cabin	No's	2	By client
8	Occupancy Display	No's	6	By Client
9	Wide angle Camera - 1 camera for 4 cars	No's	36	-
10	LPU Kit - 1 LPU Kit for 3 camera	No's	12	-
11	Central Command Centre(CCC)	No's	1	By Client

ENTRY PORTION

IP CAMERA
SECURITY CABIN
DISPLAY 2
BOM BARRIER
DISPLAY 1
VEHICLE
EXIT
ENTRY

EXIT PORTION

IP CAMERA
SECURITY CABIN
BOOM BARRIER
DISPLAY 3
VEHICLE

Terms & Conditions

★ The calculation is done on the assumption that camera detects 4cars.
★ The equipment at the entrance and exit can be connected to the CCC through wire also instead of Cloud or WAN.
★ Internal and external wiring, lighting provisions taken suitable according to the site

COS AI – AI Powered Intelligent Transportation System Provider

• **Automatic Parking Management System** - Our customized solution offers seamless parking management, ensuring a hassle-free experience for both operators and users.
• We also provide customized AI-based services in ITS for our clients.

Please contact us or visit **www.cosai.in** for more information.

COS AI
AI Powered Intelligent Transportation System Provider

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