COS AI

COS ARTIFICIAL INTELLIGENCE PRIVATE LIMITED

AI Powered Intelligence Transportation System Provider

COS AI INDIA

COS AI is a startup company that serves as a subsidiary of Cos Consultancy Services, an established multidisciplinary firm specializing in infrastructure consultancy for over 35 years. As a subsidiary, COS AI benefits from the expertise and experience of its parent company.

The Managing Director of the company, Dr. T. Mayilvahanan, holds a doctorate degree in transportation. With his extensive knowledge and expertise in the field, he leads the company, driving it forward with new initiatives and advancements.

Our products are specifically developed to address the challenges associated with traffic in particular locations. We understand that traffic conditions can vary significantly from one area to another, and it is crucial to have solutions that are tailored to the specific traffic patterns and demands of each location.

OUR CLIENTS

- MoRTH
- Highways Department Government of Tamilnadu
- National Highways Authority of India
- Indian Highway Management Company Limited
- Technical Consultancy Services
- Saksham Survey Solutions
- SOWiL Limited
- Dhuruv Consultant
- Cos Consultancy Services
- Mansarover R B Building Engineers
- Aryabhata Brandt Urban .Analytis Pvt. Ltd
- L&T IDPL

Vision

Our vision is to revolutionize the transportation industry by harnessing the power of Artificial Intelligence (AI) and Deep Learning as our primary tools. We envision a future where intelligent transportation systems seamlessly integrate advanced technologies to create highly efficient, safe, and sustainable transportation networks.

Core Values

01 Innovation

02 Customer Centric Approach

03 Collaboration

04 Transparency

05 Accessibility

06 Accuracy

Mission

Our mission is to provide a cutting-edge suite of ATS (Advanced Traffic Solutions) products, meticulously tailored to address the distinctive requirements of Indian road conditions. We are committed to surpassing the accuracy offered by any other product available in the market, ensuring the utmost reliability and effectiveness in our solutions.

COMPANY HISTORY

May 2019

New Startup COSAI, launched by COS Consultancy Services, brings 30 years of infrastructure expertise alongside AI and urban development passion.

August 2021

Despite COVID-19 challenges, intensive research collected 1.2M Indian vehicle data sets. A customized deep learning algorithm achieved over 98% accuracy in vehicle detection.

November 2022

Product released in line with ATMS NHAI 2021 Manual at Traffic Infra Tech EXPO, Mumbai.

March 2023

Successfully installed ATCC for L&T at Malvan, RVTL, and operating with great accuracy.

August 2023

COSAI registered as COS Artificial Intelligence Private Limited and registered in Startup India.

May 2024

Further research conducted for a highly customized and first-of-its-kind VIDES product based on NHAI ATMS 2023 Manual, released in June 2024, potentially the first in India.

August 2025

Step2 TNCDBR – a Land Details and Records APP was launched by COS AI PVT. LTD. in October 2025.

September 2025

SHESHA and SHESHA PLUS are products that were launched by COS AI Pvt. Ltd. in September 2025.

January 2026

TOLL LEKHA new product that were launched by COS AI PVT. LTD. in January 2026.

KEY PEOPLE

Dr. T. Mayilvahanan

M.E.(Struct)., A.I.I.Arch., Ph.D(Transport).,

Founder Chairman & Managing Director

The Founder of COS AI, with over 30 years of Transport Planning experience, passionately pioneers AI technology for efficient and eco-friendly mobility solutions. He envisions cutting-edge AI-based Traffic Video Analytics, fostering collaboration for smarter, safer, and more sustainable transportation systems.

Dr. M. Prasanna

B.Tech. – Civil (IIT-G), M.S - Artificial Intelligence (USI/ETH), Ph.D. in Artificial Intelligence (MPI).

Chief Technology Officer

As a Doctoral in Artificial Intelligence and the Chief Technology Officer, he directs COS AI's technological innovation, driving the development of cutting-edge solutions in intelligent transport systems. With his extensive academic background, he spearheads advancements at COS AI, leading the development of state-of-the-art solutions.

Ar. M. Vasanth

B.Arch. (SPA, Delhi), M.S. Arch. & Urban Design (Columbia University)

Chief Operational Head

As an Urban Planner, he serves as the Chief Operational Head, leveraging his deep understanding of Urban Planning and Architecture to effectively guide COS AI's strategic initiatives. His expertise, coupled with a background in driving operational excellence, positions him as a valuable leader within the organization.

VERTICAL SERVED

ROADS & HIGHWAYS

Enhances traffic management and safety through real-time monitoring and efficient traffic flow management. Reduces congestion and ensures smoother travel for commuters. Facilitates seamless toll collection without stopping vehicles, improving efficiency. Reduces delays at toll plazas

- Advanced Traffic Management System ATMS
- Intelligent Traffic Management System ITMS
- Free-Flow Tolling System

SMART CITY ITS

Creates safer and more efficient urban environments by monitoring and enforcing speed limits. Detects and penalizes traffic violations to maintain order and prevent collisions. Automates the detection and response to traffic incidents. Enhances enforcement effectiveness and ensures smooth traffic flow within the city

- Speed Violation Detection System SVDS
- Red Light Violation Detection RLVD
- Vehicle Incident and Enforcement System VIDES

AI FOR POLICING

Provides advanced surveillance and enforcement capabilities for law enforcement. Enhances public safety through real-time vehicle monitoring and crime prevention. Detects speeding vehicles and enforces speed limits, promoting safer driving habits. Identifies violations like no helmets and triple riding, ensuring compliance with safety regulations

- Mobile Vehicle Surveillance System MVSS
- Vehicle Over Speed Detection System VOSDS
- No Helmet Triple Riding Detection NHTRDS

PARKING SOLUTIONS

Provides automated management and control of parking facilities. Utilizes an Automatic Parking Management System (APMS) for efficient parking space utilization. Implements an Entry Exit Vehicle Control System (EEVCS) to regulate vehicle access. Detects parking violations to ensure compliance and maximize parking efficiency

- Automatic Parking Management System APMS
- Entry Exit Vehicle Control System EEVCS
- Parking Violation Detection System

LOGISTICS & WAREHOUSE

Optimizes logistics and warehouse operations through advanced management systems. Enhances inventory control and tracking for better resource management. Streamlines warehouse operations to improve efficiency and reduce costs. Utilizes data analytics for predictive maintenance and operational planning

- Automated Warehousing System
- Vehicle Tracking Solution
- Logistic Route Optimization

DIGITAL MOBILITY SOLUTIONS

Offers innovative solutions for seamless digital mobility. Enhances user experience with real-time travel information and route optimization. Supports various modes of transportation through integrated platforms. Facilitates smart ticketing and payment systems for convenient travel.

- Real Time Travel information and Route Planning
- Multimodal Transport System
- Traffic Modeling and Control

PRODUCTS

1 ATCC TOLL

2 ATCC MOVABLE (SHESHA)

3 ATCC (W) ANPR (SHESHA PLUS)

4 SVDS

5 RLVDS

6 VIDES

7 NHTRD

8 MVSS

9 APMS

COS AI PRODUCTS

ATCC TOLL

Automatic Traffic Counting and Classification - Toll

AI-powered traffic counting and classification systems provide precise real-time data and integrate with toll plaza management software. COS AI offers adaptable hardware and software for various vehicle types, enhancing efficiency with minimal maintenance. Video from gantry cameras is analyzed by COS AI software in the toll office, with real-time data displayed on a separate interface for clear insights.

ATCC MOVABLE

Automatic Traffic Counting and Classification - Movable

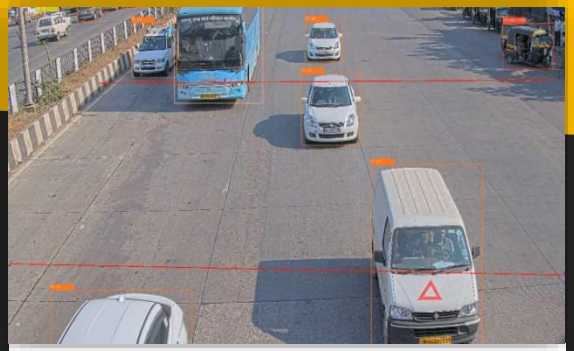
The ATCC Movable system, with a GPU-powered kit and battery-operated cameras, ensures effective vehicle detection anytime, anywhere, aiding Traffic Managers and DPR consultants. Strategically placed cameras provide unobstructed views, while the GPU kit uses advanced analytics for accurate detection and classification. Real-time results are displayed on a dashboard, offering valuable traffic insights.

ATCC (W) ANPR

ATCC with Automatic Number Plate Recognition

NHAI combines ATCC with ANPR technology for vehicle counting, classification, and precise plate recognition, streamlining tolling and supporting TTMS for travel analysis. The integrated system uses cameras, ANPR, and a GPU unit along highways to capture and process vehicle details in real-time, automating toll collection for congestion-free flow through toll points.

COS AI PRODUCTS



SVDS

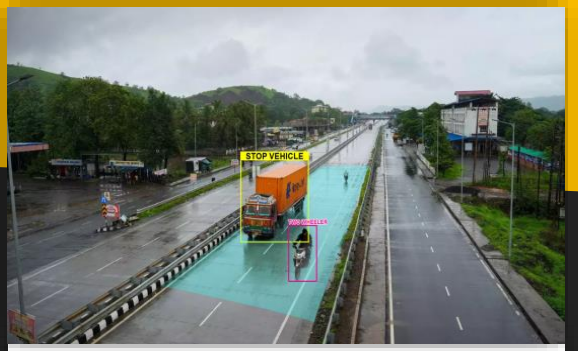
Speed Violation Detection System

Our Speed Violation Detection System uses high-resolution cameras and advanced vision technology to monitor and enforce speed limits in real time. It integrates with traffic management software, providing instant notifications and detailed reports. With robust analytics, it enhances road safety and compliance. Easy to install and maintain, it's ideal for modern traffic enforcement.

RLVDS

Red Light Violation Detection System

Introducing our Red Light Violation Detection System, equipped with high-resolution cameras and intelligent software for precise enforcement. Seamlessly integrating into existing traffic infrastructure, it provides real-time alerts and comprehensive violation reports. Enhance intersection safety and compliance with our advanced analytics and easy-to-use interface. Trust in our solution for reliable enforcement of traffic regulations.

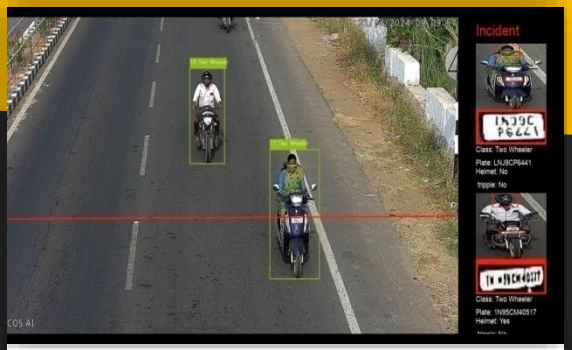


VIDES

Video Incident Detection and Enforcement System

The Video Incident Detection and Enforcement System is mandatory for NHAI concession projects, offering a comprehensive solution compliant with ATMS 2023. VIDES LPU kit and software integrate seamlessly with ATMS. It combines a GPU kit with cameras to capture and analyze video data, categorizing incidents for swift response. When an incident is detected, the software raises an alarm and displays the incident image for quick intervention.

COS AI PRODUCTS



NHTRD

No Helmet Triple Riding Detection

Utilizing IP cameras, whether stationary or vehicle-mounted, advanced computer vision detects helmet usage in safety-critical zones like construction sites and roads, aiding law enforcement in promoting compliance and enhancing overall safety. Real-time analysis identifies helmets based on unique features, with instant alerts notifying authorities of violations, facilitating effective enforcement.

MVSS

Mobile Vehicle Surveillance System

The AI-Based Mobile Vehicle Surveillance System (MVSS) conducts diverse surveillance tasks like ANPR-based Vehicle Tracking, Helmet Detection, and Intrusion Detection for operational departments and intelligence services, enhancing surveillance and protection. Employing a PTZ camera controlled by a laptop or tablet, the system allows operators to adjust the camera's position for targeted surveillance, focusing on areas of interest like license plates for effective information capture.

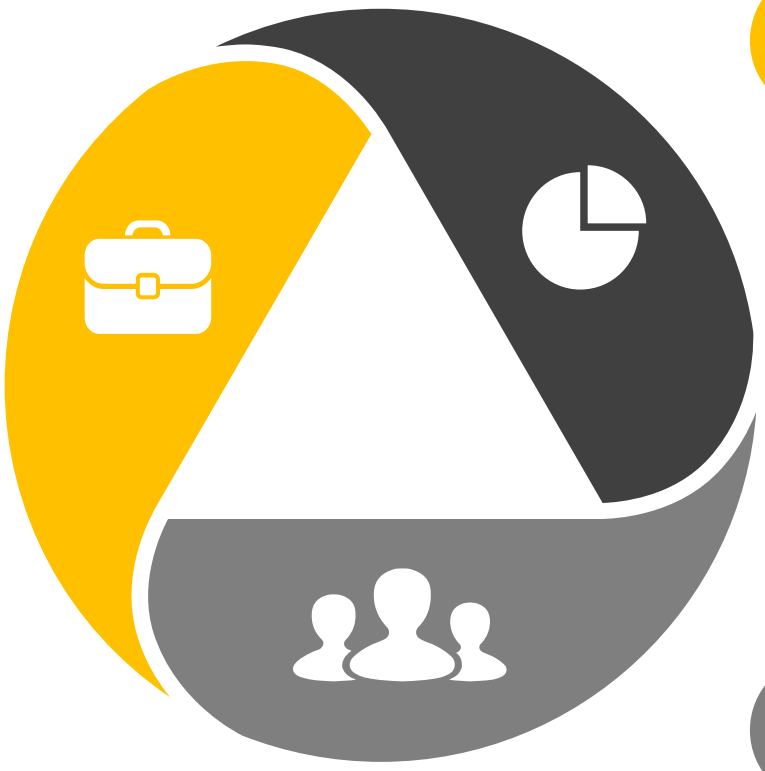
APMS

Automatic Parking Management System

The Automatic Parking Management System (APMS) employs COS AI's AI-based deep learning technology and hardware like IP/CSI cameras, displays, and LPUs for car detection, while security cabins offer manual intervention. Occupancy cameras monitor parking status, displayed on the CCC and LED screens, with IP/CSI cameras detecting license plates, controlling boom barriers via Mini PCs with ANPR APIs, and exit cameras calculating fees displayed on LED screens for payment.

AUTOMATIC TRAFFIC COUNTING AND CLASSIFICATION - TOLL

ATCC - TOLL



01

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.

02

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.

03

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.

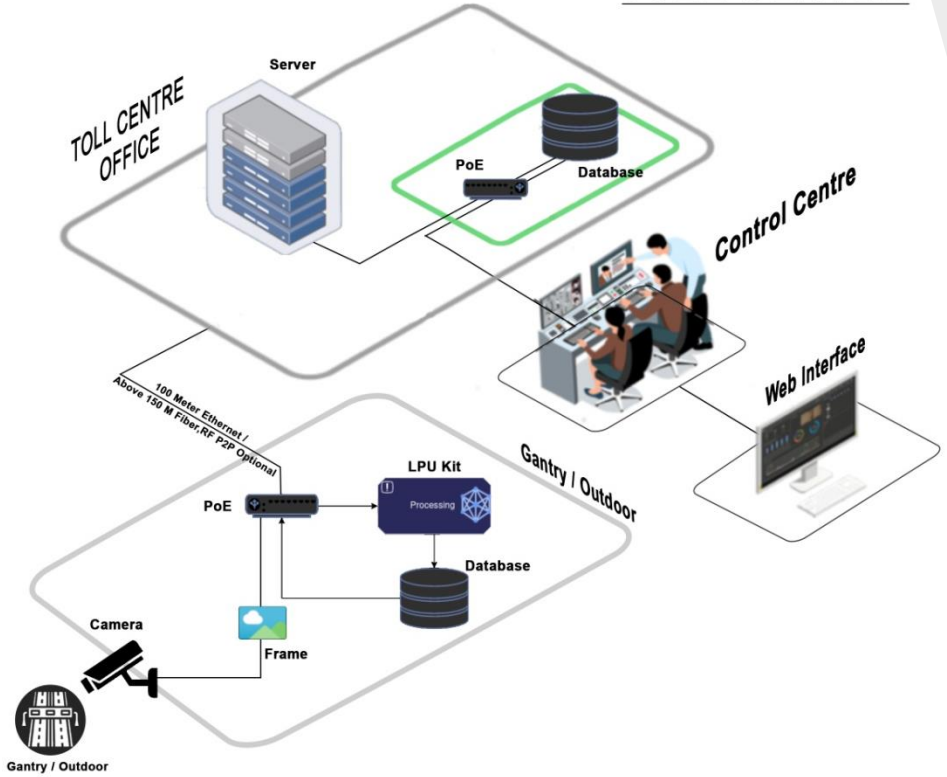
Key Features:

- **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.**

AUTOMATIC TRAFFIC COUNTING AND CLASSIFICATION - TOLL

ATCC - TOLL

TOLL CENTRE



MAPPER VEHICLE CLASSES VS COS AI CLASSES

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

** The combined class will be segregated during the post-audit.

DEPLOYMENT ARCHITECTURE

AUTOMATIC TRAFFIC COUNTING AND CLASSIFICATION

SHESHA

ATCC - MOVABLE

01

Why AI based ATCC for 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.

02

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.

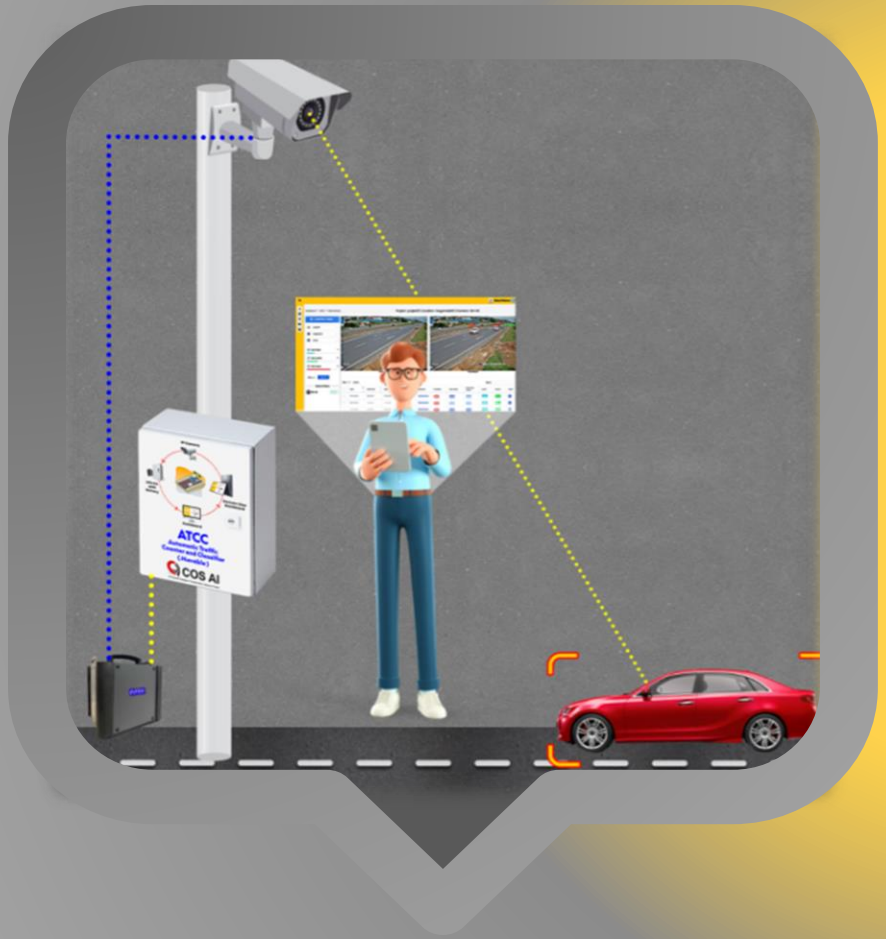
Key Features

1. Detects more than 13 Classes, covering most of the IRC Classes (16 Classes).
2. Achieves accuracy of more than 90 - 95% for Counting & Classification (Excluding Occlusion) after post audit.
3. Free Flow Traffic Count & Classification up to 4 lanes.
4. Portable and easily transported to any location.
5. Designed specially for Indian roads.
6. Detects vehicle axle configuration.

AUTOMATIC TRAFFIC COUNTING AND CLASSIFICATION

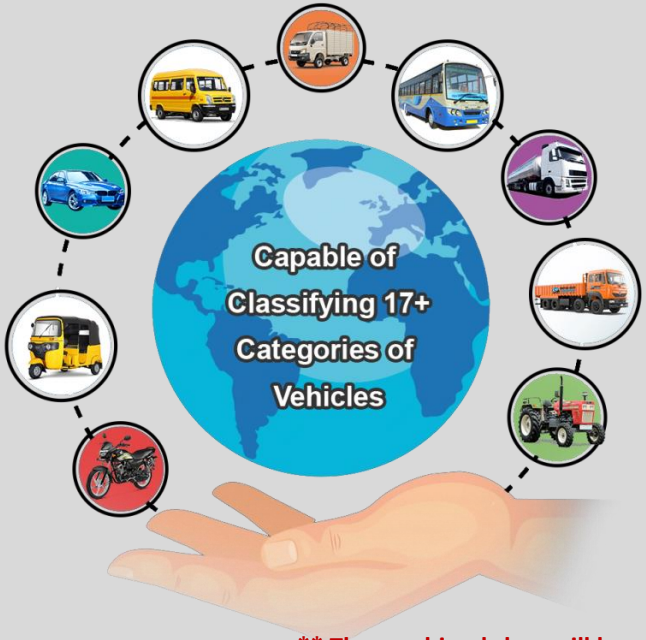
SHESHA

ATCC - MOVABLE



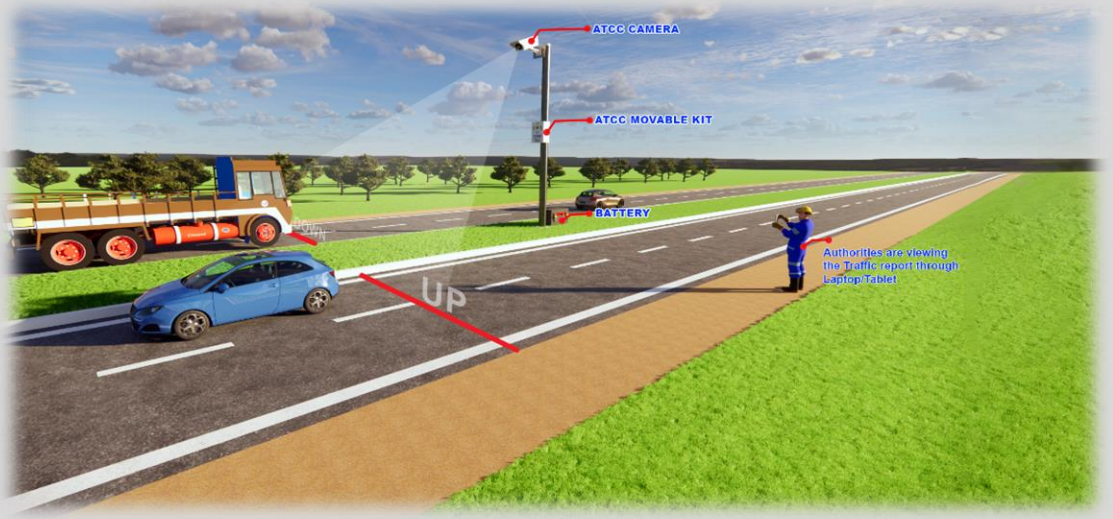
DEPLOYMENT ARCHITECTURE

IRC VEHICLE CLASSES VS COS AI CLASSES



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.



ATCC WITH AUTOMATIC NUMBER PLATE RECOGNITION

SHESHA PLUS

ATCC (W) 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.

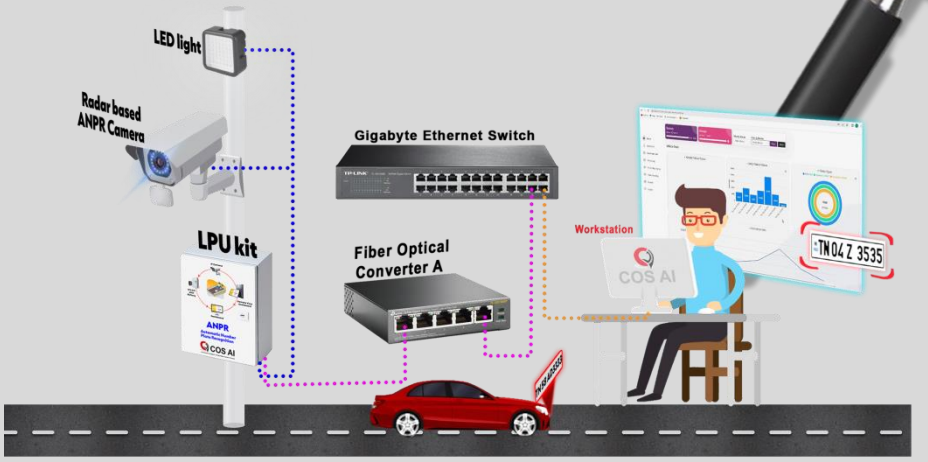
HOW ATCC WITH ANPR WORKS?

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
- Image Preprocessing
- Specialized Cameras
- Database Integration
- Real-Time Processing
- High Accuracy
- Data Storage and Retrieval
- Scalability
- Privacy and Data Protection
- Traffic Analysis
- Integration with Other System
- Alerting and Notification

DEPLOYMENT ARCHITECTURE



SPEED VIOLATION DETECTION SYSTEM (SVDS)

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.

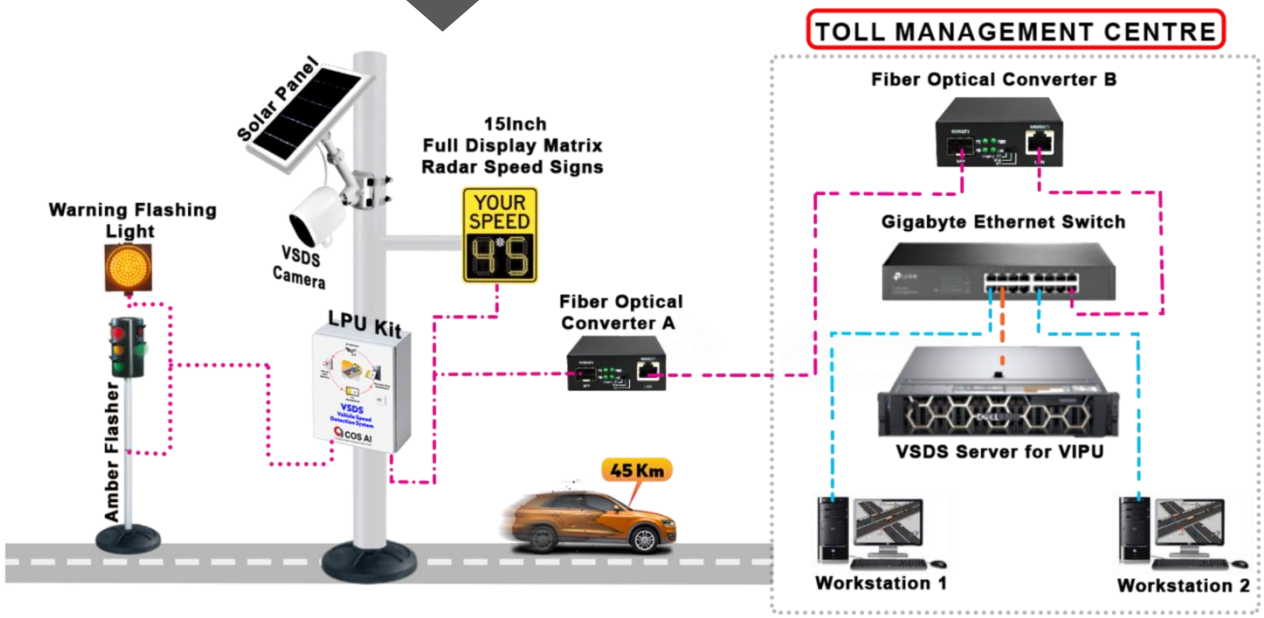
Integration with e-Challan Software:
Seamlessly integrates with e-Challan software for streamlined enforcement and record-keeping

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 2023 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



VIDEO INCIDENT DETECTION AND ENFORCEMENT SYSTEM (VIDES)

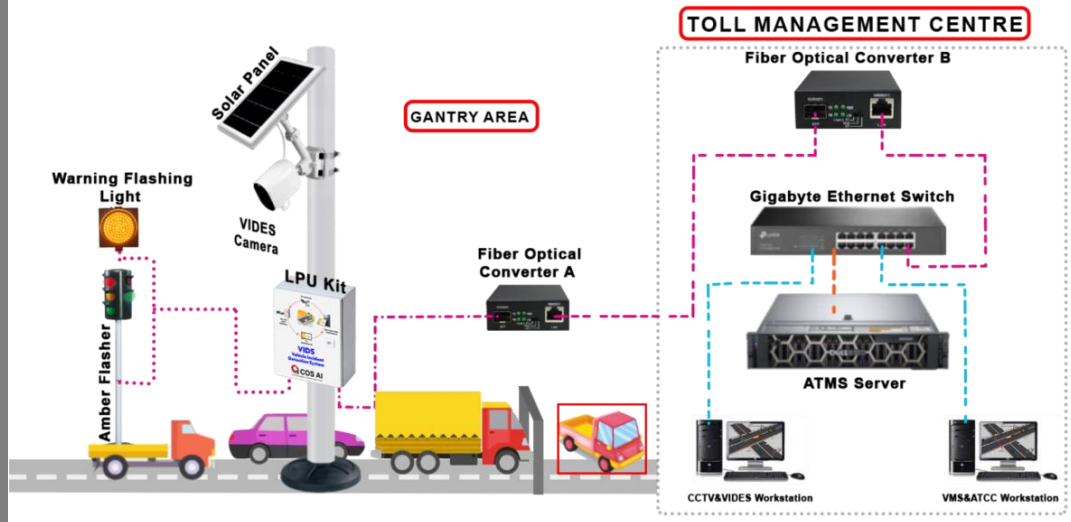
VIDES OVERVIEW

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 ATMS 2023 manual. The VIDES 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.

DEPLOYMENT ARCHITECTURE



Incident Detection

- 1 Vehicle Collisions
- 2 Vehicles Emitting Smoke/Fire
- 3 Stalled or Stationary Vehicles
- 4 Fog/Debris/Fallen Objects Detection
- 5 Pedestrian Crossing Monitoring
- 6 Animals on the Carriage Way
- 7 Vehicles Impacting Side Rails or Medians
- 8 Seatbelt Violations
- 9 No Helmet in Two-Wheelers
- 10 Triple Riding in Two-Wheelers
- 11 Banned Vehicles on Expressways
- 12 Opposite Side Traffic Detection
- 13 Over Speeding
- 14 Wrong Lane Driving/Heavy Vehicles in Fast Lane

AI FOR SMART POLICING

Applications:

- Crime Prevention & Investigation.
- Patrol & Response Enhancement.
- Event Security.
- Traffic Monitoring.
- Surveillance in Remote Areas.
- Witness and Evidence Gathering.
- Undercover Operations.
- Search and Rescue Operations

Mobile Vehicle Surveillance System (MVSS)

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.

Vehicle Over Speed Detection System (VOSDS)

The Vehicle Over Speed Detection System (VOSDS) 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 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

AI FOR SMART POLICING

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 & Classifier (ATCC)

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

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 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 & Intrusion Detection

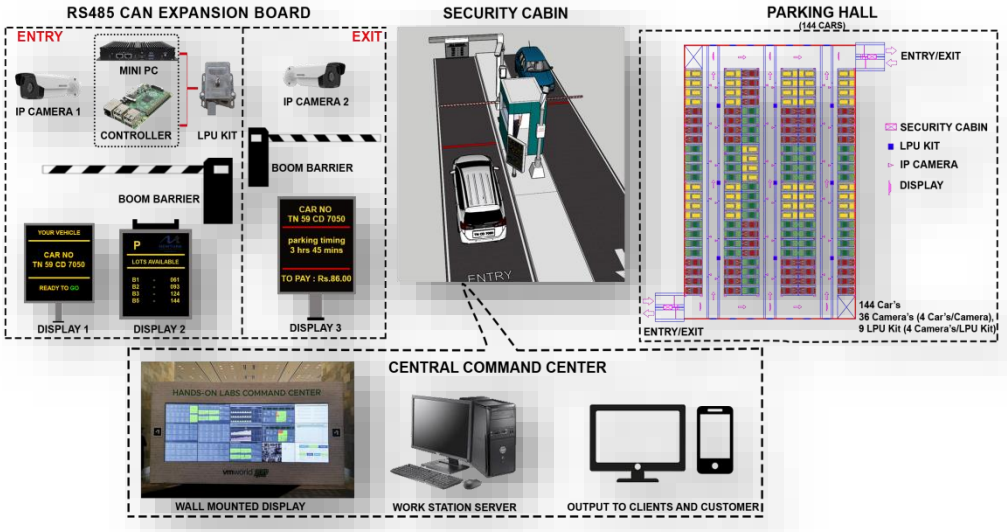
Line crossing and intrusion detection systems are essential tools for law enforcement, offering enhanced security and rapid response capabilities. These systems use virtual lines to monitor specific areas, triggering immediate alerts when unauthorized individuals cross predefined boundaries. Real-time 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 deterrent, dissuading potential intruders. Customizable and adaptable, these systems are invaluable for safeguarding critical areas and maintaining public safety.

AUTOMATIC PARKING MANAGEMENT SYSTEM (APMS)

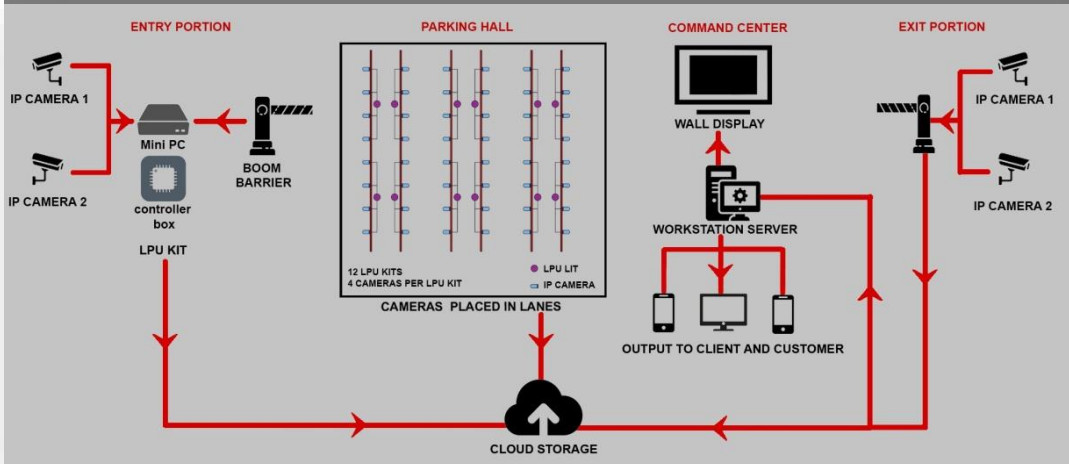
OPERATING PRINCIPLE OF APMS:

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.



DEPLOYMENT ARCHITECTURE



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

THANK YOU!

HEAD OFFICE

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