



KRYPTONAI

KRYPTON AI TECHNOLOGIES PRIVATE LIMITED



AI BASED ADAPTIVE TRAFFIC CONTROL SYSTEM

An AI-powered Adaptive Traffic Control System designed to optimize traffic flow in real-time using intelligent signal management. Enhancing urban mobility through reduced congestion, faster commutes, and smart city integration.

Glossary

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INTRODUCTION



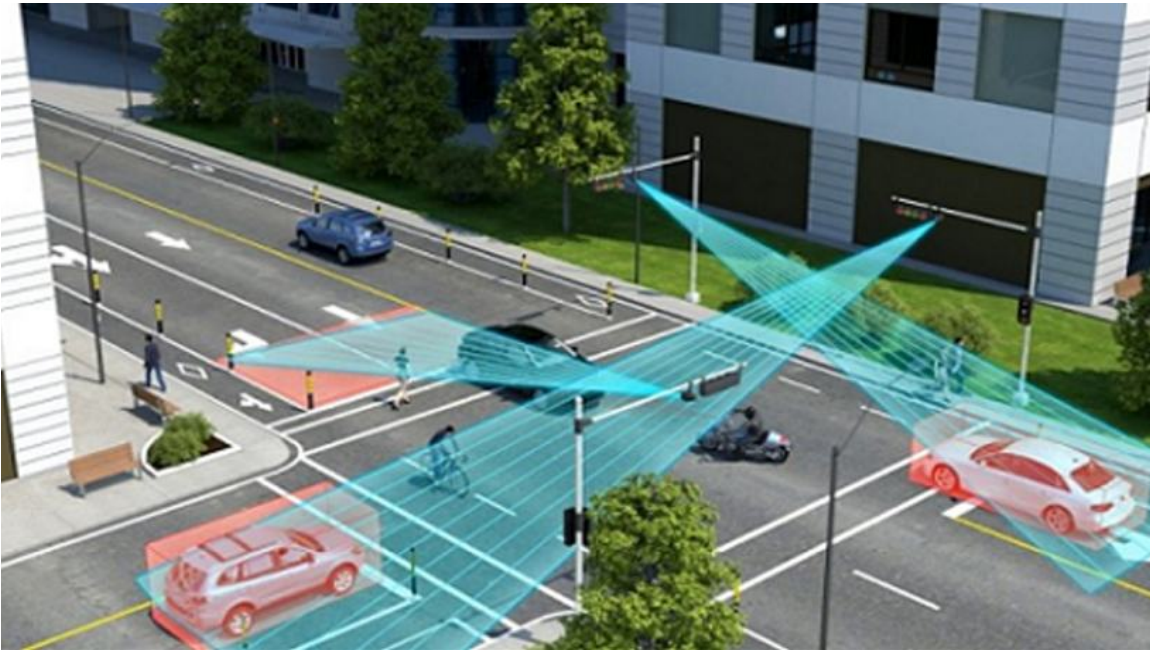
Urban traffic in India faces rising congestion, especially during office hours, festivals, convoys, and unpredictable peak periods. Traditional fixed-timer signals can't adapt to these real-world conditions, resulting in long delays, fuel wastage, and slow emergency response.

Our Adaptive Traffic Control System (ATCS) is designed for Indian roads and non-homogeneous traffic conditions, including vehicles like tempos, rickshaws, and other modes of transport often overlooked by conventional traffic AI systems. By understanding these mixed traffic patterns, ATCS ensures smoother passage for every road user.

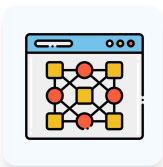
Powered by AI, IoT, and edge computing, ATCS detects real-time traffic flow, adjusts signal timings, prioritises emergency vehicles, and switches off lights when roads are empty—making it a future-ready solution for India's diverse and unpredictable traffic landscape.

PROPOSED SOLUTION

Our Adaptive Traffic Control System (ATCS) is an AI-powered solution designed for Indian traffic conditions. Using real-time data, patent-applied technology, and existing CCTV infrastructure, this **Made-in-India** innovation manages traffic more efficiently, reduces congestion, and prioritises emergency vehicles—all while being cost-effective and easy to deploy.

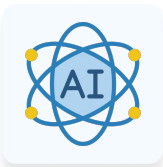


Core Technologies



AI-Driven Pattern Recognition:

- Learns each junction's "traffic fingerprint"—vehicle mix, cycle times, queue behaviors—at 99% precision.
- Continuously retraines itself on new data (festival surges, school runs, seasonal changes).



Edge AI Processing (Krypton Controller):

- All video analytics run locally at the pole—no cloud lag or bandwidth bottlenecks.
- Millisecond-level decisions ensure green signals switch exactly when and where needed.



IoT Connectivity & ICCC Integration:

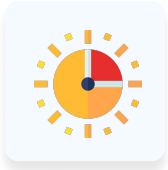
- Secure 4G/5G links tie every junction into your city's central command center (ICCC).
- Live dashboards show vehicle counts, average wait times, incident alerts and junction health.

• Adaptive Signal Control



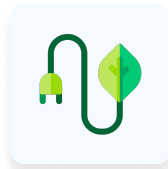
Dynamic Green Corridors:

- AI analyzes adjacent intersections to auto-generate “green waves,” maximizing throughput along key arterials.
- Adjusts corridor width and timing in real time as traffic patterns shift.



Festival & Peak-Hour Intelligence:

- Automatically detects elevated volumes during Diwali, Holi or major events—and extends green time on main approaches.
- Morning and evening office-hour surges get dedicated timing phases; off-peak periods shrink or power down signals to save energy.



Energy-Saving Mode:

- At very low traffic volumes (late night, mid-afternoon lulls), the system can switch lights off or go into flashing mode—cutting electricity consumption by up to 25%.

• Integrated ITMS & Priority Handling



Built-in Intelligent Traffic Management System (ITMS):

- Use the same CCTV + edge units for parking surveillance, queue detection at toll plazas, illegal parking alerts, and more.
- No extra hardware or licenses—all modules run on your existing investment.



Emergency & VIP Convoy Priority:

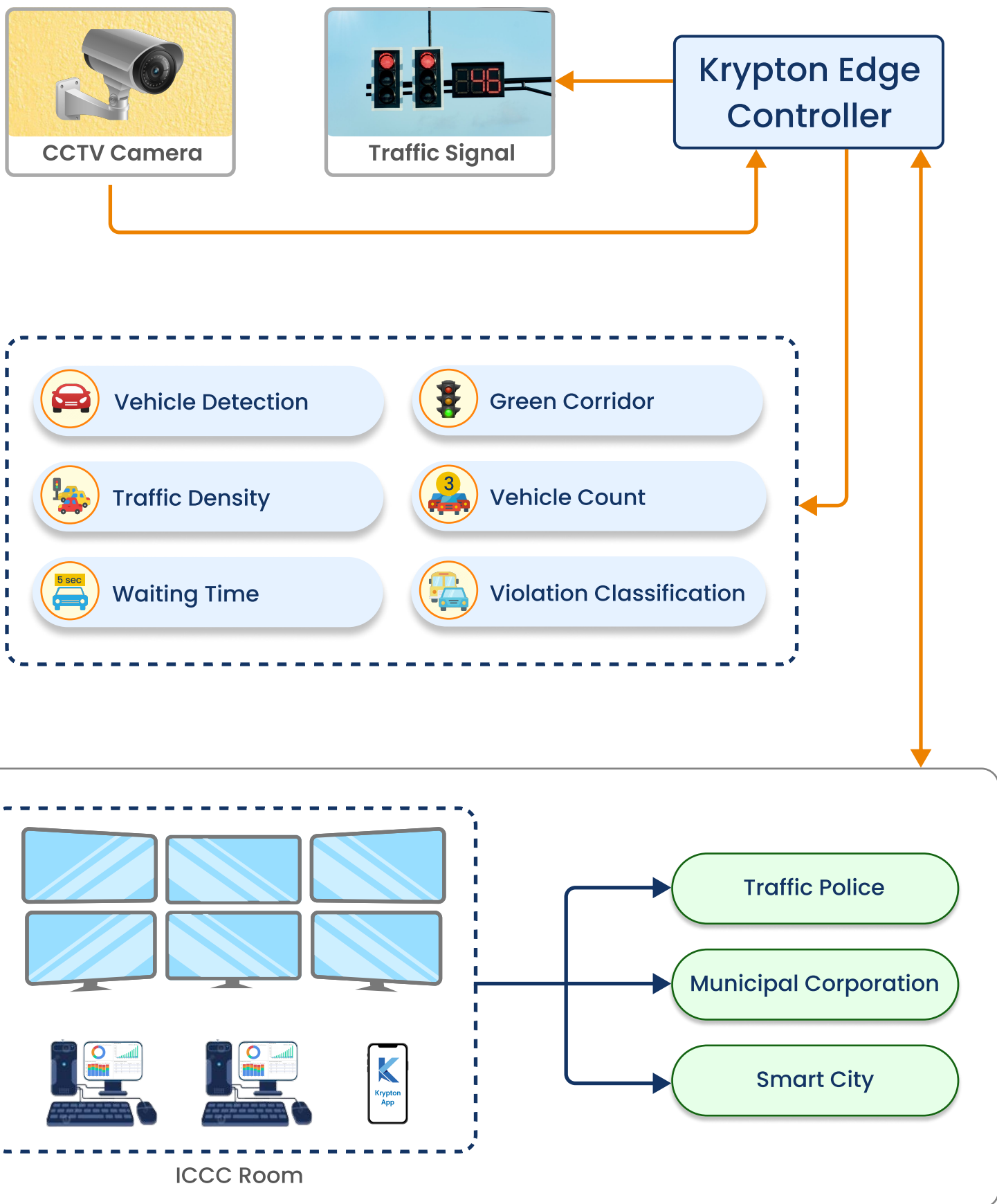
- Real-time detection of ambulances, fire tenders, police vehicles and VIP convoys.
- Instant override of normal signal plan to create a clear green path, then auto-revert once the vehicle has passed.



Cost-Effective & Camera-Agnostic:

- 35–40% cheaper than legacy systems.
- Fully compatible with any standard CCTV camera—no need for specialized optics.

SOLUTION ARCHITECTURE



KEY BENEFITS



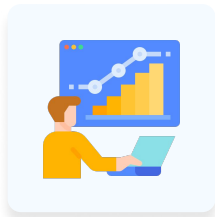
Reduced Capital Expenditure Cost

Uses existing city cameras, eliminating need for costly ANPR or RLVD systems.



Reduced Fuel Consumption & Idle Time

Lowers fuel use by minimizing vehicle idle time through real-time signal control.



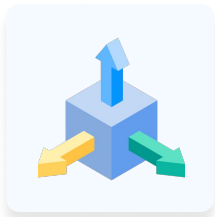
Enhanced Centralized Monitoring

Real-time remote access via a unified dashboard for quick decision-making.



Eco-Friendly & Sustainable Deployment

Reuses existing surveillance infrastructure, reducing e-waste and power usage.



Scalable for Multi-City Expansion

Easily expandable across new regions without major infrastructure changes.



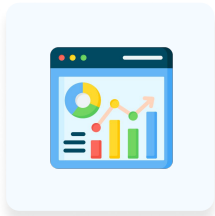
Dynamic Signal Control for Reduced Congestion

Adjusts traffic signal timings in real time to reduce congestion and wait.



Priority Passage for Emergency Vehicles

Prioritizes emergency vehicles at signals, reducing response time in critical situations.



Data-Driven Urban Traffic Planning

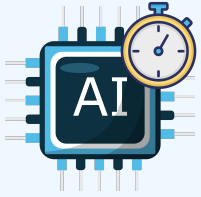
Generates traffic trend insights to support smart urban road planning.



Minimal Human Intervention

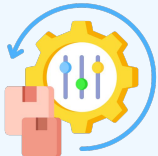
Automates traffic monitoring and enforcement, reducing manual workload.

UNIQUE SELLING POINTS



Trained on Complex Indian Traffic Scenarios

- Trained on real Indian traffic, including unstructured and mixed-lane roads.
- Provides accurate, real-time decisions in complex urban conditions.



Seamless Integration with ITMS

- Fully compatible with existing Intelligent Traffic Management Systems (ITMS).
- Combines ATMS and ITMS functions on a single integrated platform.



Highly Cost-Effective

- Offers low-latency detection using edge devices.
- Lowers costs by automating traffic flow and reducing manpower needs.



Plug & Play Integration with ICCC

- Directly connects with ICCC dashboards for centralized traffic control and reporting.
- Offers real-time monitoring, remote configuration, & analytics from the ICCC.



Compatible with Existing Infrastructure

- Works with already-installed CCTV & traffic signal poles — no need for major civil work.
- Minimizes setup complexity and accelerates time-to-deploy across intersections.



Dynamic Signal Control Based on Live Traffic

- Automatically adjusts signal timings using live video feeds & AI-based vehicle counting.
- Helps reduce idle wait time, fuel wastage, and traffic congestion during peak hours.

TRUSTED BY



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