

Restoring Clarity, Enabling Control

AI-Enabled Computer Vision

Overview

ProHawk AI delivers a transformative traffic management solution by restoring degraded, obstructed, or low-visibility video streams into clear, actionable footage—enabling accurate monitoring and real-time decision-making. Powered by ProHawk AI's patented computer vision restoration powered by NVIDIA accelerated computing with CUDA[®] based parallel processing of every pixel, the platform unlocks the full potential of existing traffic cameras without the need for costly infrastructure upgrades.

Whether dealing with glare, rain, fog, low light, or other environmental distortions, ProHawk AI ensures traffic authorities and city planners receive consistent, high-fidelity video to detect congestion, track vehicles, monitor intersections, and respond to incidents with precision and speed.

Key Challenges

Poor Visibility & Environmental Distortion

Rain, fog, glare, low light, and pollution degrade video quality, making it difficult to monitor and analyze traffic conditions accurately.

Limited Budget for Aging Infrastructure

Replacing large-scale camera networks or adding thermal/IR systems is often cost-prohibitive for city agencies.

Delayed Incident Response

Computer vision systems struggle with low-quality video input, leading to unreliable detection of vehicles, violations, or incidents.

Integration Complexity

New technologies often require complex integrations with existing VMS, ITS, and municipal platforms—slowing down deployment and scaling.

Key Benefits and Outcomes

ProHawk AI delivers a transformative advancement in traffic management by converting existing camera infrastructure into intelligent, high-performance systems. ProHawk AI ensures clear visibility even in low light, glare, or harsh weather—enabling accurate traffic monitoring, rapid incident detection, & data-driven signal optimization. The result is smoother traffic flow, better safety, and eased operating loads. ProHawk AI empowers municipalities & transportation authorities to make smarter, faster decisions that improve mobility and public safety while minimizing infrastructure costs.

• Reduced Congestion

Real-time data enables adaptive signal timing and better traffic flow across intersections and corridors.

• Operational Efficiency

Automated incident detection and analytics reduce the need for manual monitoring and accelerate response times.

• Enhanced Safety

Improved visibility supports faster detection of accidents, wrong-way drivers, and stalled vehicles.

• Optimized Infrastructure ROI

Maximizes existing cameras, avoiding costly upgrades or replacements.

• Better Enforcement & Compliance

Clearer footage boosts license plate recognition and supports more accurate automated ticketing and tolling.

Real-Time, AI-Driven Traffic Management for Safer, Smarter Cities

ProHawk AI's traffic management solution restores degraded video streams in real-time using patented pixel-level restoration & NVIDIA accelerated computing—unlocking accurate visibility in all conditions. ProHawk AI boosts the accuracy of any NVIDIA DeepStream-supported model by improving existing traffic cameras, for incident detection, license plate recognition, and vehicle tracking. As a pipeline platform, ProHawk AI seamlessly integrates with VMS and ITS systems, enabling automated enforcement, congestion monitoring, and actionable analytics—delivering faster response, safer roads, and scalable smart city operations without costly upgrades.



As a NVIDIA accelerated computing solution, ProHawk AI transforms degraded or low-quality traffic camera streams into clear, actionable video in real time. This clarity enables accurate incident detection, precise vehicle tracking, and reliable automated enforcement. Built on the NVIDIA Metropolis Vision AI stack, it delivers as fast as 3ms latency and up to 30x faster video restoration, ensuring reliable visibility even in low light, glare, fog, or rain. By maximizing the value of existing traffic cameras and avoiding costly upgrades or thermal imaging systems, ProHawk AI reduces capital expenditures—cutting sensor upgrades and associated costs by up to 60%. Improved AI accuracy drives faster response, safer roads, and efficient enforcement—cutting costs and boosting ROI without costly infrastructure upgrades.

Use Case	Result
Smart Intersection Monitoring	Restores video clarity for accurate vehicle detection and adaptive signal control, reducing delays at busy intersections.
Highway Incident Detection	Improves long-range roadside camera feeds for early detection of stalled or wrong-way vehicles.
License Plate Recognition in Low Visibility	Improves LPR accuracy in poor visibility conditions, supporting tolling, red-light enforcement, and ticketing systems.
Real-Time Congestion Management	Delivers clear, consistent video enables traffic flow analysis, signal adjustments rerouting.
Event & Emergency Traffic Control	Improves visibility, enabling faster response, dynamic traffic routing, and improved crowd flow.

Feature	Requirement
Compatible NVIDIA Hardware	NVIDIA Jetson Orin™ & NVIDIA RTX™ Pro 4000/5000/6000 Blackwell
Supported Input Formats	Image & Video Files, RTSP Camera Stream
Supported Operating Systems	MS Windows Server 2019/2022/2025 & Ubuntu 20.04/22.04

With urban mobility demands rising, ProHawk AI offers traffic managers a powerful, cost-effective solution to restore visibility, improve analytics, and make smarter decisions—faster. Accelerated by NVIDIA Jetson™ at the edge and scaling up to data center-class NVIDIA GPUs, it transforms poor-quality video into actionable intelligence, supporting safer, more efficient, and more responsive traffic systems—paving the way for the next generation of smart cities.

