NVIDIA

SOLUTION SHOWCASE

INEX Video Vehicle Detection and Classification

Challenge

- Current tolling solution is expensive and requires specialized in-ground inductive loops and axle counting devices that need to be installed inside the concrete.
- Current automated license plate reader (ALPR) systems require a number of additional costly devices to detect and classify vehicles and count their axles.

NVIDIA Solution

- The NVIDIA Jetson platform reduces hardware solution costs by 40%
- The NVIDIA DeepStream SDK accelerates video processing and AI inference resulting in higher channel density by 2 times
- The NVIDIA software tools—pre-trained models,TAO Toolkit and DeepStream SDK—help to reduce development time by 60%

INEX IS REVOLUTIONIZING TOLL ROAD SYSTEMS WITH REAL-TIME VIDEO PROCESSING

> *"INEX RoadView, our comprehensive automatic license plate recognition system for toll roads, uses NVIDIA's end-to-end vision AI pipeline, production-ready AI models, TAO Toolkit, and DeepStream SDK. We slashed the development time by 60% and camera hardware cost by 40%. This enabled our vendors to deploy RoadView quickly and reliably. For us, nothing else came close."*

INEX Comprehensive Roadview Tolling System

The INEX RoadView solution provides automatic axle counting, vehicle classification, and lane zone tracking and triggering using LPR and RoadView cameras. RoadView video-based recognition eliminates the need for costly concrete cutting, in-ground loop maintenance, and axle-counting treadles. It can also support existing video cameras and add INEX cameras to provide a full solution for a toll zone VES (video enforcement system) infrastructure.

NVIDIA Platform

NVIDIA GPU technology revolutionizes the INEX APLR system, a state-of-the-art graphics processor designed to support artificial intelligence. The INEX video system uses the NVIDIA Jetson Nano and Jetson NX computing hardware and embedded software created using the NVIDIA DeepStream SDK for faster read rates and image processing. The simplified workflow of pre-trained models and NVIDIA TAO Toolkit also helped reduce development time by 60%. By pairing the INEX video-based solution with NVIDIA GPUs, the system can apply video vehicle detection and classification algorithms in near real-time to read licenses from all 50 states in the US and multiple countries in Europe, the Far East, the Middle East, and Australia. And using the NVIDIA Jetson platform-based system reduces hardware and setup costs by 60%, lowering operating and maintenance costs by 50%.

Results

- Easy-to-install system for toll road operators and integrators such as SKIDATA in Las Vegas and Miami
- 50%+ reduction in maintenance cost
- 40%+ reduction in overall client system ownership investment
- Sizable increase in revenue through use of the new AI-based tolling solutions
- 60% reduction in development time

Products Used

- Jetson Nano™ and Jetson Xavier™ NX

AI models Used

- Object classification and detection – YOLOv3
- Vehicle detection and tracking – TrafficCamNet and DashCamNet

Software Used

- NVIDIA TAO Toolkit
- NVIDIA DeepStream SDK
- NVIDIA® TensorRT™

INEX Results

By upgrading to the INEX video-based vehicle classification and ALPR system, tolling authorities can upgrade their toll systems quickly and easily. Plus, they can immediately increase revenue by improving the speed and accuracy of their automated toll system.

About INEX www.inextechnologies.com

INEX Technologies designs, develops, and manufactures comprehensive hardware/software solutions for license plate recognition and vehicle identification. As the developer of both proprietary ALPR imaging hardware and firmware/software analytical engines, the company achieves the optimum synergy to create the world's premier license plate recognition systems. They're ideal for any plate, any ambient lighting, any weather condition, and vehicle speeds of up to 150 mph (240 km/h).

LEARN MORE

-NVIDIA TAO Toolkit: **developer.nvidia.com/tao-toolkit**
-NVIDIA DeepStream SDK: **developer.nvidia.com/deepstream-sdk**
-INEX's solution: **www.inextechnologies.com**

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