Enhancing Automatic Incident Detection (AID) Efficiency with CT-ADL Technology on tunnels

The transition from a legacy Automatic Incident Detection system to one powered by Deep Learning marks a big step forward in cutting down on false alarms and making the monitoring process much smoother and more effective.

Below is an in-depth analysis derived from the available data:

Project Background

Location: France
Infrastructure type: tunnel
Configuration: Monodirectional tunnel with 2 tubes, 330 meters in length each
Surveillance equipment: 24 cameras

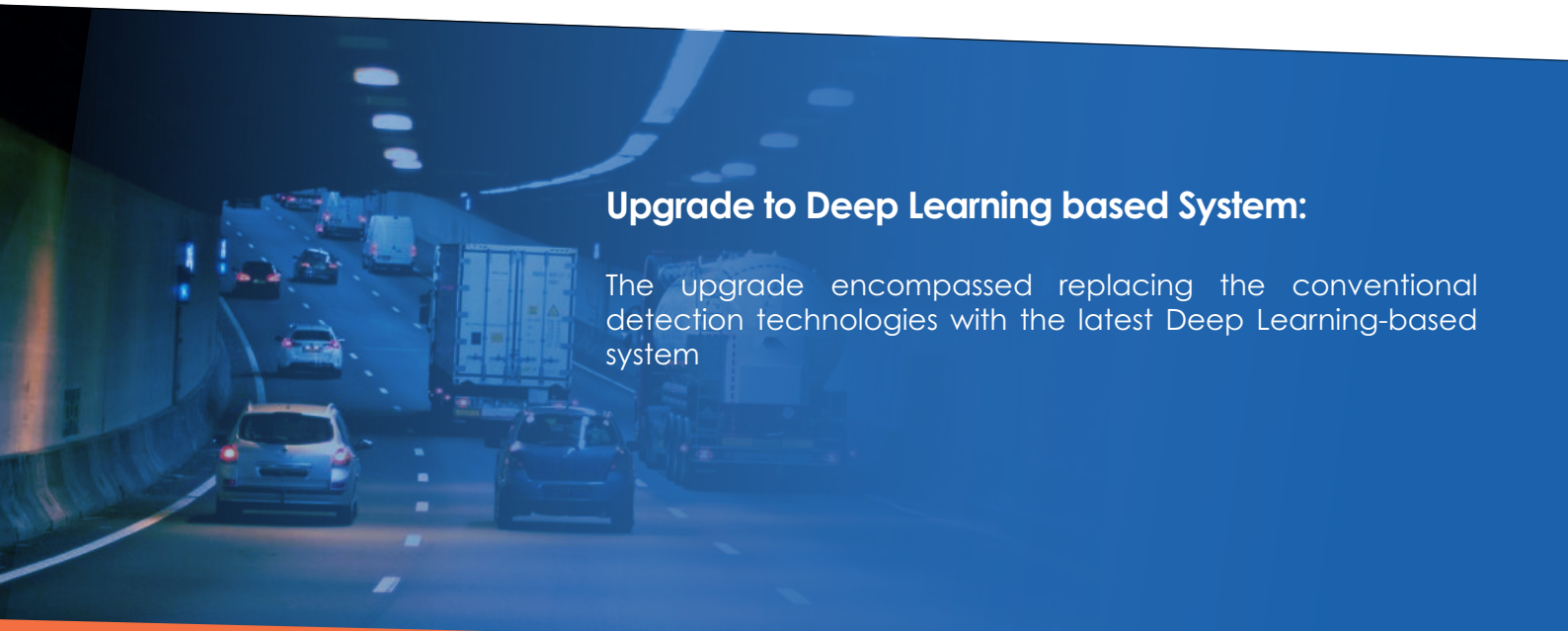
24 cameras

Challenge Overview

Overall false alarm frequency reported on site: 1 false alarm per camera per 3 days.

Primary sources of false alarms:

- Light effects contribute to over half of the total false alarms (66.66%),
- Weather effects (specifically water on the road) contribute to 14% of the false alarms,
- Vehicle projections constitute 19% of the false alarms.



Upgrade to Deep Learning based System:

The upgrade encompassed replacing the conventional detection technologies with the latest Deep Learning-based system

Post-Upgrade Results

Decreased False Alarms
Following the implementation of the DL system, **the frequency of false alarms decreased to 1 false alarm per camera per 10 days.**

Improvement Metrics
The false alarm frequency of the system saw a remarkable reduction of approximately 75%.
The DL system successfully eliminated all (100%) pedestrian-related false alarms previously observed with the legacy system.
Additionally, the DL system significantly mitigated 94% of the stop-related false alarms that were prevalent in the computer-vision-based system.

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False alarm per camera per 10 days

75%

False alarms reduction

Key findings

Proven Effectiveness of DL-based Systems
This case study demonstrates the significant positive impact of integrating Deep Learning technologies into traditional surveillance systems, particularly in challenging tunnels where varying conditions can trigger false alarms.

Valuable impact on Operational Efficiency
By significantly decreasing the occurrence of false alarms, the DL system not only saves time, but also ensures that operator attention is focused on real incidents, improving safety and security within the tunnel.

Future Successful DL Integrations
The positive results of this upgrade highlight the considerable potential for broader integration of Deep Learning technologies in similar scenarios. Citilog's cutting-edge technology promises to reduce operational disruptions and enhance the accuracy of all CCTV camera-based incident detection systems.

Conclusion

This use case demonstrates the effectiveness of artificial intelligence and Deep Learning technologies in addressing real-world challenges and remarkably improving operational outcomes in infrastructure management and security.