

Smart Detection



Smart Detection for Bridge Safety Efficiency and Safety with AI

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What is Smart Detection for Bridge Safety?

Smart Detection is an innovative technology that supports bridge operators in safely and efficiently managing bridge operations. The system utilizes cameras and artificial intelligence (AI) to provide real-time insights into what is happening on and around the bridge deck during critical moments of the operation process.

Using a user-friendly dashboard integrated into the SCADA control system, operators receive instant alerts about potential hazards and unusual situations, enabling them to act quickly and informed.

Whether it's pedestrians, cyclists, or vehicles on the bridge deck, Smart Detection identifies them all, ensuring that operators maintain full control, even when managing multiple bridges remotely. This innovative system is designed to prevent accidents and ensure the safety of all road users.

How Does It Work?

1. Real-Time Image Recognition

Smart Detection can be used with both standard and thermal cameras to continuously monitor the bridge deck. Standard cameras provide clear images under normal conditions, may detect other irregularities in the future, and are usually already in place. Meanwhile, thermal cameras enable reliable detection even in poor visibility conditions, such as darkness or fog.

2. Instant Warnings on a Dashboard

Operators receive clear notifications on an intuitive dashboard, including status updates such as:

"No detection" – It is safe to open the bridge.

"Potentially hazardous situation" – A risk is detected, opening is not recommended, and additional checks are advised.

These text notifications are displayed in the SCADA system, with optional visual feedback in the Video Management System in the form of frames highlighting detections.

3. Review and Decision-Making

In case of doubt, operators can review camera footage from multiple angles. This helps them make well-informed decisions and operate the bridge safely.

4. AI Integration

With artificial intelligence, the system can understand complex scenarios and recognize anomalies, even in unusual circumstances.

Why Smart Detection for Bridge Safety?

Remote Operation is Becoming the Norm

More and more bridges are being controlled remotely from control centers. This means operators must switch between multiple bridges during a shift, increasing the risk of human errors and their associated dangers.

Growing Safety Challenges

Managing multiple bridges simultaneously increases the risk of accidents. By implementing Smart Detection, operators can focus on safety, supported by reliable technology.

Facts & Figures

Operator Performance

Eye-tracking research by Human Factors professionals shows that an untrained operator detects only 65% of critical cases in time. With proper training in grid-based camera scanning, this percentage can be increased to 85%. However, there are still situations where an operator's attention is divided, such as stationary persons or complex scenarios. Smart Bridge Detection bridges these gaps and provides additional certainty.

Operator Liability

Operators are personally liable in case of incidents. While they are generally not prosecuted if protocols are correctly followed, the psychological impact of such an investigation can be significant. Implementing Smart Bridge Detection is not just an investment in safety but also a demonstration of responsible employment practices. It provides operators with the support they need and contributes to their well-being.

Reduced Incidents

Every year, 30,000 hazardous situations are reported at bridges. Smart Detection can significantly reduce these risks by alerting operators in time and assisting them in making safe decisions.

Key Benefits

Certified Technology

Pegamento's Smart Detection for Bridge Safety was recognized as the best solution during the Rijkswaterstaat Challenge Detection. The system offers a unique combination of ease of use, reliability, and advanced AI functionality.

Fully Customizable

Smart Detection can be easily adapted for various applications, including bridges, traffic intersections, waterways, and even logistics centers.

Compatible with Both Standard and Thermal Cameras

The system is flexible and can be used with both standard and thermal cameras, ensuring reliable performance even under challenging conditions such as poor lighting or heavy fog.

Efficiency and Cost Savings

Operators save time and effort as the system helps them quickly and accurately assess situations. This not only reduces the likelihood of accidents but also lowers operational costs.

Future-Proof

Thanks to continuous AI training and improvements, the system is prepared for future challenges.

Why Pegamento?

Our systems have already been successfully implemented in other sectors, such as security in forensic psychiatric centers, solar parks, trains, crossings, industrial sites, and critical infrastructure.

Additionally, Pegamento collaborates with partners to further expand this system to other locations, such as locks, traffic squares, and even busy public spaces where traffic congestion and safety are key concerns.

