wi.MOVE

Structural Health Monitoring & Assessment

wi. MOVE offers a state-of-the-art approach to Proactive Public Infrastructure Asset Management and Structural Health, by collecting data from various sources such as security cameras, drones, municipal vehicles, and autonomous ground vehicles (AGVs).

Advanced AI algorithms and Deep Learning techniques process this data to assess the condition of infrastructure assets. The system generates alerts and recommendations for maintenance and safety tasks, focusing on the structural health of buildings, pavements, and roads. This proactive management approach enhances efficiency, reduces the risk of accidents, mitigates environmental pollution, and leads to significant cost savings and improved operations.

Motivation

Infrastructure Maintenance	Environment	Public Safety
Prioritize maintenance projects and allocate resources effectively	Early detection of structural issues minimizes the need for emergency repairs, which can lead to resource wastage	Well-maintained road infrastructure contributes to smoother traffic flow
40% Of public roadways in EU are in poor or mediocre condition	Monitoring structural health helps identify potential leaks (e.g. water, gas, oil)	**30%** Of road accidents are estimated to be related to damaged road surfaces
Up to 40% Extension of the lifetime of infrastructure assets with proactive monitoring	Severe road surface damages, contribute to **~15%** of total vehicle emissions due to increased fuel consumption	Road damages contribute to accidents due to decreased traction and loss of vehicle control

wi.MOVE Intelligent algorithms aim to proactively manage infrastructure, reducing the risk of accidents and environmental pollution.

Assessment of the condition of the infrastructure using Video Analytics

Machine Vision Algorithms → Statistical Analysis Methods →

Resource Optimization · Structural Health Monitoring · Environment · Predictive Maintenance · Planning of Construction Works · Safety

Insights
- Infrastructure Faults Identification
- Severity Estimation for each Damage
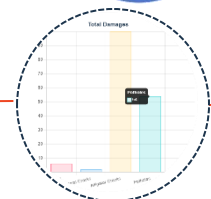- Corrective Interventions Identification

Multiple Data Sources

Data are gathered from diverse sources including fixed cameras, drones, municipal vehicles, and autonomous ground vehicles (AGVs).
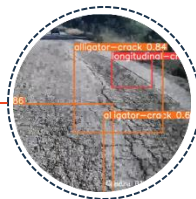
Detection Model

The video streams are processed in real-time, yielding valuable parameters and features. Damage severity for each damage is also conducted.

Visualization Dashboard

The video streams, the detections and the insights derived are accessible through a powerful visualization dashboard, allowing administrators to obtain comprehensive views of the structural health inspection outcomes, real-time monitoring data, and damage detection results.

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FEATURES

Visualization Dashboard:

- Structural health inspection output
- Realtime monitoring & damage detection
- Realtime camera feed from active devices (drones, AGVs)
- Notifications and alerts on detected damage severity
- Total number of damages
- Total number of damages of each type (e.g. longitudinal cracks, lateral cracks, alligator cracks, potholes, manholes)
- Filters: Date range, road damage type, severity, device
- Inspection & management of devices
- Statistics and analytics
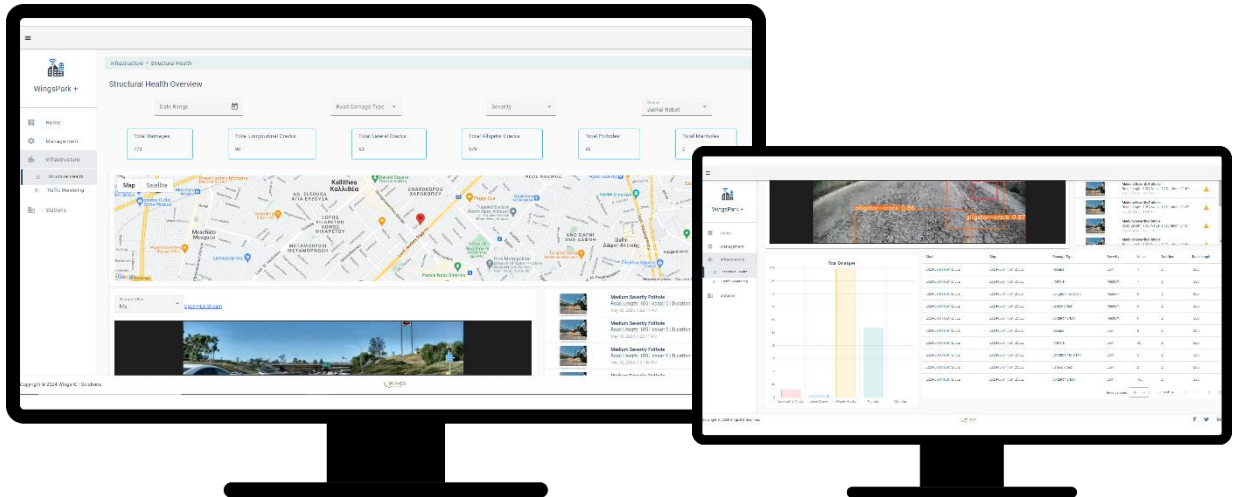
ABOUT WINGS

WINGS ICT Solutions provides comprehensive IoT solutions for smart cities, e-health, and public utility services, utilizing innovative technologies such as Artificial Intelligence, Big Data, advanced wireless networking, and security technologies.

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