

Artificial Intelligence for Critical Operations

Description

STGI Industries develops algorithmic models to interpret operational information and transform it into alerts, evidence, and concrete decision-making support. We work with the images, signals, and variables available in each process, defining together with the client which events are relevant and how they should be managed.

Our solutions combine computer vision, data analytics, and applied artificial intelligence to identify anomalies, anticipate deviations, and strengthen operational continuity. The approach is modular: it adapts to existing infrastructure and the specific conditions of each asset or operation.

Areas of Application

- Visual inspection of processes, equipment, and critical areas.
- Detection and classification of operational anomalies.
- Analysis of condition variables for predictive maintenance.
- Alerts with traceability and evidence for operations and maintenance.



Technological Capabilities

STGI Industries designs and trains artificial intelligence models using the data and images made available by each operation. The selection and integration of sensors, cameras, and data sources are defined for each project together with the client and, when appropriate, technology partners.

Capability	What STGI Develops	Potential Application
Computer Vision	Models that detect, locate, and classify anomalous objects or conditions in images and video.	Workshops, yards, stations, support processes, and restricted-access areas.
Predictive Analytics	Models that identify patterns and deviations in operational and condition variables.	Critical equipment, planned maintenance, and continuous industrial processes.
Alerts and Traceability	Business rules, event prioritization, dashboards, and useful information for human review.	Operational supervision, maintenance, and improvement of response protocols.

Application in Critical Infrastructure and Operations

These capabilities can be evaluated in maintenance workshops, yards, stations, electromechanical facilities, industrial processes, and other locations where early detection, event traceability, and asset availability are relevant. Applications are defined based on the specific operational challenge, without assuming a standard solution

Working Method

Each project begins with a review of the process and the definition of the events requiring attention. STGI Industries builds, tests, and refines the algorithmic model with feedback from the people who understand the operation.



Managment Outcomes

- Timely information to review situations that are not always visible in daily operations.
- Evidence and traceability to support operations and maintenance decisions.
- Models that are progressively refined using events confirmed in the field.
- A scalable foundation for extending monitoring to new assets or critical points.

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