

TECH OFFER

AI Solution for Safety Management in High-Risk Industries or Workspaces



KEY INFORMATION

TECHNOLOGY CATEGORY:
Infocomm - Artificial Intelligence

TECHNOLOGY READINESS LEVEL (TRL): **TRL8**
COUNTRY: **SINGAPORE**
ID NUMBER: **TO175096**

OVERVIEW

High-risk industrial sectors, notably the chemical industry, frequently experience severe safety incidents during production. Traditional risk management approaches, heavily reliant on manual efforts, often suffer from inadequate supervision, incomplete coverage, and suboptimal control. Addressing these challenges, the tech provider offers an advanced solution combining artificial intelligence technologies such as computer vision, the Internet of Things (IoT), and big data analytics. By utilizing existing enterprise cameras and sophisticated algorithmic servers, it establishes a video-based intelligent analysis platform for hidden risk management. This platform enhances overall safety through comprehensive risk perception, proactive hazard identification, predictive warnings, and visual decision-making aids, aiming for widespread and intelligent safety management across high-risk industrial environments.

TECHNOLOGY FEATURES & SPECIFICATIONS

The tech provider integrates AI technology with operational safety in high-risk sectors, developing over 160 bespoke algorithms to monitor the key elements of industrial safety production: people, equipment, environment, and workflows. Its solution includes:

- **Industry-specific Small Sample Detection:** Utilizing a Siamese Network structure trained on a mix of normal and abnormal data, their system achieves over 90% accuracy in identifying hazards in high-risk settings.
- **Sequence Standard Action Verification with Transformers:** Designed for real-world chemical production interactions, this feature uses Transformer network structures to robustly extract and verify sequence action features, ensuring over 95% detection accuracy in critical operations.
- **Decision Support with Large-Scale Industrial Models and Knowledge Graphs:** Combining a specialized industrial large language model with a multimodal knowledge graph, the tech provider facilitates advanced decision-making by leveraging text and visual data for comprehensive understanding.

POTENTIAL APPLICATIONS

The tech provider significantly enhances safety management and operational processes across various high-risk industries including chemicals, oil fields, mining, power, steel, construction, and ports. Capabilities include:

- **Safety Production Monitoring and Alerts:** Supervising standard and temporary operations, and personal protective equipment (PPE) usage.
- **Intelligent Equipment Monitoring:** Identifying vehicle issues, equipment leaks, instrument readings, and potential sparks.
- This technology also extends to quality control, using AI-driven visual inspections to detect and categorize product defects, thus enhancing the precision of industrial quality assessments.

UNIQUE VALUE PROPOSITION

The tech provider uniquely blends computer vision with operational safety in hazardous industries, offering a lightweight deployment solution for an "Active Safe Workplace". This system integrates multiple computer vision algorithms for real-time, thoughtful safety information processing, providing:

- **24/7 Continuous Monitoring:** Its AI capabilities enable around-the-clock supervision across all camera feeds.
- **Customizable Algorithms:** With over 160 standardized algorithms, tailored developments are possible based on specific scene conditions and business needs.
- **Highly Accurate and Rapid Deployment:** Proven in numerous chemical industry applications, their algorithms are not only highly accurate but also quick to implement in new environments.

The tech provider's advanced data-driven approach positions it at the forefront of industrial safety technology, facilitating smarter, safer operations across the board.