REVOLUTIONISING INDUSTRIAL SAFETY WITH AI-POWERED COMPUTER VISION

BACKGROUND

Ensuring worker safety in dynamic and hazardous factory and warehouse environments is crucial. Frequent interactions between personnel, machinery, and structural elements pose significant risks. Industry best practices like segregated walkways, speed limits, and strict loading protocols help mitigate these dangers. However, human error and unforeseen events can still lead to accidents.

Recognising the need for enhanced safety measures, the client sought to leverage technological advancements for a safer and more efficient environment. The goal was to integrate past incident lessons into an open technology platform, deploying safety applications that uphold stringent data privacy and security standards.

AT A GLANCE

Industry: Pharmaceuticals

Employees: 10k+

Objectives:

- Implement advanced safety measures to reduce accidents.
- Use ML and Computer Vision for automated safety monitoring.
- Leverage data analytics to enhance safety initiatives.
- Ensure safety applications comply with privacy and security standards.
- Design a scalable, globally deployable solution.
- Minimise downtime and boost productivity by reducing injury risks.

Products:

- Azure Machine Learning
- Azure Computer Vision
- Azure IoT Edge
- Azure Data Lake Storage
- Azure Synapse Analytics
- Azure Security Centre
- Power BI
- Databricks Analytics Platform
- Databricks Delta Lake
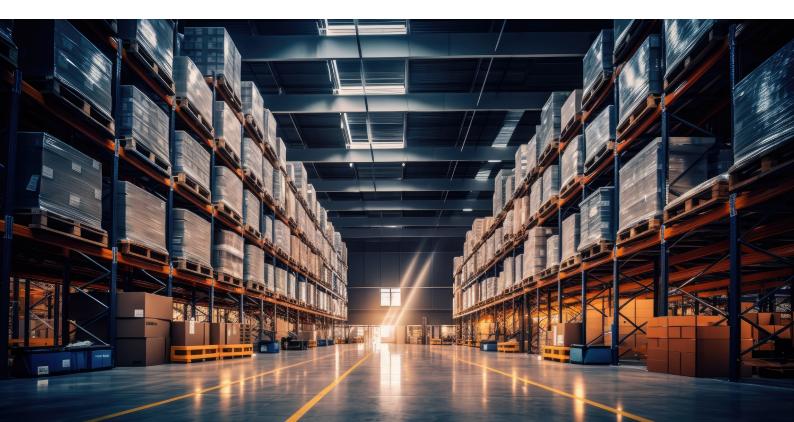- Databricks MLflow

CHALLENGE

Factory and warehouse environments present significant risks to workers, given the frequent interactions between people, machinery, and fixtures such as elevated shelving. To regulate these risks, best practices, including segregated walkways, speed limits, blind spot removals, and prohibiting unsafe loading and unloading, are imposed. However, even with the best training and intentions, human error and unexpected events can compound, eroding safety margins and leading to accidents.

To ensure safe and efficient operations across their factories and warehouses, the client wanted to apply the lessons learned from past incidents within an open technology platform by deploying a series of safety applications while respecting data privacy and security concerns.

BENEFITS

With the power of Computer Vision and Machine Learning and employees' know-how, the client will significantly improve the safety of their factories and warehouses. Thanks to the solution's data collection and analytics capabilities, the company can target its safety awareness initiatives more effectively, using data-driven insights from actual operations. It's a significant step forward for AI-powered safety in the industrial workplace. More capabilities include:

- Detection of potential safety violations with higher accuracy
- The potential to reduce the number of unsafe events within days
- Improved productivity by reducing the risk of injuries that force employees to take time off from work

SOLUTION

Holisticon Insight (Nexer Insight) developed an intelligent factory surveillance system using Machine Learning-powered Computer Vision to automate the monitoring and protection of factory operations. This identified vehicles and people moving within forbidden or shared zones, identifying and alerting those at risk of collision.

By collecting examples of safe and unsafe behaviour and then running iterative ML model training, the solution could spot a wide array of potential safety violations and case-specific rule breaches and generate automatic alerts for the company's safety system.

RESULTS

To deliver, the client required a partner with deep Azure ML/Computer Vision expertise who could design and build a scalable implementation in a high-security environment. Microsoft recommended Holisticon Insight (Nexer Insight) as a partner based on its proven capability to implement large-scale Azure Computer Vision solutions for global leaders within the mining, shipping, and manufacturing industries, plus its world-leading IoT and Edge Computing skills.

Holisticon Insight (Nexer Insight) deployed a team to work closely with the client's health and safety, IT, and security teams to deliver the solution to the client's Azure tenant and edge computing appliances. This avoided any movement of highly confidential data outside corporate data security. The solution was piloted in one of the client's factories and deployed globally across other sites.

"We knew we would solve the challenge, but seeing the results from the edge software and algorithms we delivered on Azure Stack Edge is fantastic. Using the existing CCTV camera networks to have one camera to track and calculate the direction and velocity of identified objects and the distance between the objects is just a fantastic accomplishment!"

– Mattias Zaunders, Business Manager, Nexer Insight

Find out how Holisticon Insight can help your organisation:

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