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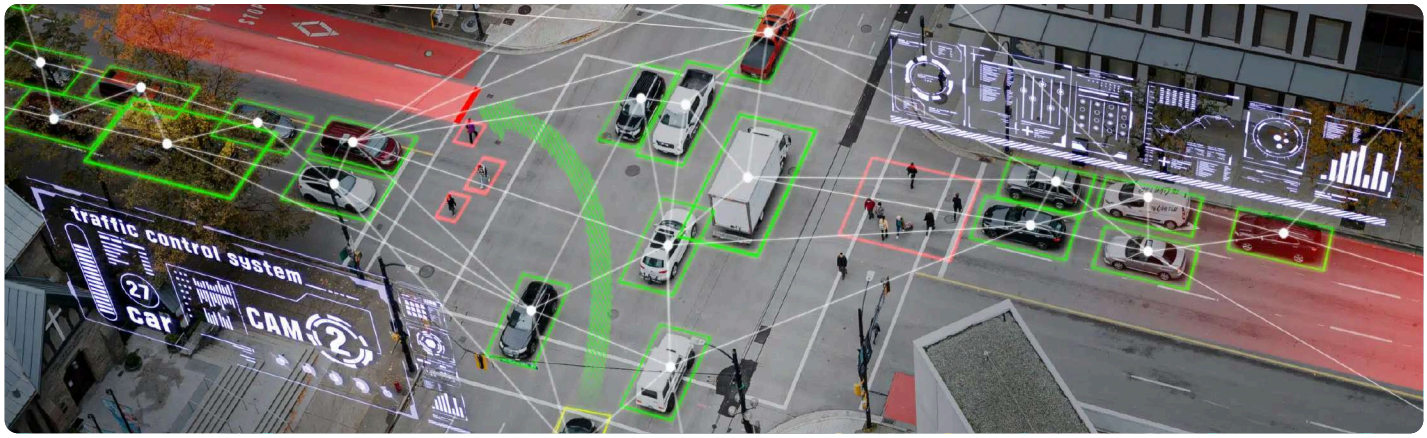
AI-enabled Video Intelligence Platform

Introduction

Artificial Intelligence has been debated and discussed ever since computers were invented. There have been various discoveries in the field of AI and its utilization in multiple technologies, fields, and businesses. Although many revolutionary AI incarnations are not commercially available as of today, AI-based technologies such as voice recognition, search engines, virtual assistants, and chatbots are becoming widely integrated. AI-based video analytics is one of the most discussed topics in the fields of surveillance and monitoring. Its capabilities are rapidly increasing, and its potential is being explored exponentially.



What is Video Analytics?

At its core, video analytics is a branch of computer vision, a field of AI that enables machines to interpret and understand video data. It extracts meaningful insights, detects patterns, and triggers automated actions, ranging from basic motion detection to advanced behavior analysis.

Vidan AI utilizes advanced AI, machine learning, and deep learning algorithms to perform real-time monitoring and provide detailed analytics. It offers smart solutions such as facial recognition, enhanced security, behavior analysis, and predictive event detection.

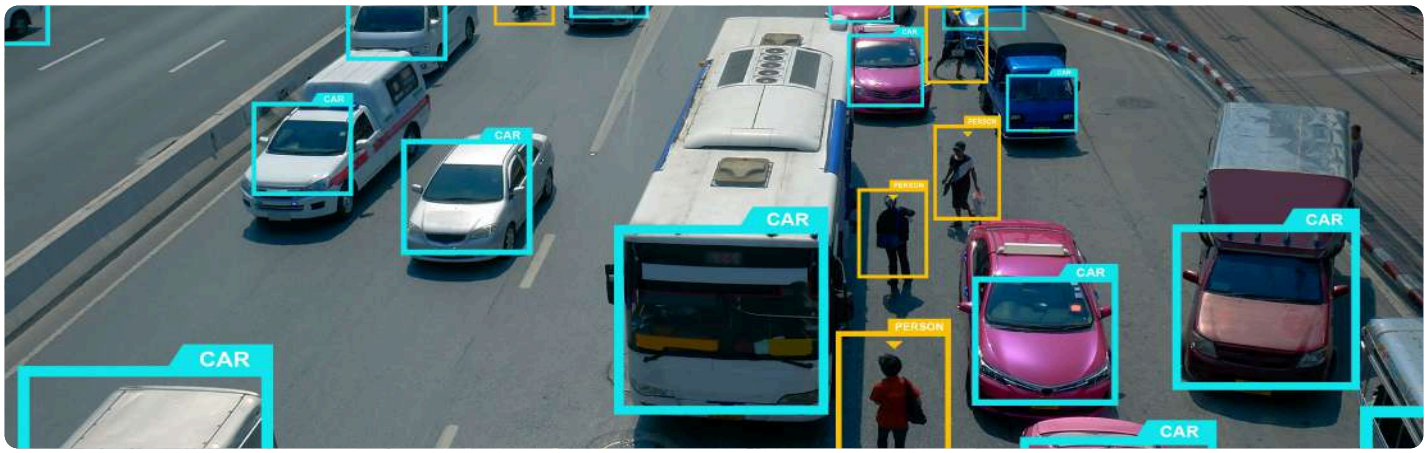
The video analytics market is rapidly growing, with projections reaching $52.67 billion by 2032, driven by AI advancements, smart city initiatives, and broader applications across sectors, growing at a compound annual growth rate (CAGR) of 22.7% from 2024 to 2032.

Video Analytics and Vidan AI

Video analytics encompasses a wide range of capabilities, from basic motion detection to sophisticated behavior analysis. Traditional Video Motion Detectors (VMDs) rely on algorithms to identify specific actions, such as detecting movement or recognizing predefined behaviors like loitering, trespassing, or unauthorized access to restricted zones. Common applications include detecting objects left behind, tracking vehicles or people entering or leaving defined areas, and monitoring unauthorized access. Advanced systems can even perform autonomous PTZ (pan-tilt-zoom) tracking of moving entities.

More recently, the advent of AI has shifted video analytics from rule-based algorithms to learning-based systems. These AI-driven solutions adapt to their environment by observing patterns of normal activity within a camera's field of view. By identifying deviations from learned norms—AI-based systems can detect and respond to potential threats that might otherwise go unnoticed.

Building on this advanced approach, Vidan emerges as a transformative AI-powered Video Intelligence Platform. It revolutionizes how organizations leverage surveillance data by offering high quality video analytics capabilities. Vidan identifies actions such as zone entry, trespassing, and unusual behaviors, delivering detection and analysis results. Integrating advanced deep learning technologies, it provides functionalities like people counting, gun detection, fire alerts, behavioral analytics, and facial recognition, enhancing security and operational efficiency across multiple sectors.



Technologies Powering Video Analytics

The backbone of video analytics lies in several advanced technologies that drive its capabilities:

Computer Vision

Video analytics relies on computer vision to process and interpret visual data, enabling tasks like object recognition, tracking, and activity detection to extract meaningful insights from video streams.

Machine Learning

Machine learning enhances video analytics by enabling systems to learn from data and detect patterns, improving tasks such as facial recognition and anomaly detection for smarter security and surveillance.

Natural Language Processing (NLP)

NLP analyzes audio content in video streams, identifying keywords, sentiments, and themes to provide insights into customer behavior and interactions.

Large Language Models (LLM)

LLMs improve video analytics by offering contextual understanding of text-based data, enhancing tasks like subtitle generation, content summarization, and interpretation of speech or actions.

Small Language Models (SLM)

SLMs support lightweight, task-specific video analytics, enabling quick, efficient real-time responses like detecting keywords or generating alerts in resource-limited scenarios.

This technological foundation equips video analytics systems to transform raw data into actionable intelligence, changing the dynamics of a wide range of growing industries from security to customer experience.

Challenges in Video Analytics

High Computational Requirements

Video analytics relies on computer vision to process and interpret visual data, enabling tasks like object recognition, tracking, and activity detection to extract meaningful insights from video streams.

Privacy Concerns

As video data often contains sensitive personal information, ensuring privacy and complying with data protection regulations (e.g., GDPR) remains a critical challenge.

Real-Time Processing Needs

Many applications, such as security surveillance and customer service, require immediate insights from video data, demanding fast, efficient processing without compromising accuracy.

Accuracy vs. Speed

Striking the right balance between processing speed and the precision of insights can be difficult, especially when systems need to quickly analyze vast amounts of data without errors.

Data Security

Ensuring that video data, especially when stored and transmitted, is secure from breaches and unauthorized access is a constant concern in video analytics.

Bringing Vidan to Life

Innovation and Expertise Behind the AI Video Analytics Revolution

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Identifying the Need for Advanced Video Analytics

As data complexity and volume grow, businesses across sectors struggle to manage and extract meaningful insights from vast amounts of footage. This challenge creates a key opportunity for AI-driven video analytics solutions like Vidan, which transform raw data into actionable insights that enhance decision-making and optimize operations

A Commitment to Innovation: Developing Vidan

Recognizing the gap in traditional video surveillance systems,Vidan's Team set out to develop a system capable of detecting basic events like motion or trespassing and one that would leverage AI algorithms to understand complex behaviors, predict potential risks, and trigger automated responses to minimize threats. With the latest advances in AI and machine learning, Vidan was created as a robust, scalable, and intelligent platform.

Research-Driven Design: Understanding Industry Needs

Vidan's development began with a deep understanding of the unique challenges across industries like security, healthcare, and retail. Using the Design Thinking approach, our team identified the limitations of existing systems and created a platform with advanced algorithms for people counting, gun detection, fire alerts, and dynamic features like behavioral analytics and facial recognition. Vidan was built to adapt to the evolving needs of diverse industries.

Impact Across Industries: Transforming Security, Operations, and Healthcare

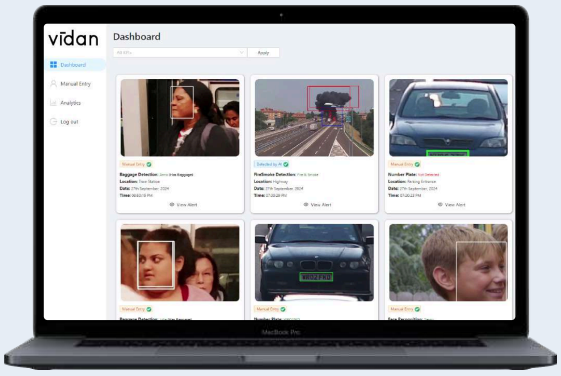
Vidan's versatility shines across industries. In security, it improves threat monitoring and response. In healthcare, it enhances patient safety and resource allocation. Retailers use it to track customer behavior and optimize store layouts. Additionally, Vidan aids urban planning with traffic flow analysis and crowd management, proving to be a highly adaptable tool across various sectors.

Recognized Innovation: Industry Acclaim and Awards

Vidan's innovation has earned industry recognition, including the PASHA Award for Best Security Solution. This underscores its groundbreaking capabilities and positive impact on organizations, setting new standards in video analytics and becoming a cornerstone for businesses seeking to enhance security, efficiency, and decision-making through AI.

The Future of Video Analytics: A Smarter, Safer World

Vidan's scalability and powerful insights are just the beginning. As the world becomes more interconnected, AI video analytics will play a crucial role in enhancing safety, optimizing operations, and enabling smarter decision-making.



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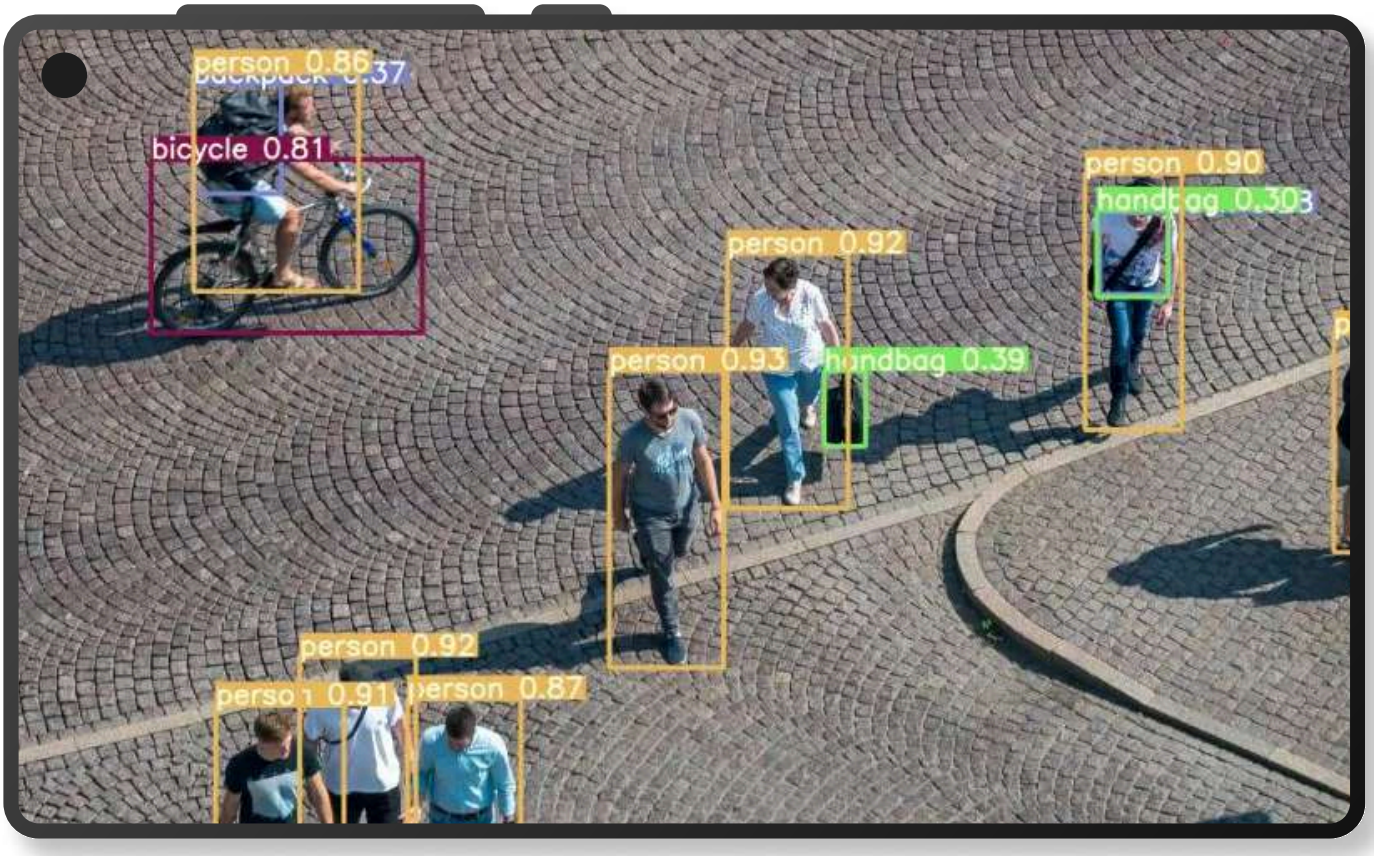
Train Your Own AI Models with Vidan

Vidan's intuitive interface enables organizations to easily build and train custom AI models tailored to their needs. This feature offers flexibility across industries like manufacturing, retail, and healthcare, making advanced AI accessible to teams with varying technical expertise while ensuring accuracy and scalability.



Core Features of the Interactive Vidan Platform

Custom Model Training:

Users can upload datasets, define parameters, and train models directly within the platform, ensuring AI aligns with their operational goals.

Real-Time Insights:

Vidan processes live video feeds, generating actionable insights and enabling quick responses to emerging situations.

Dynamic Data Tagging:

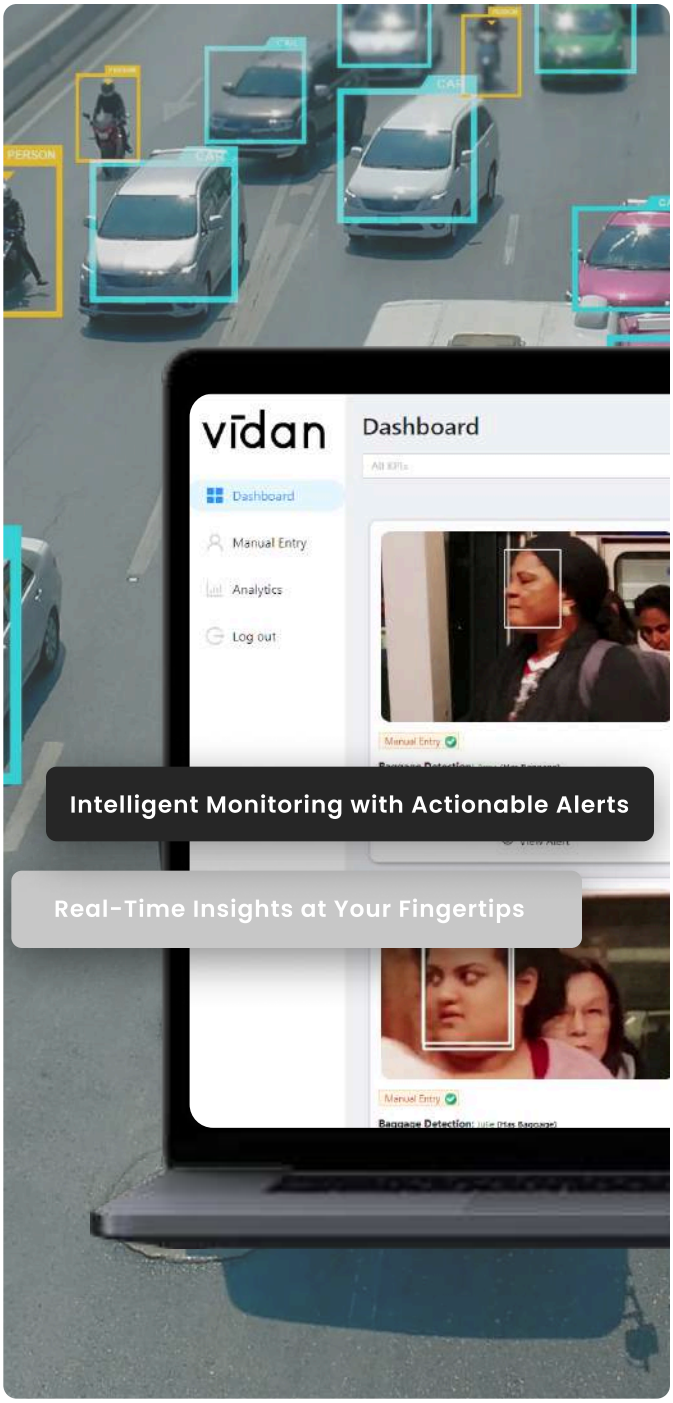
Businesses can tag and categorize video data flexibly, unlocking deeper analytics and enabling smarter decision-making.

Integration:

Designed to integrate effortlessly with existing infrastructure, Vidan supports rapid deployment across diverse enterprise environments.

Scalability:

As business needs evolve, Vidan's modular architecture allows for the easy addition of new capabilities, ensuring the platform grows alongside the organization.



Vidan AI: **Key Advantages**

Vidan AI offers advanced video analytics algorithms that provide a wide range of benefits to organizations seeking to enhance security and operational efficiency.

Here are some of the most outstanding advantages of Vidan AI:

Accurate Detection of People and Objects

Vidan AI uses deep learning neural networks to accurately detect people, vehicles, and objects, minimizing false alerts and ensuring reliable surveillance

Configurable Zones for Targeted Detection

Users can define multiple zones for precise detection, optimizing surveillance in critical areas with high accuracy.

Directional Line Crossing:

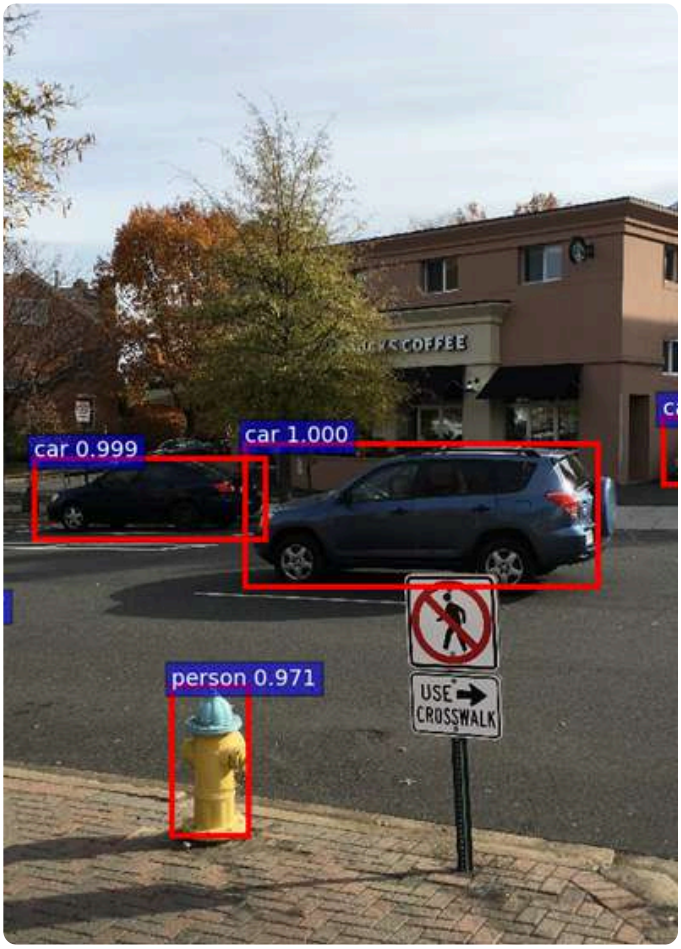
Detects movement across configurable lines, improving security by tracking specific movement patterns.

Advanced Tracking Functionality

Vidan AI offers robust tracking, including loitering and directional line crossing alerts, to detect specific behaviors and monitor movement patterns.

Loitering Detection:

Alerts are triggered when a person loiters beyond a set time threshold, identifying potential threats.



Vidan AI Workflow & Key Capabilities

	Collect	Annotate	Train	Develop	Deploy	Connect	Monitor	Maintain	Secure
Description	Gather video data.	Tag & organize	Refine AI models	Build tailored tools	Implement solutions	Integrate systems.	Provide real-time insights	Optimize & update.	Protect sensitive data.
Key Features	Video Capture, Data Import, Automation, Camera Links	Object Tagging, Event Labeling, Dynamic Data High Accuracy	Model Training, Feature Optimization, Algorithm Refinement, AI Learning	Modular DesignAPI, Integration Custom Features, Scalable Tools	Cloud Ready Rapid Setup, Low Latency, Reliable Performance	IoT Links Cross-Platform Synchronization Interoperability	Dashboards Alerts, Behavioral Insights, Anomaly Detection	Fine-Tuning Training Support	Encryption Access Control Compliance, User Authentication

Collect : Gather video data efficiently from multiple sources.

Annotate : Tag and organize data with high-accuracy labeling.

Train : Refine AI models through feature optimization and learning.

Develop : Build tailored AI-powered tools with modular design.

Deploy : Implement scalable, cloud-ready solutions with low latency.

Connect : Integrate seamlessly across platforms and IoT devices.

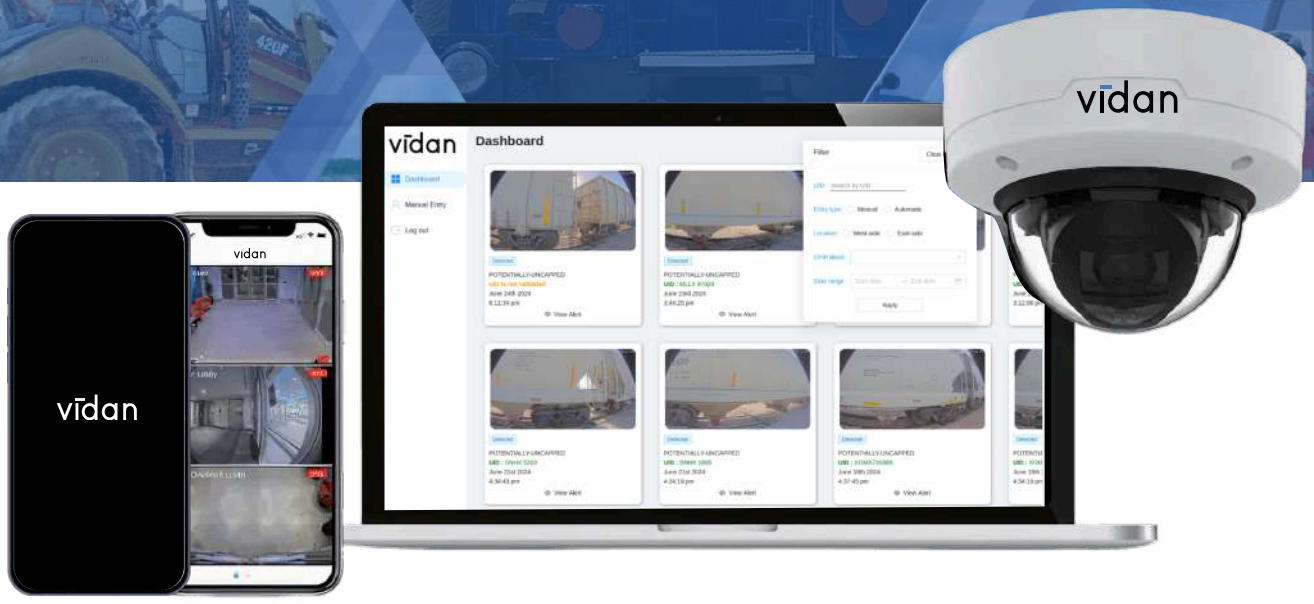
Monitor : Provide real-time insights with dashboards and alerts.

Maintain : Optimize, fine-tune, and continuously improve AI models.

Secure : Protect sensitive data with encryption and access control.

TGS
Trans-Global Solutions, Inc.

Case Study: TGS Vidan



TGS Vidan is an advanced implementation of Vidan AI solutions, specifically designed to address the unique challenges faced by the logistics & transportation industry. This system uses Vidan's real-time video analytics to improve operational efficiency, cargo security, and the overall business value for Trans-Global Solutions, Inc. (TGS).

Key Features and Functionality

At the heart of TGS Vidan is its real-time surveillance capability, made possible by strategically placed high-definition cameras monitoring freight trains. These cameras focus on the caps on the sides of the trains, which are critical for securing liquid cargo during loading and unloading. Properly secured caps ensure the cargo remains safe during transit.

Using advanced AI algorithms, the system continuously monitors the status of the caps, checking if they are tightly fastened. If a cap is found to be loose or missing, the system immediately detects the issue and sends an alert to relevant personnel. This allows for quick action to secure the cap and prevent potential spillage. The system also allows users to provide feedback on any instances that might have been missed, which helps improve the model's accuracy over time by learning from these corrections.

This combination of surveillance and AI-powered detection ensures TGS can maintain high operational efficiency while minimizing the risks associated with cargo spillage

Benefits of TGS Vidan

TGS Vidan prevents cargo spillage by ensuring caps are securely fastened, reducing the risk of leaks and financial losses. Real-time alerts enable quick responses to hazards, enhancing safety and preventing environmental damage. Automated monitoring streamlines operations, minimizes downtime, and speeds up issue resolution, boosting efficiency and reliability. Continuous user feedback improves the AI model, leading to better accuracy and results.

Customer Testimonial

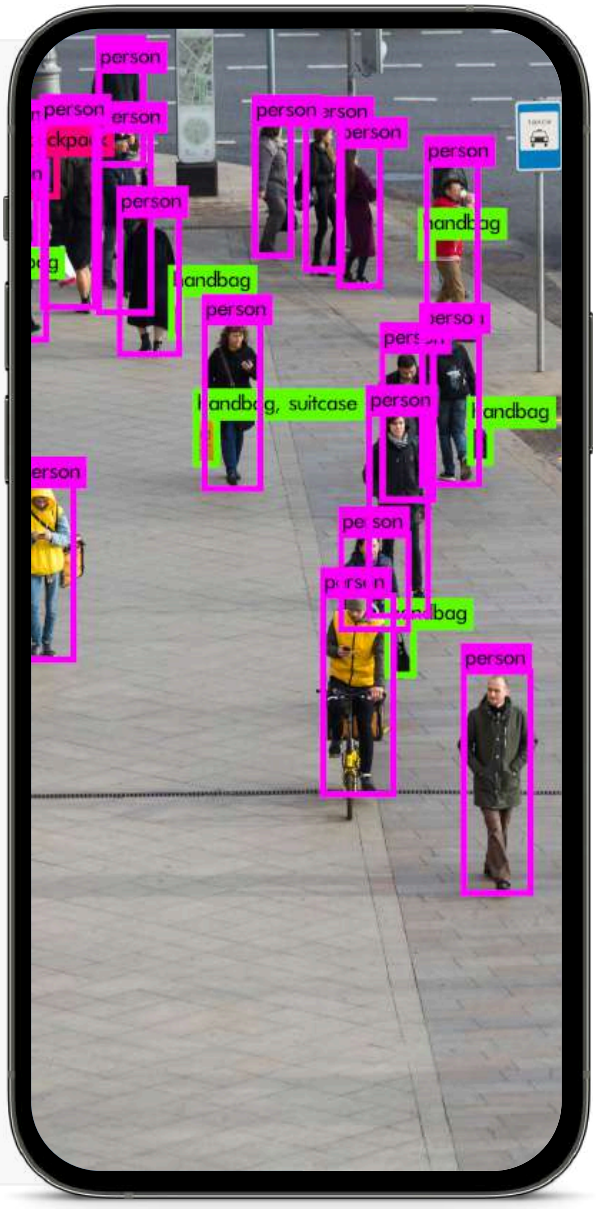
Ryan Westmeyer, Director of Systems and Technologies at TGS, shared his confidence in Liquid Technologies' ability to support future projects

Ryan Westmeyer
Director of Systems and Technologies

Ready-to-Deploy Proofs of Concept (POCs)

Vidan is adaptable and can be applied in various industries, addressing a wide range of challenges. Here are a few examples of how Vidan's AI-powered video analytics can be used across different sectors:

- Weapon Detection
- Vehicle Detection
- Train Cap Detection
- Traffic Count
- Smoke Detection
- Mark Sheet Reader
- Intruder Detection
- Identity Access Management
- Fire Detection
- Employee Chatbot
- Debris Detection
- Customer Heatmap
- Cans Conveyor Belt Monitoring
- Airport Detection



Conclusion

Vidan offers a powerful video analytics solution that transforms raw video data into actionable insights across industries. By combining AI technologies like Deep Learning, Computer Vision, and Machine Learning, it enhances security, improves safety, and boosts operational efficiency. With features like real-time detection, behavioral analysis, and proactive alerts, Vidan helps businesses respond to threats, optimize workflows, and predict trends.

Its adaptability makes it valuable across sectors, from healthcare to retail and urban planning. As data volumes grow, AI-driven video analytics like Vidan will play a crucial role in modern surveillance and operations, delivering immediate value and long-term benefits. Vidan is not just the future of video analytics—it's the present.

Case Study

Automating Railcar Inspection and Enhancing Environmental Compliance with Vidan at

TGS
Trans-Global Solutions, Inc.

Introduction

Trans Global Solutions (TGS), a leader in transportation and infrastructure, joined Operation Clean Sweep to help reduce plastic waste. To support the initiative, TGS introduced drain filters, cleanup protocols, and plastic hopper car inspections. However, manual monitoring through cameras at the CPIP yard proved inefficient. To streamline the process, TGS partnered with Vidan to implement an **AI-powered video analytics** solution.

Opportunity

TGS faced multiple challenges in ensuring environmental and operational compliance:

- **Unsecured Hopper Caps**: Frequent manual findings of loose caps on plastic hopper cars posed spill and contamination risks.
- **Inefficient Monitoring:** Existing camera systems required constant manual checks, straining resources.
- **Data Gaps**: Lack of automated inspection logs limited accountability and compliance reporting.
- **Environmental Risk**: Delays in detecting unsecured caps increased the chance of plastic spills and regulatory penalties.

Environmental Risk: Delays in detecting unsecured caps increased the chance of plastic spills and regulatory penalties.

Customized AI Solution

Vidan tailored its video analytics system to TGS's operational needs through in-depth research.

Smart Data Tagging

Introduced a flexible tagging system for detailed video inspection analysis.

Database Integration

Synced with TGS's MS-SQL database to log alerts, timestamps, and equipment data.

Real-Time Alerts

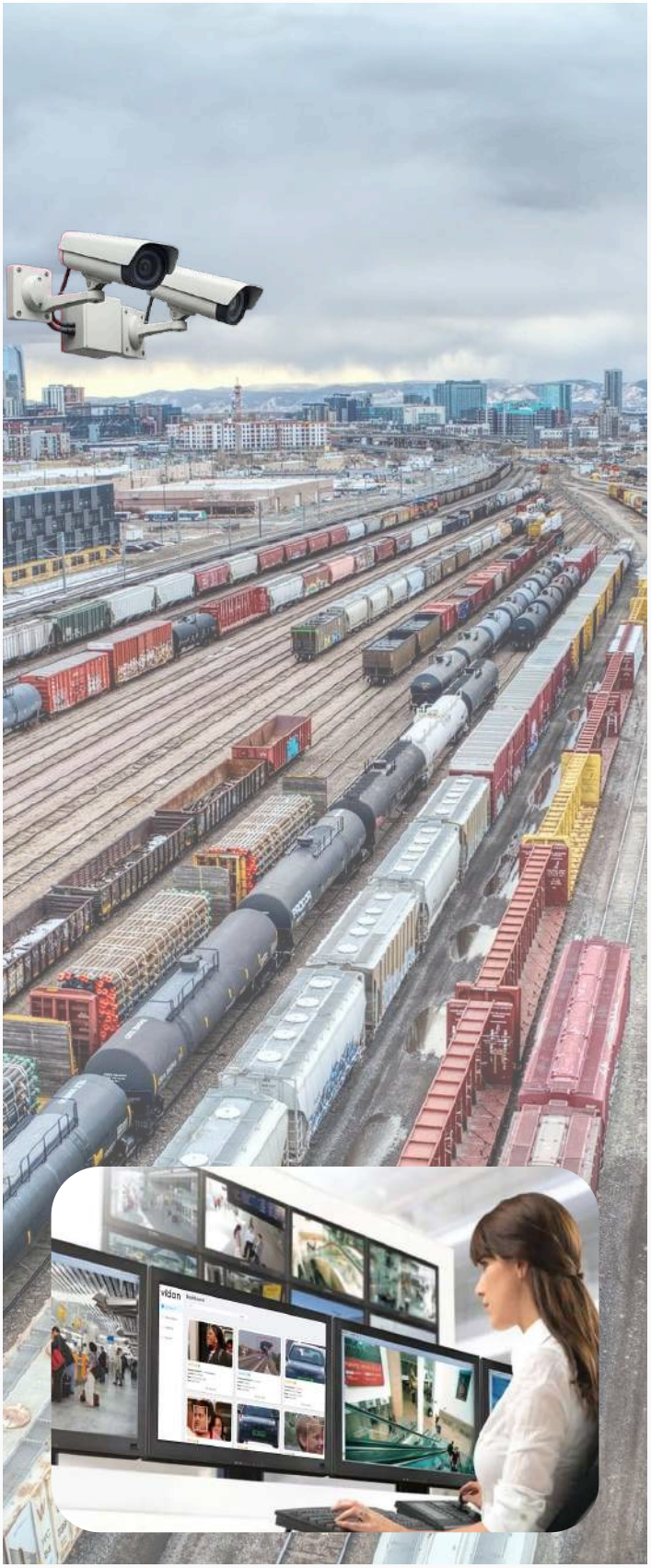
Enabled instant notifications for open hopper caps to prevent spills.

Agile Delivery

Used Agile sprints with TGS feedback for fast, aligned development.

Optimized Deployment

Tested and fine-tuned camera setups for accurate, uninterrupted monitoring.



Results

Automated Alerts

Instant detection and alerts for unsecured hopper caps prevented hazards.

Less Manual Monitoring

Reduced reliance on staff to watch camera feeds, cutting labor costs.

Improved Accountability

Enabled quick identification of responsible clients and fine imposition.

Boosted Efficiency

Faster inspections and reduced downtime improved resource use.

Regulatory Compliance

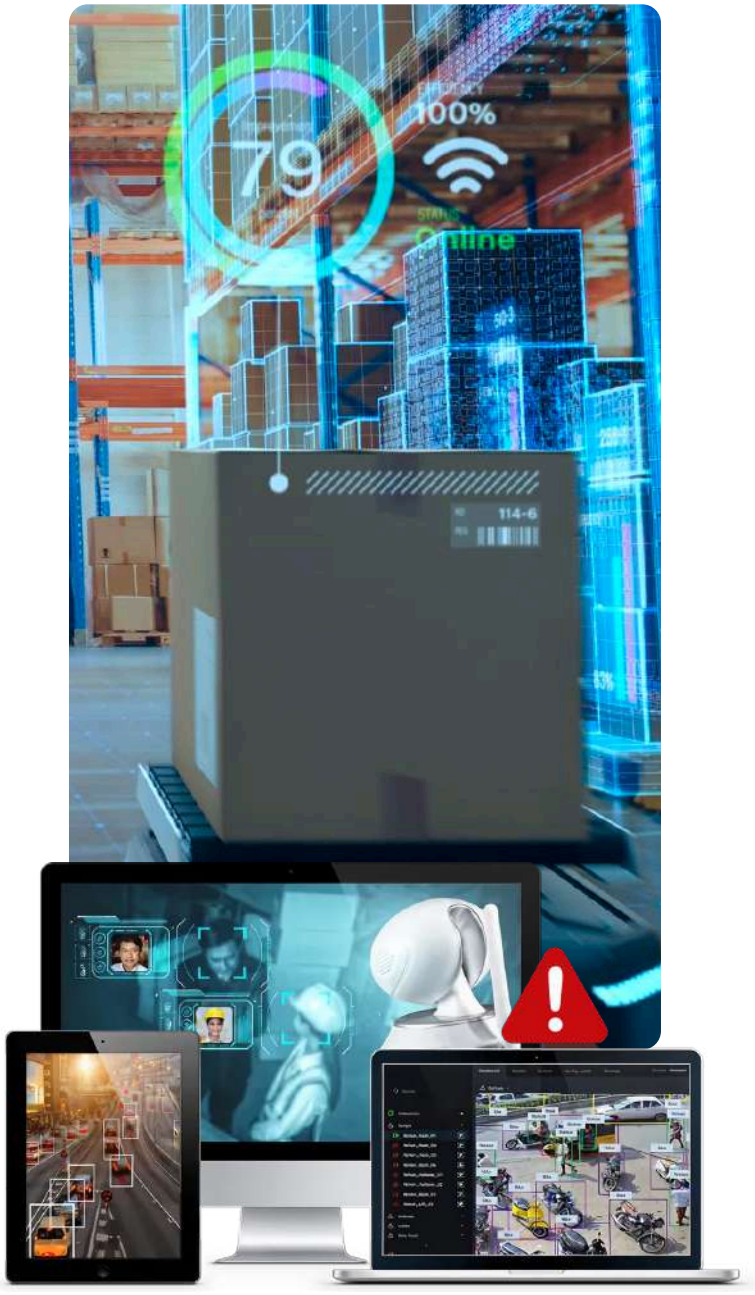
Integrated data logging ensured transparency and compliance.

Environmental Protection

Minimized spill risk through timely detection and response.

Smarter Resource Allocation

Freed up staff to focus on critical operations.



Conclusion

Through its partnership with Vidan, TGS transformed its railcar inspection process with automated video analytics—streamlining operations, improving compliance, and advancing its sustainability goals under Operation Clean Sweep.

The solution addressed key operational challenges while creating a scalable foundation for future innovation, reinforcing TGS's leadership in sustainable infrastructure.

Case Study

Enhancing Traffic Management and Violation Monitoring with Vidan at

Introduction

The Sindh Police, a critical law enforcement agency in Pakistan, is responsible for ensuring public safety, managing traffic, and enforcing road regulations across the province. With rapidly growing urban areas and increasing vehicular traffic, the police force faced mounting challenges in managing traffic flow, monitoring violations, and ensuring public safety. Recognizing the need for innovation, Sindh Police partnered with Vidan, an AI-powered video analytics solution, to revolutionize their traffic management and violation monitoring system.

Opportunity

Despite an existing traffic management system, Sindh Police faced ongoing challenges:

- **Undetected Violations**: Manual monitoring missed many incidents like speeding and red-light running.
- **Urban Congestion**: Peak-hour traffic caused major delays and pollution.
- **Reactive Enforcement:** Delayed violation detection led to inefficient responses
- **Manual Reporting:** Time-consuming processes slowed legal action and resource use.

To address this, Sindh Police partnered with Vidan to implement a real-time, AI-powered traffic enforcement solution.

AI Violation Detection

Identified speeding, red-light running, illegal turns, and lane changes in real time.

Traffic Optimization

Analyzed flow and adjusted signal timings to reduce congestion.

Auto Logging

Logged 5,000+ monthly violations with video, timestamps, and details.

Real-Time Alerts

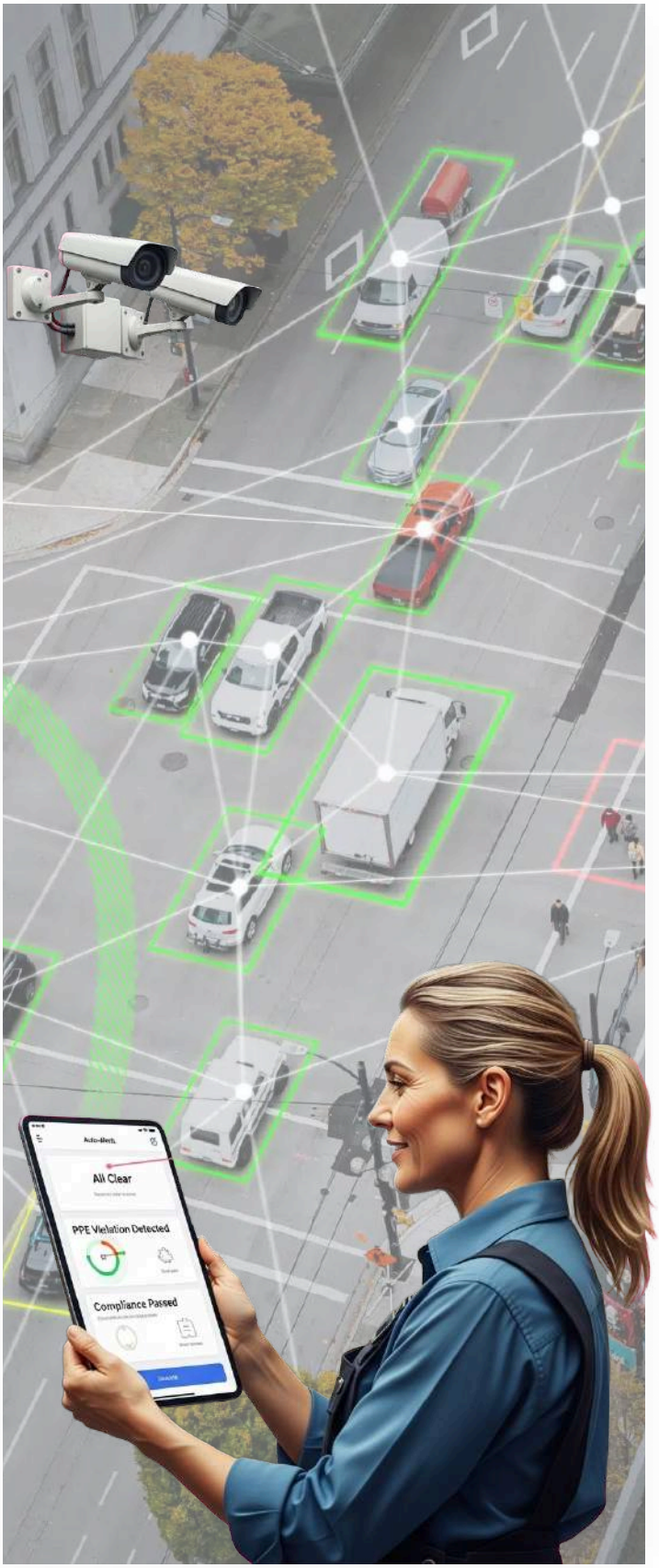
Enabled quick officer response via instant notifications.

Easy Integration

Leveraged existing traffic cameras—no major upgrades needed.

Ongoing Refinement

Monthly reviews helped adapt AI to changing traffic patterns.



Results

90% Accuracy in Violation Detection

Over 4,500 violations flagged in the first month, dramatically reducing undetected infractions.

25% Drop in Congestion

AI-optimized signals improved peak-hour flow and cut travel times.

70% Less Admin Overhead

Automated logging streamlined reporting, freeing officers for active enforcement.

60% Faster Response Times

Real-time alerts enabled immediate action on violations.

20% Fewer Repeat Offenders

Increased public awareness led to better compliance within three months.

15% Cost Savings

Automation cut operational costs, saving ~$200,000 annually.

Lower Emissions

Reduced congestion led to cleaner air—equal to 1,000 fewer cars on the road daily.

Conclusion

With Vidan’s AI-powered traffic solution, Sindh Police achieved major improvements in violation detection, congestion management, and enforcement efficiency. Real-time monitoring, automated logging, and dynamic signal control enhanced road safety, reduced delays, and increased public compliance—paving the way for smarter, scalable traffic systems across the province.

Case Study

Monitoring Operator Efficiency at Siddiqsons with Intelligent Presence Tracking

Objective Overview

Siddiqsons, a leading textile and denim manufacturer, launched a pilot with Vidan AI to measure real-time floor productivity. The goal was to gain visibility into operator performance using passive monitoring to track active work time per shift.

The pilot featured facial recognition-based presence logging, shift efficiency analytics, and idle time detection—providing managers with actionable, data-driven insights.

The Challenge

Despite structured schedules and attendance protocols, the factory floor lacked real-time clarity into worker efficiency. Supervisors were unable to track:

- **How long operators remained at their stations during shifts**
- **Which workstations were idle at any given time**
- **The broader impact of operator absences on production line flow**

Without accurate data, workforce planning and performance optimization remained reactive and inconsistent.

The Solution

To address these gaps, Siddiqsons and Vidan deployed a targeted solution in one section of the facility. The setup included facial recognition cameras at operator stations, real-time dashboards for supervisors, and a reporting system that translated presence data into clear performance metrics.

Key components included:

Automatic Operator Detection

Operators were logged in when seated at their desks and logged out when absent. This allowed for continuous, hands-free attendance tracking.

Shift Activity Monitoring

The system measured how much of each shift was spent actively working versus idle or away, providing accurate utilization metrics.

Live Status Dashboards

Supervisors could view real-time presence across all monitored stations, enabling quicker responses to gaps in staffing or productivity.

End-of-Day Reporting

Daily reports were automatically generated, summarizing presence logs, active and idle durations, and efficiency scores for each operator.

Key Performance Indicators (KPIs)

Metrics	Metrics
Active Time Ratio	Percentage of shift spent actively at the workstation
Idle Time Duration	Time away from desk or inactive during shift
Presence Log Accuracy	Facial recognition-based tracking accuracy
Operator-Level Reporting	Shift summaries including timestamps, durations, and trends
Daily Line Efficiency Data	Aggregated activity across the production line for line-level insights

Results and Impact

72% Average Active Time

Established a clear productivity baseline across shifts.

15% Reduction in Idle Time

Real-time insights enabled quicker supervisor intervention.

Better Line Coordination

Operator data helped reduce workflow gaps and bottlenecks.

No Manual Tracking

Automated attendance improved accuracy and saved admin time.

Conclusion

The Vidan AI pilot at Siddiqsons showed that real-time presence monitoring can significantly enhance visibility and productivity. By automating operator activity tracking, the company shifted from assumptions to evidence-based performance management—improving accountability, efficiency, and enabling smarter workforce and production planning.