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Automating Critical Repetitive Human Visual Inspection Tasks with the AIVID Visual Inspection and Video Intelligence Platform

The AIVID Platform, powered by Intel® processors and optimized with the OpenVINO™ Toolkit, enables businesses to simply implement and maintain consistent standard operating procedures at scale with AI and deep learning.

About AIVIDTechVision

AIVIDTechVision empowers businesses to mitigate the risk of non-compliance and strive towards a safe & high-quality workplace by automating human observation-based process inspection. Their vision is a workplace where every process-owner works with AIVID Bots, liberating humans to focus on creating value and solving intellect-demanding challenges, leading to fulfillment and optimal productivity for all.

Automated Visual Inspection Offers New Opportunities

The use of cameras linked to video monitoring systems for security and operational monitoring is nothing new; they are commonly deployed across a wide variety of industries and organizations. Traditionally, manual monitoring methods have been used to review and analyze footage, such as a security guard spending their shift scanning multiple screens. This method is highly inefficient, resource intensive, and expensive.

With the rise of AI and deep learning, these cameras can now help drastically improve the efficiency of security monitoring and offer video analytics and intelligence that can be applied to a multitude of use cases, including monitoring compliance to standard operating procedures (SOPs).

Implementing SOPs can help businesses achieve consistency across processes, reduce employee error, ensure quality of services and products, provide better customer experiences, and ultimately save time and money. Ensuring compliance for standard operating procedures can be difficult to monitor across 100 locations or 1,000 locations. Implementing SOPs across numerous geographically dispersed locations is a highly cumbersome and slow process that is further complicated by the fact that most businesses lack a central monitoring system.

The sheer amount of data that needs to be collected and analyzed increases the challenge of implementation, particularly when humans manually perform repetitive, mundane inspection tasks and results are subject to error. Computer vision and DL platforms have been found to be over 91% more reliable than traditional human-powered systems.[1]

So wouldn't it be wonderful if those same cameras that businesses are already using for security monitoring could now utilize AI-based video analytics to help solve these challenges? This would allow organizations to utilize staff in more productive and fulfilling ways, ensure a higher level of accuracy in data collected, and derive insights that drive improvements at scale and increase operational efficiency. That's where AIVIDTechVision comes in.

The AIVID Platform Solution

AIVID's vision is a workplace where every process owner works with AIVID BOTS to liberate humans to focus on creating value and solving intellect-demanding challenges, leading to fulfillment and optimal productivity at all. The result of this vision is the AIVID Visual Inspection Automation Platform, which leverages AI and deep learning to automate manual process inspections. AIVID is a cost-effective solution compatible with existing infrastructure, such as cameras and NVRs, that provides a centralized, highly scalable architecture to help businesses focus on executing productive business decisions based on data-based insights. The platform has tremendous potential to generate more value with video data for a wide variety of verticals including Banking, Retail, Healthcare, Hospitality, Transportation, and Smart Cities.

The platform aggregates and analyzes camera feed data from existing CCTV infrastructure to generate scheduled inspection reports and drive visual process improvements based on real-time insights. It enables decision-makers to automatically inspect standard operating procedures across multiple locations with central management for security, safety, workplace, and hygiene compliance.

AIVID Platform Key Compliance Capabilities

Workplace Compliance

- People counting
- Emotion recognition
- Uniform detection
- Person wait time
- Heat map
- Queue management
- Door open/close
- Staff availability
- Age and gender detection

Security Compliance

- Camera tamper detection
- Covered face detection
- Intrusion detection
- Cash dispensed detection
- Abandoned object detection
- Loitering detection
- ATM monitoring
- Missing object detection
- License plate recognition
- Cash drawer monitoring
- Delivery of receipt monitoring
- Billing counter staff availability

Safety Compliance

- PPE detection
- People density and crowd detection
- Overcrowding detection

Hygiene Compliance

- Floor cleaning frequency detection
- Cleaning schedule compliance monitoring

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Why AIVID Platform?

- Provides an integrated platform with auto-discovery of camera and configuration of rules for detection, workflow automation, and visual data analytics
- Utilizes a single platform to manage and monitor events for all locations from one central hub
- Offers unique KPI based SOP/Activity inspection automation
- Supports single click video search and proof from data anomalies and outliers right from the insights dashboard
- Leverages existing IP camera, NVR, or VMS structures to help reduce deployment costs and enable scalability
- Enables customers to easily scale across multiple locations as the platform is powered by the latest cloud technology and supports a distributed architecture
- Supports Edge-based distributed architecture with central orchestration
- Offers smart video searchability for streamlined identification of anomalies with proof when preset rules are broken, removing the need for tedious and error prone manual footage review
- Reduces storage requirements significantly compared to typical NVRs and DVRs, enabling companies to store footage for longer
- Provides real-time alerts to enhance security and ensure timely response to anomalies

These features and capabilities enable the AIVID platform to provide the following benefits to end customers:

Reduce Cost and Operational Inefficiencies	Accelerate SOP Adoption and Ensure Consistency	Scale Easily and Drive Improvements at Scale with Central Control
AIVID helps automate costly, tedious, and error-prone repetitive tasks and produces critical alerts and reports. This reduces the resources required to manually perform these routine tasks and frees up staff for other value-add activities. In addition, AIVID platform does not require specialized equipment, enabling companies to save on cost and install quickly by utilizing already installed CCTV.	With customizable options and a simple, easy to configure interface, AIVID enables customers to deploy pre-built deep learning models that can scale effortlessly across multiple locations without needing complex technical knowledge. AIVID reduces human subjectivity and error and confirms KPIs are met across branches to ensure safety and compliance.	The completely automated platform is managed from a central location allowing enterprises to implement SOPs at scale across all locations. Enterprises can easily scale up, add cameras, implement new activities, or expand to multiple sites. Automatically generated inspection reports and aggregated data help identify trends to drive visual process improvements at scale.

Example Industry Applications

Banking and Financial Services

Financial institutions need to ensure compliance to regulatory SOPs across multiple branch locations and are required to follow a strict level of security to meet those regulatory compliances. AIVID Platform helps banks accelerate adoption of regulatory SOPs, ensure safety and security, and reduce risk of penalties.

- Regulatory SOP compliance monitoring
- Central monitoring or ATMs and Branches
- Cash counter and vault monitoring
- Staff engagement compliance at counter
- ATM cleanliness detection

- Customer wait time detection
- Time spent at ATM violation detection
- Masked and covered face recognition
- Guard presence detection
- Intrusion and loitering monitoring
- Camera tampering monitoring
- Automated reports for audits and internal control

Retail

AIVID platform enables retail owners to collect in-store insights that help them understand customer behavior, staff planning, and operational efficiency across all stores. It can help retailers increase sales conversion rates, provide better business insights and real-time alerts, forecast more effectively for improved planning, and benchmark store performance across locations.

- Staff engagement analysis
- Customer conversion ratio
- Queue management
- Product placement and visit density heat map
- Dwell times at product aisles
- Missing object alert
- Peak and quiet hour trends

- People counting
- Shopper segmentation: age and gender detection
- Staff uniform detection
- Campaign and promotion insights
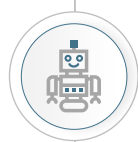- Window effective and signage analytics
- Shutter open and close detection

Industrial Safety

Ensuring employee safety is a critical priority for Industrial Enterprises. AIVID platform provides real-time monitoring to ensure compliance with safety regulations and helps companies proactively create safer workspaces for their employees through actionable data insights and trends.

- Safety gear detection (helmet, vests, hand guards, shoes)
- PPE detection
- Vehicle count

- Risk zone entry detection
- Camera tampering and offline alert
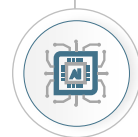- Proper barricade detection

Solution Components

AIVID BOTs: Deep learning models pre-trained by AIVID that provide monitoring capabilities for specific set of activities across safety, security, hygiene and workplace compliance (i.e. people counting, queue management, missing object detection, etc.). They provide built-in notifications and alerts for anomalies, deviations, and key observations to trigger automatic actions related to non-compliance.

AIVID Operation Portal: The cloud-based central portal that manages which AIVID Bots are deployed and where, allows customers to select from pre-defined SOP checklists and activity set up, set up rules, discover camera and sensor connections, and provides alerts and notifications.

AIVID Node: The deep learning engine that runs AIVID bots utilizing Intel® Core™ or Xeon® processors and integrates with existing IP Cameras, NVRs or DVRs. It is deployed in the customer network at each customer location with options to deploy at the edge, on-premise, or the cloud.

Intel® Core and Xeon Processors: The AIVID Node is built on Intel Central Processing Units and designed in collaboration with Intel engineers. Depending on customer needs, AIVID Node can include an Intel® Core™ Processor for customers with fewer camera streams, up to 14 cameras, or an Intel® Xeon® Processor for higher compute requirements, up to 100 cameras. Intel hardware enables AIVID to provide reduced TCO with enhanced storage capabilities while maintaining affordable pricing.

Intel® Distribution of OpenVINO™ Toolkit: The Open Visual Inference and Neural Network Optimization Toolkit enables developers to build and optimize AI-based computer vision models on Intel® hardware and makes it simple to adopt and maintain code. Developers can take advantage of existing Intel® processor architecture to quickly build, optimize, and scale deep learning and visual inference applications.
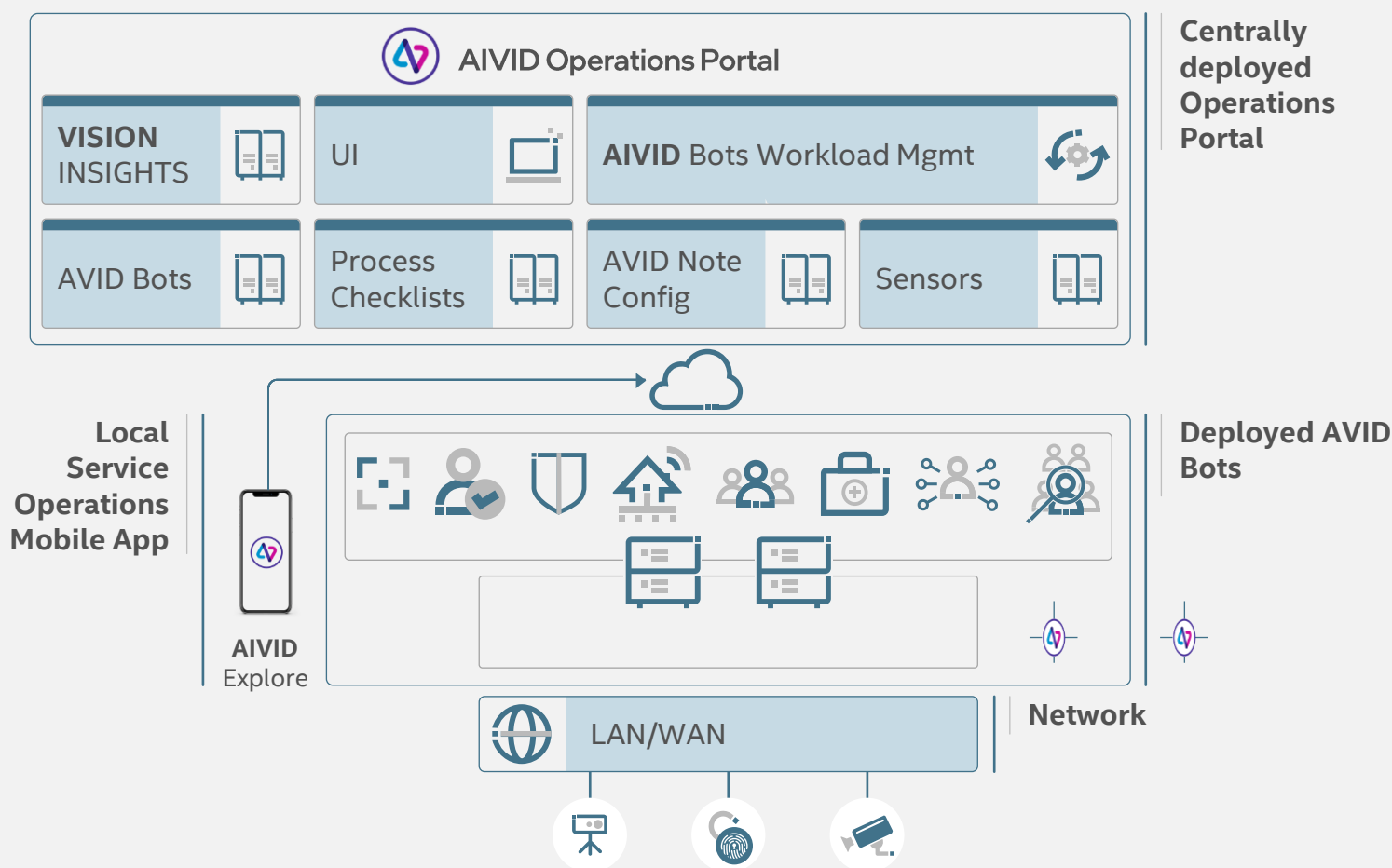
How AIVID Platform Works

Customers begin their journey by speaking with AIVID engineers on the events or activities they would like to inspect and what AIVID Bots they would like to include. The implementation can be done remotely or AIVID will send an engineer to deploy the AIVID Node at the customer location(s) and provide technical support during installation.

Customers then log on to the AIVID Customer Operations portal, which can be deployed on a central public or private cloud. It enables customers to simply set up the solution by configuring SOP checklists and selecting pre-defined activities and tasks for automated inspection by AIVID BOTs, such as measuring wait time in a queue.

Customers can then add inspection rules they want associated with those activities that indicate compliance or non-compliance with an SOP, such as flagging when customer wait times are more than 6 minutes. They can also enable and configure alerts and insights on the selected channel and schedule as required.

The Customer Operations Portal is connected to AIVID Node and has the AIVID bots deployed at the edge, which is linked to the LAN and IP

cameras in the network. Once set up, customers can deploy their SOPs with a single click across all locations. The AIVID BOTs, activities, and rules selected are pushed to AIVID Node deployed at the edge network and AIVID BOTs begin visual inspection. Alerts are provided in real-time, helping customers minimize the impact on non-compliance, detect anomalies across the board with proactive notifications, and identify issues like network cuts or disconnected cameras.

Customers can manage BOTs through the Operations Portal to deploy multiple BOTs on a single camera or multiple BOTs across multiple cameras and locations with the ability to change the location of BOTs with a single click. Central control makes it easy for customers to scale up by easily adding new cameras or sensors, adding or changing BOTs, or expanding to multiple sites.

The solution provides automated inspection reports for all SOP activities monitored by AIVID BOTs. Customers can configure the system to

automatically send reports to the right people on a specified schedule. The central process owner can choose to see reports or receive alerts across all sites but set up rules for local branch managers to only receive reports and alerts relevant to their location. The solution enables customers to derive insights across all branches at a glance with data visualizations that help quickly identify sites low in compliance and need troubleshooting.

AIVIDTechVision Enables Automated Inspection at Scale

With the AIVID Platform, end customers can simply convert video footage to actionable data insights to understand what is happening on the ground in real-time, which can help drive better business decisions across multiple locations, all from a single platform.

Learn More

- The AIVIDTechVision Website

- The Intel® Distribution of OpenVINO™ Toolkit Website

- The Intel® Xeon® Scalable Processors Product Page

- The AIVID Platform Website

- The Intel® Core™ Processor Family Product Page

1. Computer Vision Market by Component, Product, Application, and Vertical, Global Opportunity Analysis and Industry Forecast, 2020–2030, *Allied Market Research*, September 2021

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