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Türkiye's journey to zero incident

a case study



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Background on computer vision Al

Computer vision is a rapidly evolving artificial intelligence (AI) subfield that enables machines to interpret and understand the visual world. The technology has been around for decades, but recent advancements in machine learning, deep learning, and big data have revolutionized computer vision and made it a powerful tool for various applications such as robotics, self-driving cars, healthcare, and security.

The origins of computer vision can be traced back to the 1960s when researchers first attempted to develop algorithms that could automatically interpret and analyze visual data.

However, it was not until the 1980s that computer vision gained momentum, thanks to the development of powerful computers and the emergence of digital imaging technologies. In the 1990s, researchers started to apply machine learning techniques to computer vision problems, which led to significant progress in object recognition and image classification.

Computer vision is a complex and interdisciplinary field that involves several components, including image acquisition, image processing, feature extraction, and machine learning:

- Image acquisition refers to the process of capturing visual data from cameras, sensors, or other sources. The quality and type of data acquired can significantly affect the accuracy and efficiency of computer vision algorithms.
- Image processing involves the manipulation and enhancement of visual data to extract useful information. Common techniques used in image processing include filtering, segmentation, and edge detection.
- Feature extraction is a critical step in computer vision, as it involves identifying and extracting relevant features from visual data. This process enables machines to understand and recognize objects, shapes, and patterns in images.

In computer vision, machine learning algorithms are used to analyze and classify visual data, and they are trained using large datasets of labeled images.

As technology continues to advance, it is expected that more exciting applications of computer vision will emerge in the years to come.



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Enhancing workplace safety with computer vision Al

The use of computer vision AI to improve workplace safety is a relatively recent development, yet it has quickly gained traction as a powerful tool for preventing accidents and injuries. AI algorithms are being used to analyze workplaces in order to improve safety and ensure compliance. These algorithms work by analyzing video feeds and other visual data from cameras located throughout the workplace. They are designed to detect and analyze various activities, including the movement of people and objects, as well as environmental factors. The AI algorithms then use this information to identify potential safety hazards and to alert workers and environmental health and safety (EHS) teams to potential risks.

JOURNEY TO ZERO JOURNEY TO ZERO JOURNEY TO ZERO

There are several benefits of using computer vision AI for workplace safety Here are some of the most significant advantages:

Shifting from lagging to leading safety culture

Computer vision AI can analyze workplaces in real-time and alert workers or supervisors to potential EHS risks before they cause harm.

Enhanced safety compliance

By monitoring compliance with safety procedures and informing workers in real time, computer vision Al can help ensure that workers are following safety procedures and taking the necessary precautions.

Reduced accidents and injuries

By identifying potential safety hazards and unsafe acts, computer vision AI can help reduce the risk of accidents and injuries in the workplace.

Increased productivity

When workers feel safe in their workplace, they are more productive and engaged.

Despite these benefits, there are also potential concerns associated with deploying computer vision AI in the workplace.

One of the major concerns is privacy.

Worker (

Workers may feel uncomfortable with the idea of being monitored by cameras and other sensors. Employers must be transparent about how the technology is being used and what data is being collected. They must also ensure that the data is stored securely and that it is not being used for purposes other than improving workplace safety. The positive impact can only be realized through engaging the workforce transparently on how the technology is being used and addressing their concerns.

Another concern is the possibility of **both false positives and false negatives** when using computer vision AI systems.

While these systems are highly advanced, they are not infallible, and may mistakenly identify certain acts or conditions as hazardous, or fail to detect an actual unsafe situation. This can result in unnecessary interruptions and may cause workers to become complacent if they are alerted too frequently. It could also result in creating a false sense of security if the AI fails to identify a legitimate hazard.

To address these concerns, it is imperative to continuously train the AI algorithms through labeling and continue to enhance AI's accuracy.

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Introducing the AI-powered EHS platform

Intenseye is a leading EHS platform powered by cutting-edge AI. Using existing cameras within facilities, the platform empowers teams to see the unseen hazards and save lives proactively, through **24/7 analysis of workplaces** and generating real-time alerts. Thanks to AI, it has become possible to identify and analyze **45+ EHS use cases** with high accuracy and **protect 100,000+ workers** for leading industrial groups and Fortune 500 companies across 25 countries, **processing 22 billion images** daily.

Organizations can easily integrate this software into their existing CCTV cameras in their facilities within minutes without any hardware or sensor requirements. Plug-and-play AI models are designed to identify at-risk conditions including PPE Detection, Area Controls, Housekeeping, Behavioral Recognition, Vehicle Controls, Pandemic Control Measures & Ergonomics.

AI-powered EHS platform



Alerts

Immediate notifications to the at-risk individual and notifications to the supervisor.



Compliance

Insights into both positive safety behaviors as well as at-risk behaviors so that EHS teams can prioritize corrective actions.



Visual analytics

Data on the high-risk exposure spots, allowing not only for safety and health evaluations but also providing insight into operational efficiency.



Task management

Management of corrective actions from creation to completion and demonstrates the real-time impact of the precautions taken.



KPI tracking

With data-backed analytics and insights, the platform shifts the focus from lagging to leading indicators. Companies use these indicators to set up individual, team or corporate-level datadriven KPIs to monitor and improve their EHS performance.



Al accuracy checks

Transparent reporting of the AI accuracy rates. This enables users to have confidence in the accuracy of the data analyzed by the AI algorithms.





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Real-Time notifications and automated EHS reports

In addition to real-time notifications via email and SMS in the event of an alert, users can also schedule regular automated EHS reports to be sent to their emails, including daily, weekly, and monthly summaries of EHS metrics. These reports are useful for field safety meetings (e.g. toolbox talks) and regular EHS meetings, allowing organizations to stay informed about their EHS performance.

Automated seamless deployment and scalable AI

This platform combines on-site automation, deployment ease, scalability, and camera compatibility, creating a powerful integrated solution. Its client software ensures a secure connection between IP cameras and its cloud-hosted AI stack, enabling swift setup and rapid image processing. It integrates with IoT devices, offering real-time notifications and automated responses. The camera-agnostic software utilizes existing CCTV infrastructure, processing any IP camera input with over 95% AI accuracy while cutting bandwidth needs. It effectively converts a vast range of CCTV images into insightful data.

High accuracy with a broad range of EHS use cases

Al's deep learning services, designed for object detection and analysis, utilize image datasets labeled by a specialized Data Operations team. This team continually labels customer images, while monitoring and sharing accuracy rates weekly via a dashboard. For use cases with low accuracy or improperly detected objects, data is collected, labeled, and processed to refine Al algorithms within just a few days.

Ensuring ethical AI: Considerations for data privacy and psychological safety

Recognizing the importance of privacy and ethical considerations in Al deployment, Intenseye uses different methods to maintain anonymity and protect the privacy and well-being of the frontline. Intenseye is designed to protect individuals' privacy and does not collect, use, or store biometric data. The whole operations comply with KVKK and GDPR, and Intenseye uses anonymization techniques in our processes.

With the 3D anonymization method, Intenseye's AI renders individuals in workplace settings completely unidentifiable, without compromising the overall context to detect unsafe acts and conditions. Intenseye's unique 3D anonymization removes the individuals from the scene and places realistic rendered animations, ensuring irreversible anonymization.

Upholding the highest standards of data privacy and security is critical, as evidenced by its SOC 2 Type II compliance, which builds on its previous Type I certification. This achievement underscores the commitment to the five trust principles: Security, Availability, Processing Integrity, Confidentiality, and Privacy.

Intenseye is SOC 2 Type II compliant, building on its SOC 2 Type I certification. Intenseye's compliance demonstrates its dedication to upholding the highest standards of data privacy and security.



- The platform is designed with robust access controls, intrusion detection systems, and other IT security tools to prevent unauthorized access to systems and data.
- Measures such as analyzing network and application performance, site failover, security incident handling, and customer and application support systems are implemented to ensure the platform is always accessible.
- The platform is designed to deliver the right data at the right time, complete, valid, accurate, and authorized.
- Data confidentiality is managed with the use of encryption in transit and at rest, network and application firewalls, and other controls to safeguard sensitive information from unauthorized access or disclosure.
- · Personally identifiable information (PII) is protected with adjustable data retention periods, in line with GDPR (KVKK in Türkiye) and the AICPA's generally accepted privacy principles (GAPP).

According to the International Labour Organization (ILO), over 300 million workers interviewed from 142 countries stated that they feel they cannot report safety issues to their employers without fear of punishment. This lack of reporting can lead to serious preventable injuries due to fear. What AI can see 24/7 is extremely powerful and could prevent these types of injuries by acting as a 'source of truth'. However, the data must be handled with extreme care. Companies should adopt a human-centric approach to deploying AI. As an example, Human Performance Principles are the commonly accepted set of principles that endorse the fact that it is not the people who make violations willingly, it is the system or context around them which drives certain acts leading to incidents.

Thus, the focus should be on fixing the systemic issues that make compliance difficult for the workforce, rather than blaming them. Additionally, involving employee unions and securing employees' early buy-in helps to ensure that the AI is used to create a psychologically safe environment, whereby workers are empowered to speak up their minds. Such an inclusive and positive approach fosters constructive dialogue between decision-makers and the frontline staff, culminating in a transparent work culture and a better-engaged workforce.

Success Story at a multinational manufacturing company

A recent survey conducted at a leading global manufacturing company that has deployed Intenseye across their 28 facilities in 15 countries (13 are emerging markets across India, the Middle East, and Latin Americas) reveals that the Total Recordable Injury Rate has decreased 24% while 93% of workers feel safer appreciating AI as a job-aid helping them get their voices heard and protect them.



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⊙ 53,000 +

improvement actions completed in the **first year**

Türkiye's journey to zero incident: A multi- stakeholder project

Every 7 seconds one worker is injured in the USA. According to the ILO's recent report 2.9 million workers die every year from work-related injuries and diseases and 402 million people suffer from non-fatal injuries, resulting in a loss of more than 5.4% of the world's annual GDP.

Delivering on employee health and well-being, and protecting physical and psychological safety in the workplace has become a paramount concern for employers that commit to achieving the social aspect of ESG. The United Nations Sustainable Development Goals (SDG) 3.9, 8.8 and 16.6 provide a blueprint to improve occupational health and safety conditions and worker welfare by reducing the number of deaths and illnesses, protecting labor rights while promoting an effective, accountable and transparent institution at all levels.

Unfortunately, Türkiye is not exempt from the worldwide problem of workplace injuries. In response to this worldwide problem, the Turkish Confederation of Employer Associations (TISK) and TISK Microsurgery and Reconstruction Foundation (TISK MCV) have taken the initiative to launch the "Türkiye's Journey to Zero" project, aiming to address this issue on a large scale. The main objective of this project is to promote healthier and safer working environments across more than ten member industries by utilizing cutting-edge technology. TISK and TISK MCV have always prioritized the culture of occupational health and safety, but the escalating number of accidents has made it even more imperative to take action.

They collected preliminary requests from their member companies to assess industries' willingness to adopt technology. The feedback has been overwhelmingly positive, with many expressing a strong desire to use technology to improve EHS in the workplace.

Several solution partners were evaluated during the selection process, and Intenseye's solution emerged as the top choice due to its three significant features: fast and easy integration, an extremely user-friendly interface, and covering a broad range of occupational health and safety scenarios.

SIFIR KAZAYA YOLCULUK



As part of the project's scope, TISK and TISK MCV are committed to supporting their members who wish to invest in technology. They will cover most of the installation and license costs of the technology, providing an unprecedented opportunity for the ecosystem.

During the signing ceremony, TISK Board Member Levent Kocagül and Foundation President Fethi Hinginar expressed their immense satisfaction in presenting this innovative and technological solution through the project to prevent work accidents in Türkiye.

They highlighted the significance of the overall benefits that will be delivered to employees, employers, and public stakeholders as the project expands. Their remarks underscored the importance of this initiative in enhancing safety across the workforce and the broader community.

To commence the project, representatives from all parties involved gathered in Türkiye on April 8th, 2022 for an inauguration ceremony. Eleven webinars were conducted to promote the platform and provide more information on the value proposition across various industries. Following these webinars, interests were registered, and the journey to zero has commenced. 19



The project has achieved a widespread presence in Türkiye, as indicated by the facilities on the map, serving a diverse range of industries including wood, paper, glass, soil, cement, food, chemicals, petroleum, metal/steel, textiles, leather, and infrastructure.

Additionally, more industries such as mining, and airlines are underway to sign up for the project. With its riskbased approach, AI can be seamlessly integrated into any sector, making it a versatile solution when it comes to occupational health and safety. As a result, its usage has rapidly expanded across various industries without any sectoral limitation.

11



industries cities

people protected

42% last quarter growth







21

Scaling up social impact created at the micro level

With the leading role that AI technology companies have taken for next-generation technology companies, several success stories are emerging, creating a positive impact on the safety culture across multiple countries and varying cultures. Scaling EHS impact can only be possible through deep and constructive dialogue between industry, governments, trade associations, and civil society in service of a common purpose.

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At the Joint Dialogue Forum 2022; **the president of TISK, Mr. Ozgur Burak Akko**l stated that "To reach goal zero, we facilitated a tripartite dialogue between public, private, and employees. We aim to provide occupational safety for more than 500 thousand employees, providing technology support to our businesses in excess of 70 million TL per year. With the help of technology through using the existing cameras in the facilities, we now have the ability to prevent occupational health and safety incidents before they happen."

Within 12 months since the launch of the project, the AI technology has integrated into dozens of facilities across 11 industries and generated approximately 12.5 Million real-time alerts, 12% of which are classified as high risk i.e. unsafe situations that could easily lead to serious injuries.



hours of analysis

12.5 M+

realtime alerts

(f) () ()

industries

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1.5 M+

high risk realtime alerts

> Among these 12.5 million real-time alerts, some of them hold critical importance for workplace safety. Analyzing the industrial distribution of these critical alerts and identifying the unsafe acts & conditions that occur the most would provide data-backed insights for taking the right corrective actions.

6.9% 9.4% 1.4% Cement Forestry Food



The data above indicates the risk categories where unsafe acts and conditions are most concentrated. While the use of PPE is far ahead in alert numbers, the most critical alerts stem from the Area Control Rule.

The studies conducted by NCBI in the US have shown that the likelihood of injury for someone working the night shift is 270% higher than for those working during the day. In addition to fatigue, lack of supervision during the night shift poses another risk.

Industry-based critical alerts



These data show that the percentages of industry-based critical ales sent to the teams. The textile industry emerges as the industry using AI for its higher-risk hazards on a facility basis, while the oil, metal, and food industries also exhibit high levels of unsafe acts and conditions.

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Industry and shift-based percentages of alerts

Al has revealed that night shift risks are above average in the forestry, food, paper, textile, and glass, ceramics & concrete industries. In particular, the high alert rates recorded during night shifts in the glass, ceramics & concrete industries indicate the need for further occupational health and safety measures. The glass, ceramics & concrete industry carries more risk compared to other sectors.



Critical alerts: All shifts (Total) / night shifts

It has been revealed that the critical alert ratio is two times more regarding occupational health and safety risks on the night shifts as against day shifts, especially concerning housekeeping, vehicle controls, and PPE usage, due mainly to reasons such as lack of supervision and fatigue.



All day

Al detects unsafe acts & conditions such as working at height and entering a restricted area, sending realtime notifications to the site teams. As a result, it enables the visibility of previously unseen risks and facilitates the accurate and objective analysis of field data.

Once empowered with this proactive data, more targeted and risk-based preventive measures can be taken. Consequently, compliance rates have improved by 90% on average, while securing a commitment from the key decision-makers to scale up the project further in 2023 and beyond.

Deniz Karakaş, General Manager of TISK MCV, explains his views on the project as follows:

"With the concept of the 'Future of Work' and the growing impact of digitalization, we are increasingly promoting the utilization of advanced technologies, specifically artificial intelligence, in the realm of occupational health and safety. Our Foundation has launched the 'Türkiye's Journey to Zero' project and established a partnership with Intenseye, aiming to mitigate the risks of incidents at facilities throughout Türkiye.

Through this collaboration, we have reached cutting-edge technology and a user-friendly platform, empowering us to effectively minimize the risks. As a result of our collective efforts, we have successfully fostered a nationwide culture of workplace safety across diverse industries in Türkiye, positioning this project as a global best practice in workplace safety and Al."

Task samples







After detecting an unauthorized entry to a restricted area, one of our customers reduced unsafe acts and conditions observed in restricted areas by 95% with corrective actions taken in that area, Intenseye analyzed the effectiveness of the action taken. Other teams were also included in EHS processes and thus, visibility was increased.





After the detection of artificial intelligence, unsafe conditions decreased by 100% taken in the field.

Corrective actions were taken by using the task management module in detail.

3 Impact 🗸

Risk decreased



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12		$\langle \rangle$					
9	/						
6			1				
3							
0	27 Ara 2022	28 Ara 2022	29 Ara 2022	30 Ara 2022	31 Ara 2022	1 Oca 2023	2 Oca 2023
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Al that wins the heart and minds of frontline workers



This project is unique in the sense that it is establishing a constructive dialogue between employees, public, private, and NGOs including labor unions.

Intenseye's cutting-edge AI platform for eliminating workplace injuries has been awarded the jury's special award at the Turkish Confederation of Employer Associations (TİSK)'s 60thanniversary gala dinner. The award recognizes the significant contribution that AI has made to Türkiye's Journey to Zero project. Gokhan Yildiz, Intenseye's Director for Business Development, received the award on behalf of the team from Mr. Ergün Atalay, the General President of the Confederation of TÜRK-İŞ, which represents 34 labor unions.

Fethi Hinginar, President of TISK MCV, explains his views on the project as follows:

"As the TİSK Microsurgery and Reconstruction Foundation, our top priority is to promote a strong occupational health and safety culture in Türkiye. To achieve this goal, we introduced a groundbreaking project called "Türkiye's Journey to Zero," representing a pioneering and exemplary approach in our country's work environment. We have taken the initiative to provide substantial financial support for implementing this technology integration.

The enthusiasm and excitement shown by companies in our network towards this project have been truly remarkable. We consistently emphasize that TISK members not only excel in health and safety but also serve as leaders in various other areas, ensuring the overall well-being of employees."





The Project's relentless commitment to ethical AI and human performance principles aims to build a psychologically safe work culture by winning the hearts and minds of workers at the sharp end. Such a positive approach encourages workers to report their concerns and participate in solving issues holistically. By establishing a constructive dialogue between employees, public, private, and NGOs, Project fosters a common platform whereby the impact of AI at the site level is scaled up, preventing injuries proactively and saving more lives.

The Project stakeholders are deeply proud to receive this recognition and remain dedicated to the noble purpose of creating safer workplaces through innovative technology and a people-first approach.



Participants in the project have expressed their satisfaction with the enhancement of their work environment's health and safety through the use of Al. Field workers and EHS teams alike report feeling significantly safer, noting an increase in work efficiency. Here's some feedback gathered from the end users involved in the project:

"As a shift team leader, I was initially uneasy about connecting Al to our existing cameras. I wondered if our managers would use the cameras to monitor us or find our mistakes. However, we soon realized the benefits of this technology. The Al-powered system detects hazardous situations, such as a worker not wearing PPEs, and sends a notification to the system without exposing the worker's identity. In this journey that we started with Intenseye, we not only detected the unsafe acts and conditions but also received notifications about issues we had never seen before. I can easily say that we are safe and happy with Intenseye. I believe that Intenseye will prevent 99% of dangerous acts & conditions and work accidents."



Mustafa Kireçci Shift Team Lead 🕼 ENTEK

"Huge kudos to the Intenseye team, they did a great job. Although me and my team have just started using the product, **we are already amazed**. Intenseye is a dream coming true for us! Security cameras are used beyond what they are meant to do; namely to save lives.

I foresee that Intenseye's innovative technology will offer a **proactive approach to our EHS management and empower our frontline staff against incidents**. Many thanks to TiSK, TiSK Microsurgery Foundation, and MESS for their encouragement that brought us together with Intenseye."



Segezha

"We are extremely happy that we have taken the decision to implement intenseye to introduce the technology to our EHS management and operations. We are also proud to be the first company of the TISK's **Journey to Zero Project** that completed the integrations. We were able to integrate the cameras in less than a week, had a top-notch onboarding session with the Customer Success Team and got **instant value from the first day.**

We strongly believe that we can improve the EHS culture in Karsu Textile together with Intenseye."



Volkan Seyok Technical Manager Karsu Tekstil



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"We have seen that the artificial intelligence-based solutions we have implemented with Intenseye make very **important contributions to the identification and control of corrective actions and areas for improvement in our EHS management system. With the fast and agile approach** they showed within the scope of project management, we easily completed the integration of the project and moved to the **implementation phase in a short time.**

Our EHS cultural transformation roadmap and notifications that allow us to analyze to increase our EHS awareness have enabled us to take our behavioral EHS perspective to the next level. We are also happy with this project as it contributes to our **trust-based behavior management process**, in which we receive positive feedback from both our senior management and our employees, and we continue to achieve our continuous improvement goals. Many thanks to TİSK, TİSK Microsurgery Foundation, and MESS for their encouragement that brought us together with Intenseye."



Anl Talas, Occupational Health and Safety Assistant Manager Otokoç Otomotiv

Otokoc

"With Intenseye, we gained huge benefits and value from the platform very quickly by being able to see the hazards, unsafe acts & conditions.

The platform also made a great contribution to improving our EHS management system. Our use of the latest technology to ensure the safety of our employees has been **supported by both our employees and our management**. We see Intenseye as a very good partner to improve EHS processes in our facilities and we believe that we will find extraordinary solutions together with the Intenseye team in the future. Many thanks to TİSK, TİSK Microsurgery Foundation, and MESS for their encouragement that brought us together with Intenseye."



Faruk Sarıbuğa EHS Supervisor Arcelik

🟓 arçelik

"Intenseye is very easy to set up; we completed the camera tests, integration, and rule setup within a week and deployed Intenseye's artificial intelligence solution.

We did not need to make any additional investments while doing this because deployment happened within our existing security cameras. Also, I must say that the platform is user-friendly. Intenseye has thought of everything for us. The platform's data analysis shows us very clearly what our open wound is and where we need to focus. In this way, when we started to talk to the employees by making root cause analyses after identifying unsafe conditions, **we noticed positive changes in their behavior**. We see Intenseye as a teammate in our Journey to Zero. We would like to thank TİSK, TİSK Microsurgery Foundation, and MESS for enabling us to meet Intenseye's technology and for the incentives they offer."



iG and Environment Manager / S&E Supervisor

TKG

"With its artificial intelligence solution, Intenseye offers noteworthy solutions to take **corrective actions and prevent potential incidents in EHS management**. We decided to expand our EHS culture transformation and Journey to Zero goal with the accuracy rate and analysis we obtained within the scope of the pilot project. We are working to take the maximum benefit from the platform by creating real-time visual and audible alerts with simultaneous IoT and IO module support. We are also happy to contribute to the development process of this employee safety-focused solution that we get support from our employees and corporate. Many thanks to TİSK, TİSK Microsurgery Foundation, and MESS for their encouragement that brought us together with Intenseye. Work Safely, Taste Safely!"



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