

Understanding How Sensor Fusion AI Is Making Steel Industry Workplaces Safer

We use our five senses – sight, touch, taste, smell, hearing – every day to understand our environment and assess any risks or dangers. One sense is valuable, but when all five are used together, our ability to prevent an accident before it happens increases dramatically. Think about an afternoon bike ride, enjoying the beautiful weather as you pedal along. Before you even see a vehicle traveling towards you, you hear it and your other senses begin gathering input. By the time the vehicle travels into your line of vision, you're already incorporating that input. Without realizing it, you may use your sense of touch to grip the handle bars a bit tighter to veer out of the way if necessary. And is that exhaust you smell? You're innately processing input from each of your senses and instantaneously deciding if the situation poses any risks. If there is a risk, you naturally move away from traffic. If no risk is indicated, you continue biking and enjoying your day without ever consciously realizing all the data your body just processed.

Now imagine walking through a steel mill, fabricator or processor. Instead of that data coming from your senses, a technology platform is gathering input and data from multiple sources to continuously inform you, your workplace and your team members, proactively protecting you and your co-workers from incidents and accidents. The information it gathers, much like the inputs your senses gathered on your bike ride, is processed by artificial intelligence (AI) algorithms that are able to make the same type of split-second decisions you made.

Sensor fusion-based AI makes this concept a reality.



www.everguard.ai

EVERGUARD.ai

Sensor Fusion at Its Core

Sensor fusion is the process of combining data from multiple components to generate an output or action that is more accurate and reliable.

Much like our five senses, sensors are often used individually, but a combination of these inputs has been proven to be more valuable. Sensor fusion is how AI in health and safety understands an environment and decides if there are any definable risks or dangers present.

Cameras, computer visioning, radar, GPS, lidar and wearables are all devices that can be incorporated into a sensor fusion AI health and safety platform. Inputs gathered from these devices and potentially machine state status via PLC integration are sent to a central system for holistic analysis and processing by AI algorithms that create an almost immediate output. The more data input the system receives, the more it “learns”. While output results are more accurate with multiple sensor inputs, sensors are not dependent on each other. Should one sensor fail, the remaining sensors continue to actively gather data.

Sensor Fusion Use Across Industries

Today, sensor fusion is used widely across multiple industries, the most publicized being in the evolution of the autonomous vehicle. Sensor fusion combined with AI is what gives these vehicles capabilities for static object detection, moving object detection and tracking, occupancy grid mapping, navigation and much more. It is the “brains” if you will behind continuous outputs and actions based on that data, be it swerving to miss a fallen branch or slowing down on a rain-soaked highway.

Smart cities are also utilizing this technology. Multi-sensor systems like cameras, motion sensors, and others, allow for cities to efficiently monitor pollution, improve traffic flows, and enhance public safety.

And finally, sensor fusion can be found nearly everywhere in hospitals. The technology in the form of wearables are placed on patients to monitor heart rates, oxygen levels, blood pressure, body temperatures, and even moods. The combination of the data and inputs from these devices provides a much more accurate picture of a patient’s health than one sensor could alone.

Sensor Fusion and the Steel Industry

When it comes to employee health and safety in the steel industry, sensor fusion based AI gives mills, fabricators and processors the ability to shift from a reactive response to a proactive, behavioral training program. This technology helps bring the industry one step closer to reaching the goal of an accident-free steel industry.

Consider an overhead crane in the process of moving a coil or beam in a shipping bay. The crane carrying the load is moving south, but there is a worker with his/her back to the crane moving north, not realizing he/she is about to walk directly under a heavy load. In a bay equipped with sensor fusion AI, a mix of hardware, software, bio-metric wearable devices and other sensors feed data to the AI algorithms embedded in a technology platform to remind that worker of safety protocols, all in under half a second.

Camera A attached to the crane tells the system the crane is moving and in what direction, Camera B views the worker moving towards the crane, and also relays that input to the system. That data is processed almost instantaneously to create an alert which is sent to the worker via a bio-metric wearable device before he/she reaches

the danger area beneath the moving crane. An alert can also be sent to the crane operator to notify him/her to stop movement. In addition to the cameras, a sensor can be placed on the crane itself to surround it with a geofence. Once the worker ventures within inches of the geofence, that same wearable on his or her wrist buzzes with an alert.

With multiple input devices, the system does not rely on one set of data but instead continuously assesses the entire environment to train the AI algorithms to take action.

In this scenario, sensor fusion AI is able to provide behavioral training via the alerts to encourage worker behavior that lowers incident rates and helps avoid dangerous situations before they happen, including fall protection, worker-to-worker and worker-to-vehicle detection, and many others.



Sentri360™ Solution for Steel

Everguard's mission is to make the world's industrial environments safer. To do that, we've developed a cutting-edge approach that offers an AI solution to scan through multi-sensor inputs in real-time and proactively alert workers to health and safety concerns. Sentri360™ includes computer vision, AI, real-time location services, sensor fusion, and analytics in combination with multiple sensors to provide live, actionable oversight that ensures worker health and safety. Data is collected in the analytics portal to help you recognize improvements in worker behavior, generate reports and manage the system itself. Learn more at www.everguard.ai.

... live, actionable oversight that ensures worker health and safety.

