

Brief:
Active Attention
Systems for Driver
Safety and Asset
Protection

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Introduction

This document will briefly describe VizKinect's patented technology that can provide transportation organizations a simple and cost effective solution to offer a non-intrusive safety system for driver fatigue and inattention.

I. The Challenge

Whether it is boredom, fatigue or unexpected events, operators/drivers get distracted in the case of heavy equipment operations, especially in the mining industry. These accidents can result in millions of dollars of damage and, far more often than we would like to think, death and serious injuries.

A simple review of the PDF that is enclosed below shows the challenges that the mining industry faces and further suggests that improvements are still very much needed.

http://mines.industry.qld.gov.au/assets/inspectorate/injury_v_major_equipment_03-08.pdf

Antidotal evidence of continuous monitoring from a central control and GPS reporting on its own has proven insufficient, as has additional training. Unions have been resistant to further observation, autonomous control is still 10 years away, and the high capital costs of replacing a haul truck or shovel makes widespread adoption difficult.



No professional vehicle operator intentionally drives hazardously.

However, in the course of driving heavy vehicles, there may be times when their attention is inadvertently diverted for a second or even longer or when excessive fatigue occurs. As illustrated above, it only takes a few moments of inattention to results in property damage and possibly, personal injuries.

We can provide answers to the questions:

- Is the driver operator directing their attention where it is needed?
- Is he/she focused on the horizon, on the instrument panel, or someplace else?
- If there is a critical event or roadway intersection, is his/her attention properly focused?
- Are there signs of excessive fatigue, such as long duration between checking critical instrumentations, etc.

The challenge is driven by two primary objectives: 1) ensure driver and property safety and 2) enabling a fail-safe method of alerts for fatigue and inadvertent times of inattention.

VizKinect has a simple solution that is a low cost, retrofitable monitoring device that provides an acceptable solution to all parties involved. VizKinect monitors all of the above, activates an alarm if attention is diverted, and then if necessary, reports alarms and conditions to a control center.



II. About VizKinect

VizKinect has a different view of attention monitoring than many of our competitors. The world is changing and demands are increasing to ensure the safety of vehicle operators and property is protected from damage.

VizKinect offers an innovative solution that can effectively address these issues.

III. Attention Monitoring

Using VizKinect's eye-tracking analysis with **C.I.R.C.L.E.S.**™ technology, we offer the Active Attention System (AAS) that validates whether or not drivers are focusing their attention at the road. Distracted drivers cause accidents and damage to property. In the case of large machinery, like mine haulers, cranes and even trains, the driver may have periods when attention wanders or fatigue sets in. Our patent pending solution provides relief with a simple geofencing system and our biometric device. The device monitors the driver's attention either on a time-based sequence or whenever a critical juncture is approaching and sounds an alarm, if the driver is not looking in the right direction. The alarm shuts off when his attention returns.

VizKinect can work with equipment companies to integrate our technology into their machines and easily augment the existing operational capabilities. This can be performed in a new or after-market condition without costly or major modifications.

IV. Other Value Based Analyses Available from VizKinect

VizKinect has developed patent-pending technology and has been validated in several other market areas, including:

- Active Attention System application in Medical, Transportation, Heavy Machinery, Mining, and other industrial environments
- TV Commercial, Website Usability, and Mobile Media Ad Analysis
- Product Placement Analysis (Motion Picture, Television Programming)
- Print Analysis (Magazine, Newspaper, Mailer)
- Outdoor Analysis (Billboard, Bus Stop, Mall Signage)
- Expert Training Video Production/Analysis for Trainees in high performance areas
- Legal Animation Video Production/Analysis
- Biosensor Analysis (Neural Optical, Pulse Rate: Panelist reaction to visual content)

V. Conclusion

With VizKinect, heavy machinery operators will have a safety measure to alert them when unexpected fatigue occurs or when attention is unsafely diverted. VizKinect provides this capability and enables a safe and effective solution.

It is important to note that, while we have concentrated on mining, our solution has many applications where there are moving vehicles with potential to do damage to assets or injuries to the operator. Our solution was developed out of a distracted driver study that is being conducted by the University of California San Diego (UCSD) where we provide the instrumentation and technical expertise.

We encourage you to try us out and see the difference we can offer.