Real-Time Alcohol Impairment Detection
The First of Its Kind — Built for the Road Ahead

Alcohol impairment remains one of the most persistent threats to road safety.

While traditional prevention methods rely on breath tests, interlocks, or roadside enforcement, these tools are limited in scope and often miss the critical moments when risk is highest — during the drive itself.

Smart Eye's Real-Time Alcohol Impairment Detection addresses this challenge. Integrated directly into Smart Eye's Driver Monitoring System (DMS), Real-Time Alcohol Impairment Detection provides real-time, non-intrusive detection using the same camera and processing platform already deployed for distraction and drowsiness monitoring.

Experience it at CES 2026

For CES 2026, the alcohol impairment detection technology is demonstrated in Smart Eye's AIS demo.

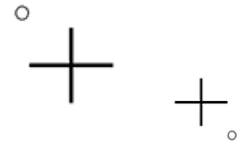**~12,000 people die** in alcohol-related crashes every year in the U.S[1]

Alcohol is involved in about **25% of traffic fatalities** in Europe[2]

Only **15–20 % of DWI offenders** actually install ignition interlocks[3]

Sources: [1]*National Highway Traffic Safety Administration. (n.d.). Drunk driving. U.S. Department of Transportation.* | [2]*Vissers, L., Houwing, S., & Wegman, F. (2018, February 7). Alcohol-related road casualties in official crash statistics. International Transport Forum (OECD).* | [3]*U.S. Government Accountability Office. (2014, June 20). Traffic safety: Alcohol ignition interlocks are effective while installed; less is known about how to increase installation rates (GAO-14-559).*
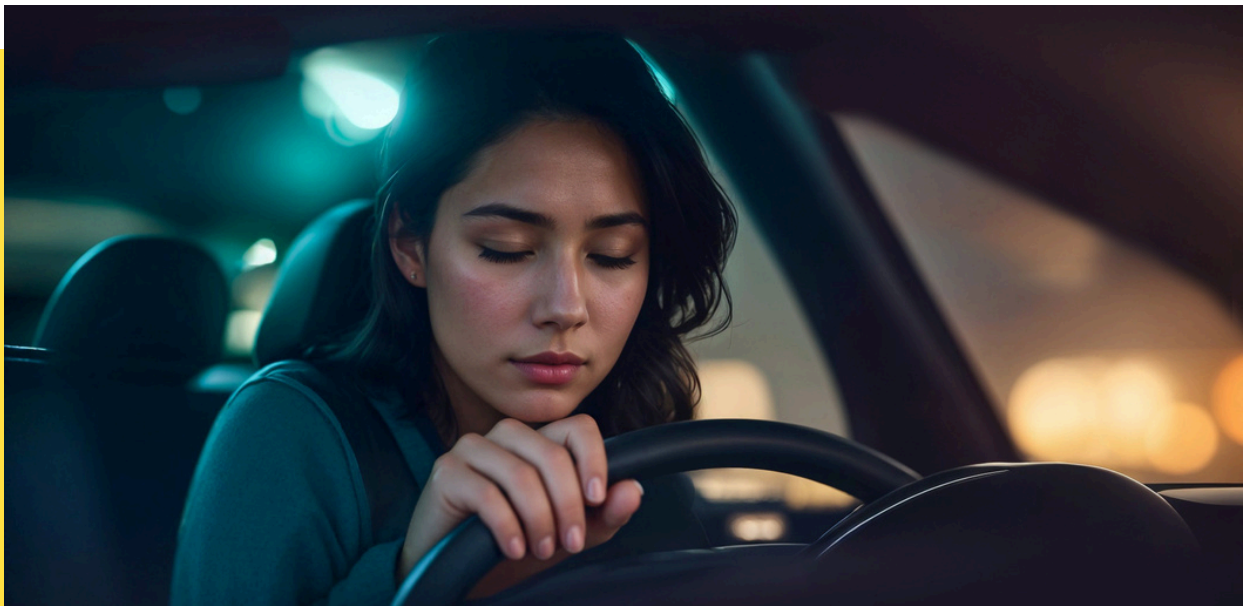
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A New Standard for In-Cabin Detection

This is the first commercially available DMS-based solution capable of detecting alcohol impairment using real-time behavioral data. Developed using closed-track studies with controlled blood alcohol concentration (BAC) levels, Smart Eye's detection algorithms are trained on real intoxicated driving data. Additional testing on sober real-road recordings helps confirm reliable performance beyond the test track — without relying on simulator data.

The system continuously analyzes subtle visual cues such as gaze patterns, blink behavior, and eyelid movement — well-known indicators of alcohol impairment. Because the detection is based on behavioral eye and eyelid metrics rather than steering input, it is designed to function regardless of whether lane keeping assistance is active.

It requires no additional hardware, runs on existing DMS platforms, and supports on-device processing to comply with stringent data privacy standards. For commercial fleets, over-the-air updates and centralized configuration allow for seamless deployment at scale.
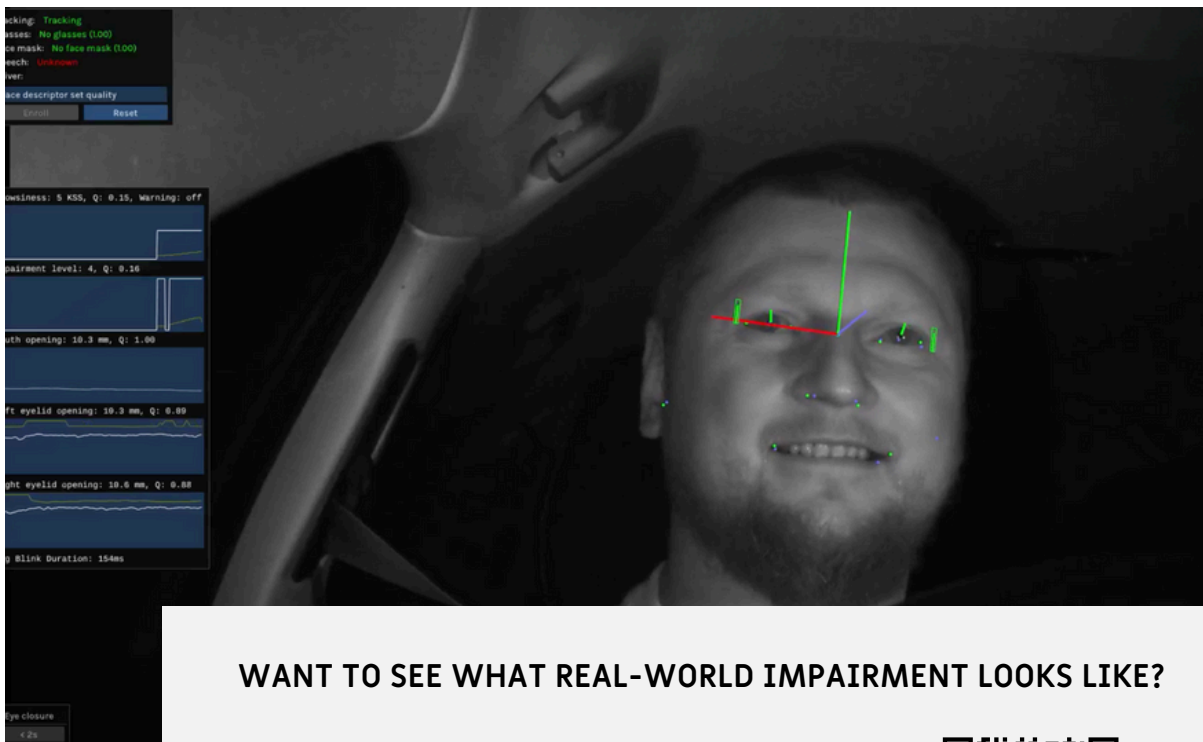

Key Features of Smart Eye's Impairment Detection

✓ Trained on real-world intoxicated driving data from closed-track studies

✓ Runs on existing DMS infrastructure

✓ Continuously analyzes gaze, blink, and eyelid behavior in real time

✓ Local, privacy-compliant processing

✓ No new hardware required

✓ Behavioral detection only

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Technical Specifications

Detection Type	Real-time behavioral analysis (gaze, blink, eyelid movement)
Hardware Requirements	No additional hardware; runs on existing Smart Eye DMS; backwards compatible
Update Rate	~6 seconds
Validation Method	Validated on real driving data at controlled blood alcohol concentrations (BAC)
Processing	On-device, privacy-compliant
Deployment	Software-only; supports OTA updates for fleet-wide activation
Alert Strategies	Configurable; integrates with in-vehicle HMI or fleet systems
Integration	Single API; aligned with Euro NCAP impairment detection guidance (in development)

WANT TO SEE WHAT REAL-WORLD IMPAIRMENT LOOKS LIKE?

Scan the QR code to see how Smart Eye and VTI conducted controlled studies on alcohol-impaired driving – and why this kind of data is so hard to capture.

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A CES 2026 Innovation Awards® Honoree

Smart Eye's Real-Time Alcohol Impairment Detection has been named a CES 2026 Innovation Awards® Honoree in the Vehicle Tech & Advanced Mobility category.

Recognized for its behavioral approach to detecting intoxication through subtle eye and eyelid movements, it delivers the first production-ready DMS feature capable of identifying alcohol impairment in real time.

How Impairment Detection Strengthens DMS

Alcohol Impairment Detection adds a new layer of capability to Smart Eye's DMS, turning in-cabin behavioral monitoring into a powerful tool for prevention, compliance, and fleet safety management.

Driver Safety Monitoring
Identify behavioral signs of impairment to support proactive intervention.

Regulatory Compliance
Supports evolving global standards like Euro NCAP and the U.S. HALT Act.

Fleet Risk Management
Enable early detection, automated alerting, and fleet-wide safety oversight.

Embedded Deterrence
Discourages impaired driving by signaling real-time monitoring inside the cabin.

Let's Drive Toward Safer Roads

Smart Eye's Real-Time Alcohol Impairment Detection redefines what in-cabin safety technology can do — offering a scalable, privacy-respecting, and production-ready solution to one of the most persistent safety risks on the road.

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