



Driver Monitoring System

Experience Smart Eye's DMS in the Nissan Ariya

At CES 2025, visitors to Smart Eye's booth will have the opportunity to see the Nissan Ariya, a production vehicle equipped with Smart Eye's state-of-the-art Driver Monitoring System (DMS). This integration highlights how Smart Eye's technology enhances safety by detecting driver attention, drowsiness, and distraction in real-world vehicles.

What is a Driver Monitoring System (DMS)?

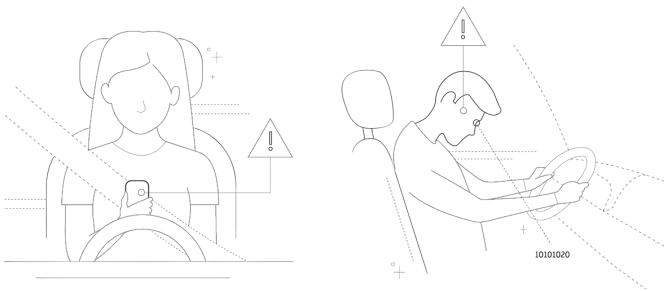
Driver Monitoring Systems (DMS) use sensors and artificial intelligence (AI) to bring insight into the driver's state and behavior. A key technology for detecting driver distraction and drowsiness, DMS improves road safety, saving lives all over the world.

The new generation of DMS can identify different people and objects, enabling greater customization of the car's interior systems and features. From seats that automatically adjust to individual preferences, to infotainment systems that can sense the driver's mood and emotions.

The Safety and Convenience Features of Tomorrow

Smart Eye's AI-based DMS software enables a wide variety of features for improved safety and mobility experiences. Powered by Affectiva's Emotion AI to capture nuanced emotions, reactions and facial expressions in real time.

- ✓ Driver Identification
- ✓ Driver Distraction
- ✓ Driver Drowsiness
- ✓ Driver Attention
- ✓ Dangerous Behavior
- ✓ Object Detection
- ✓ Activity Detection
- ✓ Face Mask and Glasses Detection
- ✓ Seatbelt Detection
- ✓ Facial Expression Analysis
- ✓ Speech Detection
- ✓ Unresponsive Driver Detection



The New Regulatory Landscape

In the last decade, Driver Monitoring Systems (DMS) have gone from a technology only found in premium cars, to an essential safety feature for preventing driver distraction and drowsiness. All over the world, legislators and influential organizations are recognizing the importance of driver monitoring systems for increasing road safety.

The US, the EU and China are some of the largest automotive markets in the world and are all in different stages of implementing regulations that require the use of driver monitoring systems for preventing driver distraction and drowsiness.

In Europe specifically, the EU's General Safety Regulation (GSR) mandates DMS in new vehicle type registrations from 2024, and for all new car registrations by 2026. This regulation reflects a growing consensus on the critical role of DMS in reducing accidents and improving road safety, and over the next few years we are likely to see similar legislations take form in other parts of the world as well – influencing the global automotive market.

Technical Specifications

Smart Eye's industry-leading DMS supports flexible camera setups and a wide variety of the latest optical sensors. Running in real time on low-power embedded systems, supporting practically all Automotive SOC's. Production-grade, fully GSR and Euro NCAP compliant.

Supported Cameras:

- Global Shutter Imagers
- Recommended 30 fps
- Recommended 1 MP resolution
- NIR, Dual Mode (RGB/IR)

Hardware Agnostic

- Currently supported SOCs: ARM-based CPUs, DSPs, CNN accelerators
- Examples: Qualcomm, TI, Nvidia, Renesas, Xilinx, Ambarella, NXP

Flexible Camera Setup:

- Single or multi camera systems
- Camera positions: steering column, A-pillar, center stack, rear-view mirror

Diverse Operating System Support

- Examples: QNX, Android, Linux, Green Hills

Driver Monitoring Evolving into Interior Sensing

For over 20 years, Smart Eye has delivered AI-powered driver monitoring technology to the automotive industry. By combining driver monitoring with cabin monitoring, we expand the intelligence to the entire car interior and every single person in it. This emerging technology is known as Interior Sensing, and is the next step towards improving safety for all road users while providing enhanced wellness, comfort and entertainment in tomorrow's vehicles.

