

Driver Drowsiness Detection

Predictive. Proactive. Proven.

WHY DROWSINESS DETECTION MATTERS

Fatigue is a significant cause of serious vehicle collisions^{1 2}, especially in fleets that transport hazardous goods, work long shifts, or perform physically demanding tasks. Traditional systems often alert **too late**. Nauto's **predictive** detection model gives drivers — and fleet managers — time to intervene **before** microsleep occurs.

PROBLEMS WITH COMMON DETECTION METHODS

Most systems rely solely on yawning or eye closure to detect drowsiness — for example, tracking 3 yawns in 90 seconds or monitoring brief eyelid closures. These reactive approaches trigger alerts **after** the driver is already impaired.

- ⊗ **Yawn detection is unreliable**
Fewer than 5% of drowsy events involve yawning (based on 4B+ driving hours)
- ⊗ **Eyelid closure alerts trigger too late**
Typically after microsleep has already begun
- ⊗ **Often requires additional hardware**
Increases install time, costs, and complexity
- ⊗ **Limited visibility in real-world conditions**
Struggles at night, in low light, or when drivers wear glasses
- ⊗ **Narrow detection scope**
Misses key signs like posture changes or shifting in the seat

1. National Highway Traffic Safety Administration. Drowsy Driving (2023)

2. AAA Foundation for Traffic Safety. Prevalence of Drowsy Driving Crashes: Estimates from a Large-Scale Naturalistic Driving Study (2018)

3. Virginia Tech Transportation Institute. AI Dash Cam Performance Testing Final Report (2025)

4. European New Car Assessment Programme. Assessment Protocol: Safety Assist — Safe Driving, Version 10.4 (2024)

HOW IS NAUTO DIFFERENT?

Nauto's patented Driver Drowsiness Detection model takes a smarter approach. It tracks subtle behavioral cues **over time** to spot signs of fatigue early — **before** they become dangerous.

Key indicators tracked:

- ✓ **Blink rate and duration**
- ✓ **Yawning** (as one of many signals)
- ✓ **Drooping shoulders**
- ✓ **Shifting in seat**
- ✓ **Scratching face and other micro-movements**

Unlike reactive models, Nauto's approach:

- ✓ **Predictive, not just reactive**
- ✓ **Reliable day and night³, with built-in IR illumination**
- ✓ **Compatible with glasses**
- ✓ **No additional hardware required**
- ✓ **Meets Euro NCAP & GSR drowsiness detection requirements (Karolinska Sleepiness Scale, KSS ≥ 7)⁴**



EVENT DETECTED

Drowsiness

Your alert for Drowsiness has been detected at 5:18pm (CST) on Friday, October 24 for Vehicle 294, XAO

[View Event](#)

REAL-TIME ALERTS AND FLEET NOTIFICATIONS

When Nauto detects high fatigue risk:

- An **in-vehicle alert** (IVA) prompts the driver to refocus or take a break
- Prolonged signs of drowsiness trigger additional IVAs and escalate to **real-time fleet manager alerts**
- All events are logged in the **dashboard and event queue** for follow-up



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PROVEN PERFORMANCE IN PRODUCTION

Deployed since late 2021 and trained on over 4 billion real-world driving hours, Nauto’s system:

- Minimizes common false positives
- Delivers consistent accuracy in real-world conditions
- Requires no additional hardware

FEATURE	NAUTO	TRADITIONAL SYSTEMS
Detection Mode	✔ Predictive, multi-signal	✘ Reactive, eye-based only
Detection timing	✔ Early signs of fatigue	✘ After microsleep begins
Hardware	✔ Built-in, no add-ons	✘ Often requires DMS sensors
Yawn reliance	✔ Minimal	✘ High
Night and glasses compatibility	✔ Yes (IR-enabled)	✘ Often limited
Regulations and compliance	✔ Euro NCAP + GSR (KSS ≥7)	✘ Varies
Deployment	✔ In production since 2021	✘ Often beta or early-stage