TATA ELXSI

DRIVER MONITORING SYSTEM

Accurate | Flexible | Customizable

Trending

Driver inattentiveness and drowsiness are major contributors to road accidents, across the world. Urbanization has led to drivers spending more time on the road with more traffic. With smartphones and feature-rich vehicle cockpits becoming universal, the likelihood of driver distraction has also increased.

Regulators and automotive safety bodies are now including driver monitoring in their roadmaps, such as EURO NCAP, which aims to incorporate driver monitoring in its ratings from 2020. The European Commission has also made recommendations to make driver monitoring mandatory. Even partially autonomous vehicles will need measures to ensure driver attentiveness, as suggested by the NTSB.

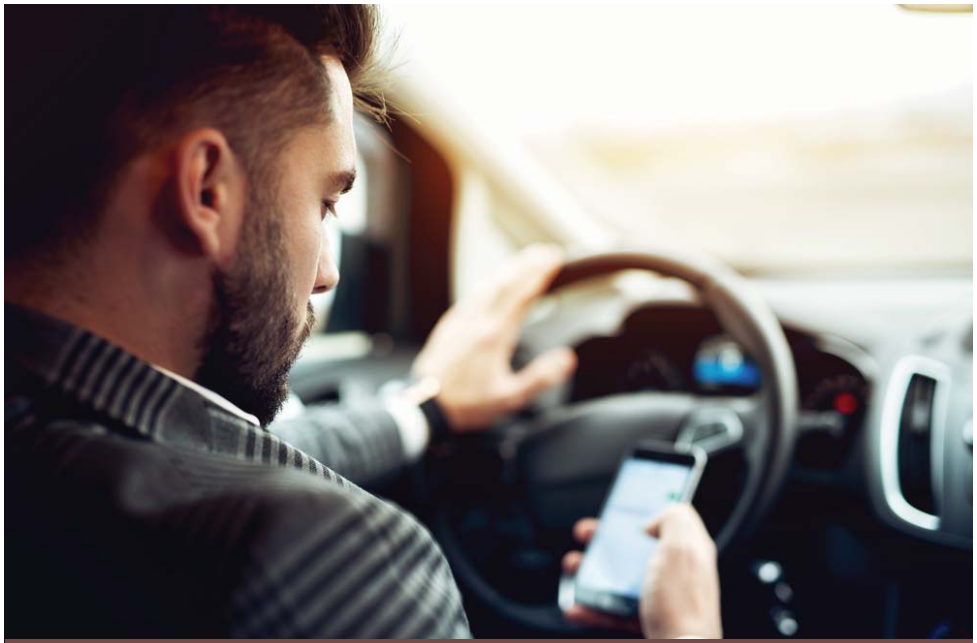
Connected intelligent vehicle systems are also changing the way end-user experience is defined, allowing for more personalized and intuitive human-machine interactions within the vehicle.

Opportunities & Challenges

Automotive OEMs and Tier-1 suppliers will need to rapidly incorporate driver monitoring across their product line-ups, to meet the changing safety standards and ratings. This comes at a time when auto makers are also launching other ADAS features, making inroads into the development of autonomous driving systems.

The increase in architectural complexity and computational requirements will require solutions that balance performance and cost-effectiveness appropriately, from entry-level cars to the most premium segments.

There is also an opportunity to create more secure, intuitive and personalized human-vehicle interactions.



Benefits for Your Customer

Leverage our DMS software to rapidly provide end-users with a safer driving experience, across all vehicle segments.

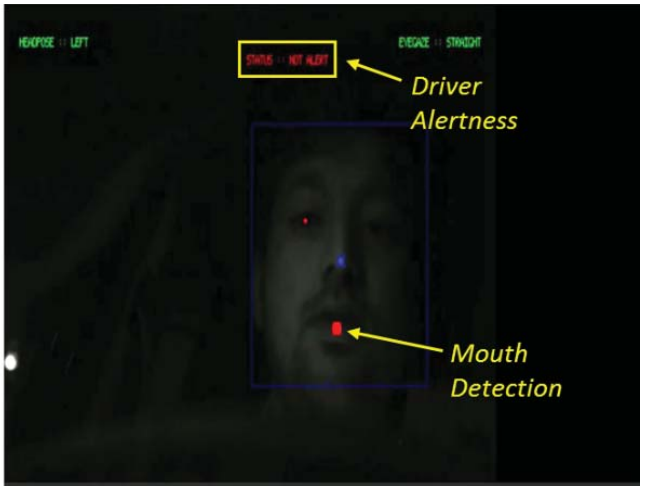
Create novel in-cabin experiences, by integrating driver monitoring with our other off-the-shelf modules like emotion detection, facial recognition and emotion recognition.

DRIVER MONITORING SYSTEM

Product Framework

Tata Elxsi's Driver Monitoring System software provides detection of:

- Eye gaze
- Head pose
- Alertness status
- Drowsiness
- Shades/ Eyeglasses
- Eye closure graph



Performance

- Machine vision based: 30 FPS on TI TDA2X, 25 FPS on TI TDA3x and 35FPS on Intel i5
- Machine learning based: 22 FPS on GPU

Supported Platforms

- Machine vision based: TI TDA2X, TDA3x, NVIDIA TK1 and TX1, Intel x86 (can be easily ported to various platforms)
- Machine learning based: Intel/ GPU/ Renasas RZ series (G1M - R8A77430)

Differentiators

- Flexibility of using either machine vision or machine learning algorithms, allowing greater choices for feature and platform selection
- Algorithm accuracy of over 90% for face detection, eye gaze and head pose detection already achieved
- Advanced insights using intelligent history tracking, based on vehicle statistics, vehicle condition, and driver status
- Validated on the test bench as well as in test vehicles, for a variety of cameras (IR, NIR, HDR, monochrome, custom camera modules)
- Tested for faces from Europe, US and Japan (limited faces)

Case

Incorporate driver recognition and behaviour monitoring in shared mobility, to create an active in-cabin ambience specific to the driver, that he/ she can take from one rented vehicle to the next.

info@tataelxsi.com