Thu, 2 March 2023
Weekly Newsletter

DVN-I
Automotive Interior

NEWSLETTER #150

Editorial

Driver & Occupant Monitoring @ DVN-I Workshop

NXP IMAGE

Hello, and welcome to DVN-Interior Newsletter № 150! It's a significant milestone in the ongoing evolution of the DVN Interior community, and we're ever so glad you're here with us.

In this week's in-depth report we pick up a topic we haven't looked at in a while, one of the current main challenges in the automotive interior: safety, specifically driver and occupant monitoring systems (DMS-OMS). It's a topic increasingly in our headlines, and the upcoming DVN-I Workshop is a great opportunity to talk over what we've seen recently. It'll be in Köln on 25-26 April; we're putting the finishing touches on the plans. Surely you won't want to miss it; come and **register** now!

I'm looking forward to meeting you all there!

Philippe Aumont
General Editor, DVN-Interior

In Depth Interior Technology

DMS: The Driver in View

VALEO IMAGE

A driver monitoring system (DMS) is an advanced safety feature that uses a sensor—usually a camera—to track driver drowsiness or distraction, and to issue alerts and warnings to get the driver's attention back to the task of driving.

Monitoring drivers and passengers is coming in as a legal or market requirement. The European Union has mandated DMS for inclusion in all new vehicle models starting in 2024, and a DMS counts toward the star rating of a vehicle under the European New Car Assessment Program (Euro NCAP).

There are various technical approaches to implementing the requirements. Driver-monitoring systems typically use a driver-facing camera equipped with infrared-emitting diodes (IREDs) or lasers to 'see' the driver's face, even at night, and see their eyes even if they're wearing dark sunglasses or a face mask. Advanced onboard software collects data from the driver and creates an initial baseline of what the driver's normal, attentive state looks like.

The software can then determine whether the driver is blinking more than usual; whether the eyes are narrowing or closing, and whether the head is tilting at an odd angle. It can also determine whether the driver is looking at the road ahead, and whether the driver is paying attention or just absentmindedly staring.

If the system decides the driver is distracted or drowsy, it can try and get the driver's attention by issuing audio alerts; lighting a visual indicator on the dashboard, or vibrating the seat. If the interior sensors indicate that the driver is distracted while the vehicle's external sensors determine it is about to have a collision, the brakes can be applied.

A DMS is essential to L^3 and L^4 conditional autonomous driving, wherein the driver may take their hands off the steering wheel but must keep their attention on the road in case they need to resume control. DMS plays a critical role in making sure the driver is alert and attentive.

DMS also have an important role to play in L^{2+} vehicles: to ensure the driver remains engaged, even when their hands are not on the wheel.

Next Steps

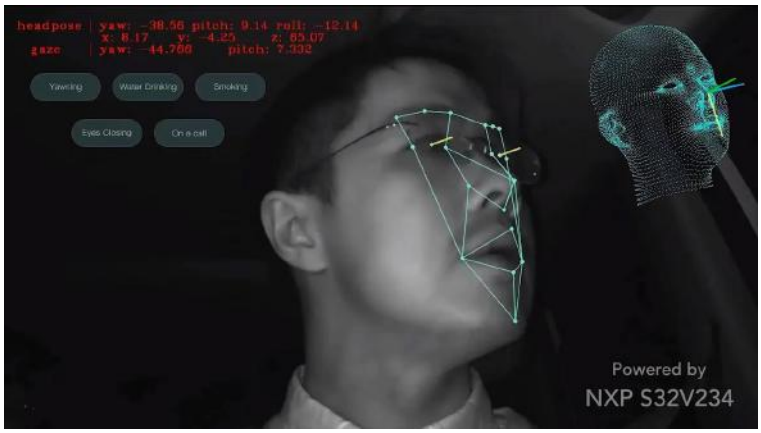
DMS to detect drowsiness or inattention is just the beginning. As these systems evolve, they will become part of a broad interior sensing platform that provides personalization; advanced safety; infotainment, and connectivity with smart home systems.

Drivers will be able to control functions with their eyes or with gestures. By adding a wide-angle camera where it has more visibility of the vehicle interior, such as near the rearview mirror, passengers can also benefit from increased functionality. For example, the camera can monitor both the driver and the cabin, which means it can detect whether a child has been left behind in a car seat; determine if an important object has been forgotten, or help personalize infotainment, HVAC, or other in-cabin functionality.

The DMS can identify the driver and enable personalization to automatically adjust the seat; temperature; side mirror, and so on to the driver's preferences.

And a DMS can detect anomalous behavior, such as by a driver under the influence of alcohol or drugs or experiencing a severe medical emergency. Let's review recent announcements in the DMS sector:

NXP



NXP offers silicon solutions for both driver monitoring system and occupant monitoring systems. It is based on their second-generation S32V234 vision processor range within the 64-bit Arm Cortex A53 S32V processor family. The S32V234 processor offers an image signal processor; a powerful 3D graphic processor unit; dual APEX-2 vision accelerators; automotive-grade reliability, and functional safety and security capabilities. It supports computationally intensive ADAS; NCAP front camera; object detection and recognition; surround-view, and automotive and industrial image processing.

Cipia

CIPIA IMAGE

Driver Sense is Cipia's (formerly Eyesight Technologies) software-based driver monitoring system. It focuses on the driver, identifying and monitoring visual attributes in real time to determine their state and actions.

Using embedded computer vision and AI, Driver Sense tracks head pose; blink rate; direction of gaze, and other visual attributes to establish if the driver is focused on the road; distracted, or drowsy.

Vayyar

VAYYAR IMAGE

Israel-based Vayyar offers a radar system-on-chip designed to monitor all the seats in a vehicle. This makes it possible to detect whether small children or pets are left in the back seat. Most recently, Vayyar developed a concept with Toyota: so-called 'Cabin Awareness', which uses an imaging radar sensor (4D radar in the millimeter-wave range) mounted on the headliner. The system can detect micro-movements such as heartbeat and breathing of the occupants in three complete rows of seats; in the cargo area, and in the footwell. It also classifies all occupants by size, posture, and position—so there will be no unwatched space within the car; the system will see all and know all.

Vayyar's in-cabin 4D imaging radar-on-chip platform supports application-ready child presence detection and enhanced seat belt reminders as well.

Gentex

GENTEX IMAGE

In 2021, Gentex acquired Guardian Optical Technologies—an Israeli startup who developed a multi-modal sensor technology to provide a comprehensive suite of driver and cabin-monitoring solutions for the automotive industry. Gentex, for their DMS, uses a 'structured light' signal which is deformed by obstacles; the distance can then be determined for each pixel. Many people have everyday familiarity with this technique; Apple uses it for their Face ID facial recognition system. The Gentex system, with IREDs and RGB light sources, is said to be able to detect whether the driver is tired or distracted, and also to record the interior itself. Gentex's mirror-integrated, camera-based DMS can monitor alertness; gaze location; behavior, and driver readiness to resume vehicle control.

Rheinmetall

RHEINMETALL IMAGES

Rheinmetall is a German technology group. They are preparing to enter the DMS market in a joint venture with Dermalo Identification Systems, based in Hamburg—Germany's largest biometrics manufacturer.

A radar device developed in-house will be used as the sensor. Dermalog will contribute software as well as camera and fingerprint technology. The system is based on the latest facial recognition and eye tracking techniques, which enable fast and accurate analysis of the driver's state in real time. This way, the system can prompt the driver to take a break before a dangerous situation occurs.

Rheinmetall Dermalog SensorTec's solution detects different types of distraction and provides information for safer driving behaviour. For example, the system detects if a driver is using their mobile phone inappropriately; eating or drinking, or is distracted by other occupants.

AMS Osram

AMS OSRAM IMAGE

AMS Osram has also unveiled a driver monitoring system, said to enable such functions as AR-HUDs; facial authentication, and drowsiness detection at the wheel. The technology for this could be integrated either into the instrument cluster or the A-pillar with just an infrared dot pattern projector and depth extraction software.

Depending on the system, it can be realized with a 2D IR camera together with 940-nm IR emitter, or a 3D indirect ToF camera with 940-nm VCSEL-based illumination (to provide the fast rise and fall times needed). See video.

Smart Eye

FRAME FROM SMART EYE SAE TEST DRIVE (SMART EYE IMAGE)

Gothenburg-based Smart Eye is a company of experts in 'Human Insight AI', which they describe as technology that 'understands', supports, and predicts human behavior in complex environments. They announced recently a collaboration with AMS Osram to deliver a new technology that will allow DMS and OMS to detect the driver and passenger status and position more accurately than ever before. It is based on Icarus, a structured light evaluation kit proof-of-concept that leverages existing architecture inside a vehicle to provide high-performance 3D sensing capabilities efficiently and cost-effectively for DMS and OMS.

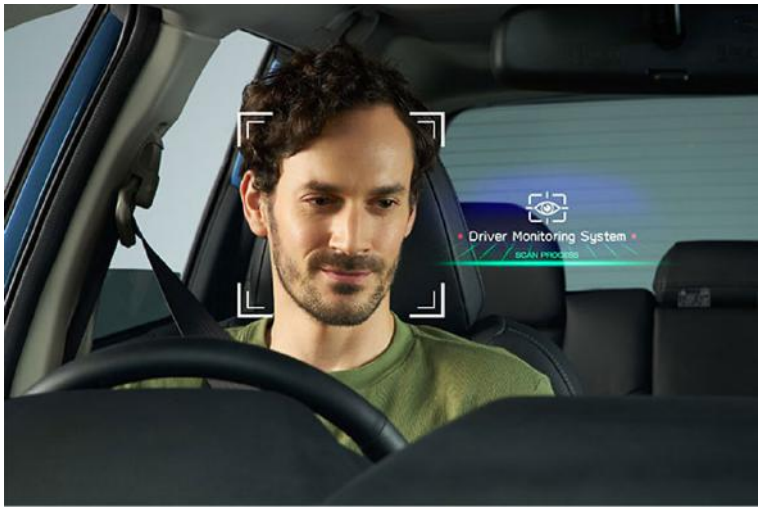
Icarus combines Smart Eye interior sensing software with AMS Osram's dot illumination technology to generate a more accurate depth map of the driver using a structured light method. The Osram dot illuminator installs on top of conventional flood illumination mechanisms, and when integrated with Smart Eye's software, the DMS can support valuable new features with high precision including AR-HUD; secure driver authentication, and advanced body position detection to enhance road safety by delivering inputs to airbag deployment decisions and pre-crash safety measures.

ST Micro

STMicroelectronics is the largest European semiconductor contract manufacturing and design company, with a French-Italian origin, headquartered in Plan-les-Ouates near Geneva, Switzerland.

ST announced a collaboration with Eyeris on integration of a 'global-shutter' sensor solution for automotive in-cabin monitoring. It combines ST's RGB-IR global-shutter sensor technology with Eyeris' AI-based deep neural networks to advance automotive safety and comfort. This advanced perception supports safety and convenience features including DMS and OMS; child presence detection; object recognition; gesture control, and activity prediction. See our previous report on Eyeris.

Veoneer



VEONEER IMAGE

Veoneer, recently bought by Magna, is an American-Swedish company, the result of a spinoff in 2018 of Autoliv's electronics and automated driving divisions. Veoneer's products include radars; lidars; thermal night vision cameras; vision systems, and advanced driver assistance and autonomous driving software. The company also provides night driving assist systems; active safety sensors; mono- and stereo-vision cameras; airbag control units, and crash sensors.

Veoneer, together with Austria-based AVL Engineering Services and Emotion 3D (see DVN company profile), has developed a system to adapt the restraint systems and passive safety functions individually to the occupants. A 3D sensor is used to detect factors such as body type; position, and gender. The concept is called "Smart RCS" (Restraint Control System).

Harmann

HARMANN IMAGE

Harman's DMS-OMS uses camera sensors to capture important first-order biometric features of drivers and occupants—gaze; head position, and pupil diameter, among many other facial features. It detects tiny fluctuations in pupil diameter and calculates brain activity levels, 'looking' especially high cognitive load. Monitoring includes driver drowsiness; driver distraction; driver gaze direction; hands-on-wheel detection; body pose; seat belt recognition; health status, and airbag cocooning.

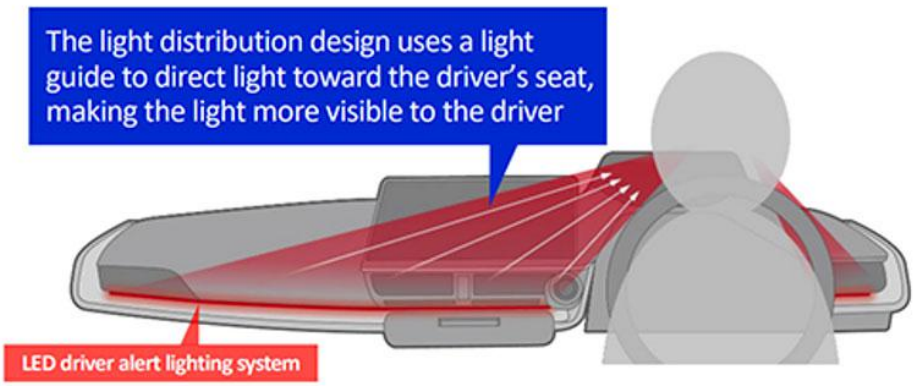
The DVN-Interior Workshop will have a DMS session with a top-notch lineup of subject matter experts. Don't miss it; register now.

Interior News

Toyoda Gosei's In-Vehicle LED Alert Lighting

INTERIOR NEWS

TOYODA GOSEI IMAGES IN THIS ARTICLE



Toyoda Gosei is a Toyota Group tier-1 supplier, experts in products combining electronic components with their core rubber and plastic technology. They've developed an LED driver alert lighting system that adds an alert function to decorative lighting. This system is used on the new Toyota Prius.

The system visually alerts drivers using strong light at times such as when they remain stopped at a junction without noticing the vehicle in front of them has started forward, or before the vehicle's automatic deceleration system begins operating when a pedestrian or obstacle is detected. The brightness of the light used to alert the driver is about 30 times higher than conventional decorative lighting. The light distribution design uses a light guide to direct the light toward the driver's seat, so that it is easily noticeable by the driver even during the day.

TactoTek's Programmable Light Structures

INTERIOR NEWS

INJECTION-MOLDED CHANNELS CONTROLLING LIGHT (TACTOTEK IMAGE)

TactoTek announces IMSE LightChannels, a platform for functional; stylistic, and HMI lighting. It uses injected light sources to create programmable interfaces with light features to indicate; inform, and interact with vehicle users. These structures can be thin and simple.

The platform offers superior light uniformity; intensity, and color mixing—and lowers cost by reducing the bill of materials. Too, it reduces packaging space compared to traditional electronics manufacturing and existing film-insert molding techniques.

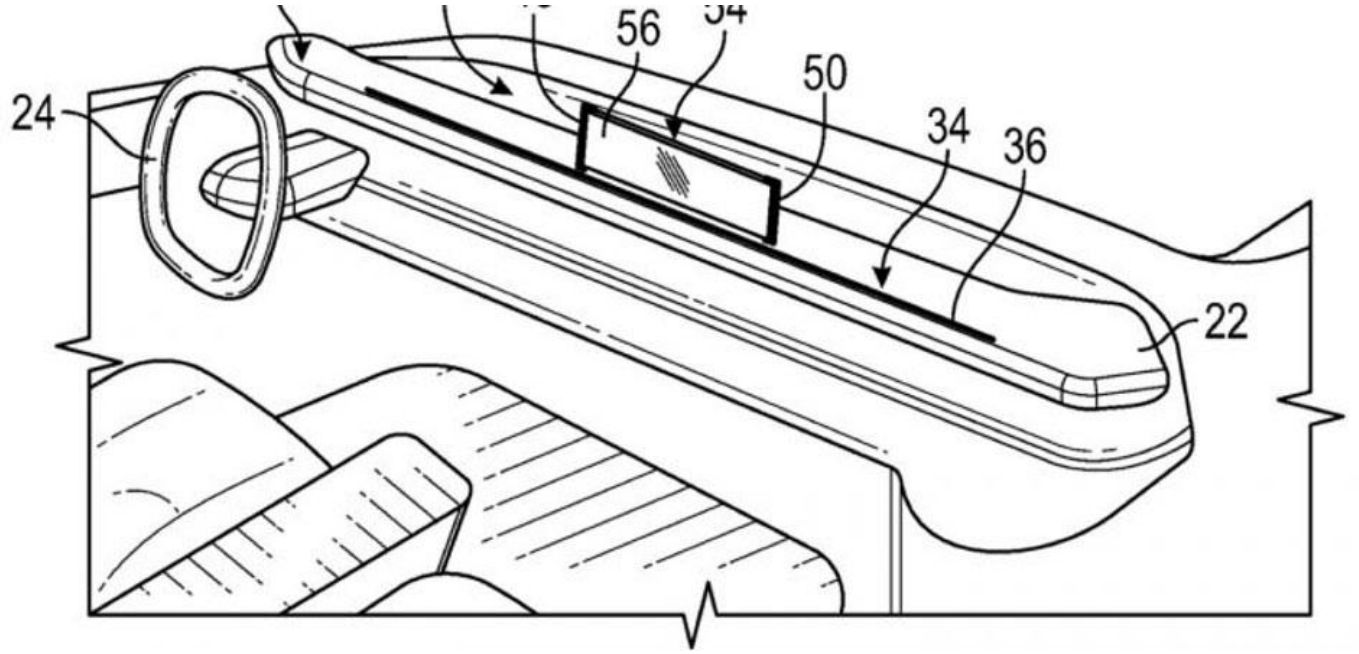
IMSE LightChannels controls light along injection-molded channels to create stunning light zones with superior light output; uniformity; and color mixing, while eliminating unwanted light bleed. The structures are extremely thin, eliminate air gaps, and simplify construction.

VERSO OF IMSE LIGHTCHANNELS DEMONSTRATOR AFTER SECOND SHOT OF INJECTION MOLDING (TACTOTEK IMAGE)

The platform supports up to seven different types of dynamic and static illumination features, including closely-spaced illuminated icons; text and emblems; light lines; and illuminated surfaces, along with durable, application-specific mounting features.

GM Patent: Deployable, Rollable Display Screen

INTERIOR NEWS



GM IMAGES IN THIS ARTICLE

GM recently filed a patent application for a deployable and rollable vehicle display screen. It's been assigned application number US2023/0031862A1.

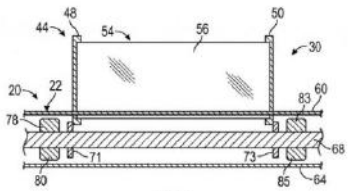


FIG. 8

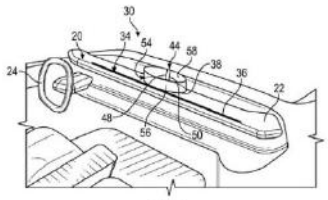


FIG. 5

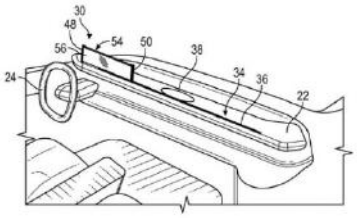


FIG. 7

The patent describes a rollable and deployable vehicle infotainment screen, allowing for a customizable display that can provide adjustable screen positions as needed. The patent images appear to show a vehicle dash where the deployable and rollable vehicle screen is mounted. Several different configurations are shown, including a screen mounted in front of the steering wheel and in the middle of the dash. The screen also seems to offer different infotainment displays through multiple surfaces.

The patent describes how screens are typically mounted in front of the driver or passenger, or sometimes in the rear for rear-seated passengers. However, as the patent points out, there can at times be insufficient screen real estate to provide all the information desired, and so "it is desirable to provide a display that is readily adaptable, moveable, and reconfigurable in order to provide desired information to operators and passengers."

Continental,Trinamix: Driver Identification, Many Applications

INTERIOR NEWS

CONTINENTAL-TRINAMIX IMAGE

Continental and Trinamix—a startup spun off from BASF in 2015—have unveiled their Driver Identification Display, a new product to protect against vehicle theft. It features an integrated camera for biometric driver identification.

The Driver Identification Display is claimed to be the world's first automotive display for a vehicle interior that enables contactless and highly secure authentication while helping to prevent fraud and theft. Similar to facial recognition used on today's smartphones, the new technology means a vehicle can only be started once the person in the driver's seat has been authenticated.

The solution also enhances other convenience features such as digital payments, which are processed using the car display for refueling, parking, paying tolls or car rental. The Driver Identification Display can also be used to make payments for apps or to access digital services. More, the built-in camera monitors the driver to prevent their falling asleep at the wheel, for example. No additional sensors are required.

The security solution uses integrated facial authentication based on a technology developed and patented by Trinamix: it combines facial recognition to verify the identity of the user with a new type of liveness detection, and can recognize real human skin to prevent system spoofing with photographs or realistic 3D masks of the vehicle's owner or driver. Trinamix says the system has been certified according to the highest biometric security standards.

The display will be presented in Europe for the first time at the Trinamix booth at the Mobile World Congress (MWC), which will take place between 27 February and 2 March in Barcelona, Spain. See previous DVN Trinamix coverage.

XPeng's Immersive Cabin Experience

INTERIOR NEWS

XPENG IMAGES

In the G9 and P7, wo new models from Chinese automaker Xpeng, a wraparound cockpit design with high-quality finishes and materials creates a warm and comfortable environment for occupants,.

The front seats are ergonomically designed; heated, and ventilated. To enhance the audio experience, an 860- or 2,150-watt Dynaudio sound system can be specified. There's an upgraded in-car Xmart operating system (OS) and a new 3D UI. The OS also comes with the improved “Hey, XPeng” voice assistant, which can distinguish complex voice commands from all four zones of the cabin. These services are supported by wide infotainment screens and a library of in-car apps. To ensure software and firmware can be improved over time, the G9 and P7 also support OTA updates.

TuneIn, a local Spotify-type service, has signed a new partnership deal with Xpeng to integrate digital radio and podcasts in new EVs, with XPeng vehicles now offering access to live sports; 24-hour newscasts; continuous music, and podcasts from round the world. These will all be delivered following seamless integration with the Xpeng infotainment system. Following integration, passengers and drivers will be able to easily select and play audio using both touch and voice control.

Awesome Seating in Faraday Future 91 Futurist

INTERIOR NEWS

FARADAY FUTURE IMAGES IN THIS ARTICLE

Faraday Future wants to launch their first electric car. The 91 Futurist is intended to stand out, the makers say, from all other vehicles. That seems plausible, with this car's 1,050 hp and acceleration from 0 to 100 km/h in less than three seconds…and reclining massage chairs.

Faraday Future presented themselves grandly as a Tesla challenger at their company launch. Then came hard times, but the Company expects their first vehicles to be built at their California factory in early April, with deliveries before the end of that month, assuming timely receipt of funds from the Company's investors.

The special features of the FF 91 include two captain's *rear* seats which can be placed in a reclining position in accord with the 'neutral posture' standards developed by NASA, which the human body assumes in weightlessness —a sort of zero-gravity seat. The ventilated, armchair-like seats also offer a massage function. There are numerous displays: behind the steering wheel; in the center console, and in front of the front passenger as an alternative to the rearview mirror…behind the front seats in the roof…in the doors. Watch for more coverage of the FF car's interior as details become available.

The Design Lounge

Sigmund

By Athanassios Tubidis

THE DESIGN LOUNGE

TIME OF FLIGHT (CAPTAINDISTANCE IMAGE VIA WIKIMEDIA COMMONS)

Automatic transmission became the tipping point allowing drivers to text and drive at the same time—it was much harder to text while shifting. Because coffee mugs are far less compelling than smartphones, humans used the newly found freedom to do something else besides, or in addition, to the main task of driving. Undeniably, it is very difficult to rationalize human behavior.

According to Sigmund Freud's theory, humans have certain characteristics that are immutable and act towards anything that obstructs the individual's path to gratification. The primary friction, he asserts, stems from the individuals quest for instinctive freedom and civilization's contrary demand for conformity.

Lexus GS 450h was the first car to adopt the Driver Monitoring System in 2006, to assess the driver's alertness, warn and eventually brake. Subaru Forester in 2019 featured a DMS that used facial-recognition software to identify signs of driver fatigue or distraction. Automakers are rapidly developing safety and driver monitoring systems, soon mandatory in EU, on all new vehicles, buses and trucks.

DMS has been around for over 20 years, failing to go mainstream until in-vehicle camera systems were deployed. Earlier versions used steering-wheel sensors on the idea that steering angle could provide intelligence on driver fatigue. Tesla, on the contrary, uses steering wheel torque sensors so that the vehicle 'knows' whether a driver has hands on the wheel. Elsewhere, time-of-flight* technology is used to infer driver's head position. Improved image sensors, camera systems, as well as hardware-agnostic software, allow to track drivers' eyes even through sunglasses or at night, analyzing not only head-nodding and eye-movement but also blinking and yawning. In addition, with AI 'expertise', the depth of understanding on mind cognition, engagement, and emotion is tuned to the point that we could detect not just what a driver said, but also how he said it. Of course, for all the above, plenty of YouTube clips go viral on the challenge to prove how easily the system can be tricked. Once again, humans.

Otherwise, the accuracy of such system can be both critical and problematic on how it alerts the driver when drowsiness, fatigue, or disengagement are detected: annoying and infuriating sounds and messages to the point that driver simply disengages the system. Driver Safety Systems (DSS) were initially used in the mining industry, however, from that to everyday commuting vehicles, there is certainly a big gap and, that's where the money is.

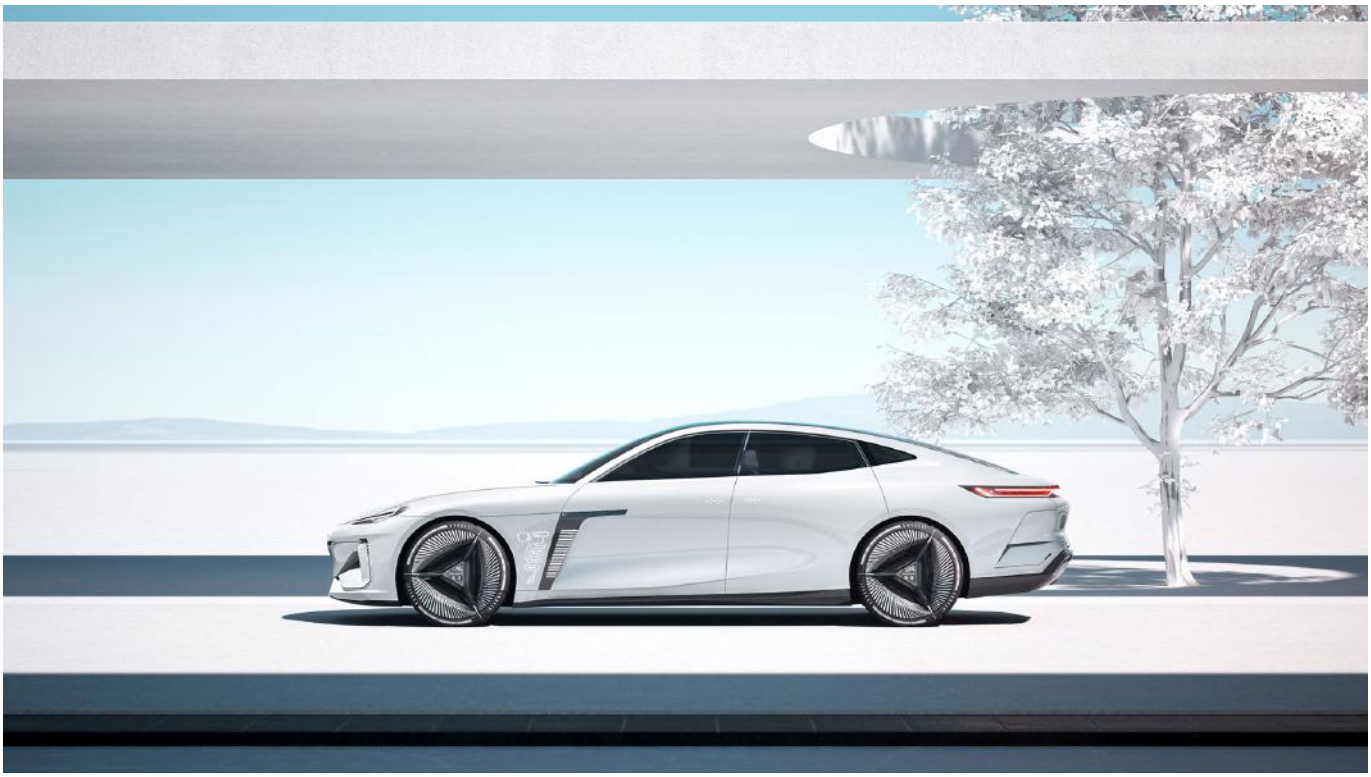
Remember your early driving days with your mother staring at you on every single driving gesture? Remarks were repeated in a steady, often accelerated pace while spoken alerts in raised voice pitch and frequency. Well, that is

now going to be the norm. It might be that the automotive industry, through an existential moment of its legacy, today, implements a Freudian twist to some of the most ambitious upcoming technology trends.

* *Time of Flight Technology _ A ToF camera measures distance by actively illuminating an object with a modulated light source such as a laser and a sensor that is sensitive to the laser's wavelength for capturing reflected light.*

Geely Galaxy: Another Luxe EV With New Design

THE DESIGN LOUNGE



GEELY GALAXY LIGHT EV CONCEPT (GEELY IMAGE)

Chinese automaker Geely is expanding quickly, selling over 650,000 electric personal and commercial vehicles in 2022—29 per cent of their total sales. Perhaps more importantly, several of their brands are becoming major contenders in the new EV era. Geely owns Volvo and Polestar, which reached a full-year volume of 51,500. And Volvo's share of fully electric vehicles almost tripled to 10.9% as the brand hit a significant turning point.

Geely continues to expand their portfolio with new vehicles like the recently revealed RD6 electric pickup truck, part of their outdoor-focused Radar auto brand.

GEELY GEOMETRY INTERIOR (GEELY IMAGE)

Now they are launching what they're calling a high-end electrified product series, in a bid to take on the top-volume EV makers like Tesla and BYD. The first fully electric vehicle of that series is slated to launch before the end of the year.

Geely and Volvo deepened their relationship in 2021, to collaborate on next-generation electric drive technology. The partnership has paid off with the success of Volvo's C40 and XC40 Recharge electric SUVs, as sales more than doubled. There's also a range of vehicles under the Geely name, and a mass-market EV range branded Geometry, as well as their Zeekr premium smart EV marque.

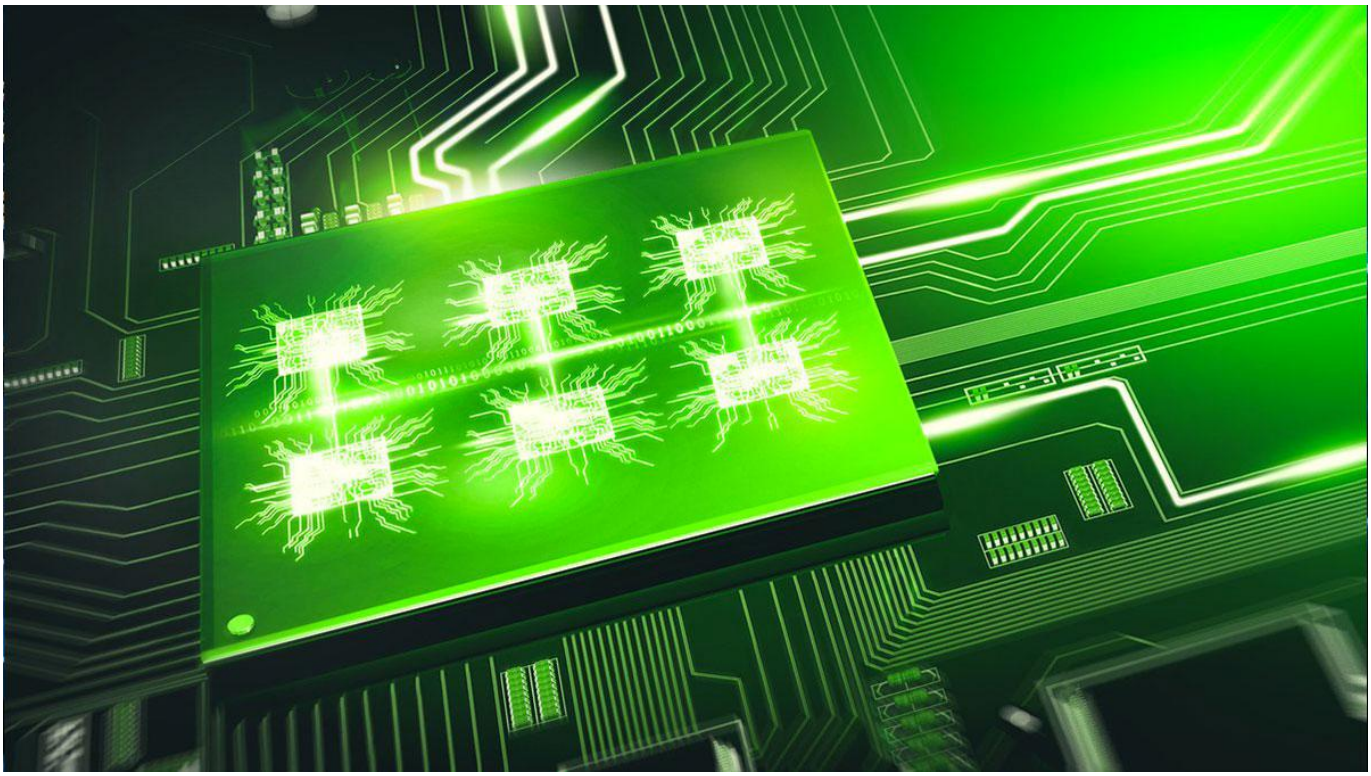
Now, Geely is adding another high-end EV marque: Geely Galaxy, announced at an event in Hangzhou (See video). The Geely Galaxy brand will launch seven new electrified products, including a three-model Pure Galaxy E range. First to market will be the Galaxy E8, scheduled for delivery in the fourth quarter of 2023.

Geely says the Galaxy cars will have Geely's latest battery safety technology and new Galaxy N-Operating system, allowing its models the fastest system startup and response.

News Mobility

New-Tech Investment Will Pay…Eventually: Study

NEWS MOBILITY



ELEKTROBIT IMAGE

The core areas of e-mobility, autonomous driving, software and services will make up the future of the automotive industry. But when will providers start earning money from them in the future? According to industry observers, investments by the automotive industry and suppliers in new technologies and business models are likely to take several more years to yield stable profits, believes the Boston Consulting Group (BCG).

In a recent analysis, BCG assumes that almost all the industry's growth in 2035 will come from e-mobility, autonomous driving, software and transport services. Although the earnings margin is still decreasing in the short term, in the longer term the experts place it at an average of more than 6 per cent.

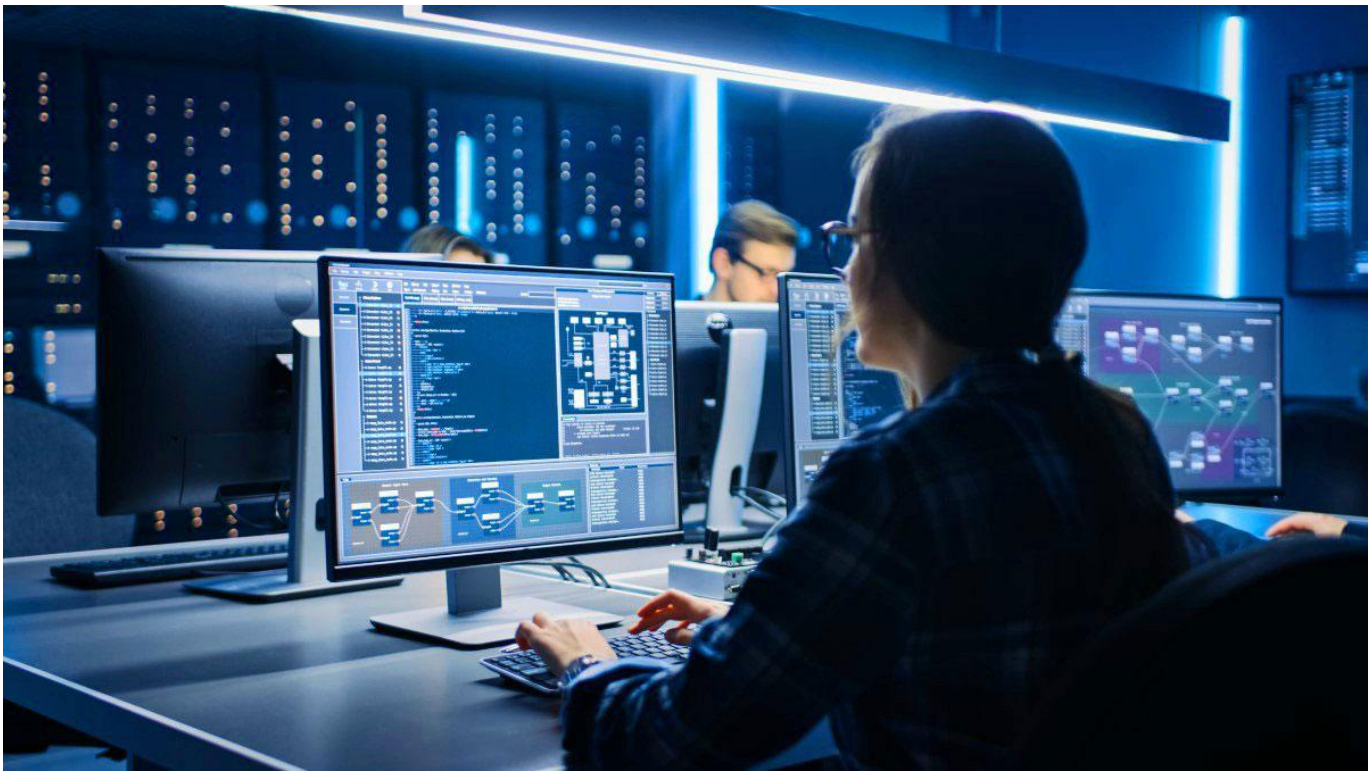
The transformation of the core industry to less climate-damaging drives and increasing connectivity requires enormous expenditure. Many in the industry are convinced that this will also pay off economically in the end. The merging of individual, increasingly machine-controlled cars with the rest of the transport system could therefore give rise to a new super-industry—BCG calculates total sales of up to $8.3tn and total profits of $524 bn (USD) by the middle of the next decade.

There's increasing clamor for much faster, more decisive change to address the climate crisis, and the upheaval is not proceeding without significant disruptions in the world of work. According to BCG's expectations, conventional diesel and gasoline engines, in whose components and production technology smaller suppliers in particular often still specialize, will no longer have a future. By 2035, the consultants believe that profits in the traditional sector could fall by 60 per cent, including plug-in hybrids.

The companies of the European automotive industry will also have to make haste not to lose ground to China and the USA in the promising fields. Both countries are expected to generate the most additional business, while Europe is likely to see only moderate increases in earnings.

Do Driverless Cars Need Road Traffic Controllers?

NEWS MOBILITY



VOLKSWAGEN IMAGE

Could vehicles become fully autonomous on open roads? Reuters reported last September that they may not, in the end, be totally autonomous. Industry experts and executives believe there may be a need for remote human supervisors to help the ‘robot drivers’ whenever they are in trouble, kind of road traffic controllers, a bit inspired from the air traffic controllers.

The Association of British Insurers (ABI) would like to see a more robust regulation and clearer guidance on the use of 'remote driving technologies for automated vehicles for use in specific and limited operational design domains'. The ABI says insurers have serious concerns about the use of remote driving technologies to operate manually driven vehicles including issues related to connectivity, situational awareness and vehicle capabilities.

Bruno Taratufolo, marketing, and product strategy, AGC Glass Europe agrees with the ABI, stating that the idea of a having human supervisor with the ability to take control of a vehicle remotely raises a few questions. This includes the potential for the abuse of power.

Varun Krishna Murthy, industry analyst for connected and autonomous driving, Frost & Sullivan explains: “If an autonomous vehicle is stuck behind a broken-down truck, it is required to follow traffic, and it can only do what it has been taught. So, it will require a remote operator to know what to do. The teleoperator will instruct the vehicle to do certain maneuvers and continue the journey – circumstantial actions based on road, environment and traffic conditions. Teleoperations will find an application in robo-taxis and shuttles to start with and may be used in automated parking.”

Although autonomous vehicles are designed to work in a range of scenarios, there may be circumstances where human supervision is required – particularly in a smart city environment where there will also be unpredictable human traffic in the form of pedestrians and cyclists.

Taratufolo also points out that there are several initiatives in play to protect privacy and personal autonomy. He says “the companies involved with developing connected and autonomous vehicles are also taking action to enable transparency and accountability in the use of data.”

The ABI says it will be crucial to have data to show whether a vehicle was in self-driving mode, being remotely driven, or even being driven by a human driver in the driving seat of the vehicle.

General News

Motherson Buys Faurecia SAS Cockpit Module Biz

GENERAL NEWS

FAURECIA SAS IMAGE

Forvia's Faurecia is selling their SAS Cockpit Modules division—which produces cockpit assembly and logistics services for the automotive industry—to Samvardhana Motherson, a diversified automotive group based in Noida, India. Their products include wiring harnesses; rearview mirrors; molded plastic car interior and exterior parts; bumpers; dashboards and door trims; complete polymer modules; rubber components; high precision machined metal parts, and injection molding tools. Motherson previously acquired the remaining assets of Reydel in France, and Peguform in Germany.

SAS, headquartered in Karlsruhe, Germany, was established in 1996 as a joint venture between Sommer Allibert (which became Faurecia) and Siemens VDO (which became Continental). SAS generated total net sales of €896m in calendar 2022, and has more than 5,000 employees in 25 locations in Europe, Asia, and America

Faurecia CEO Patrick Koller says, "We have successfully developed and positioned SAS as one of the leading global providers of assembly and logistics solutions for the automotive industry. This strong market position is founded on deep technical expertise and strong commitment of the teams. I am convinced that this transaction would unlock additional value for SAS. This would also allow Forvia to focus on its core business activities developing breakthrough technologies ".