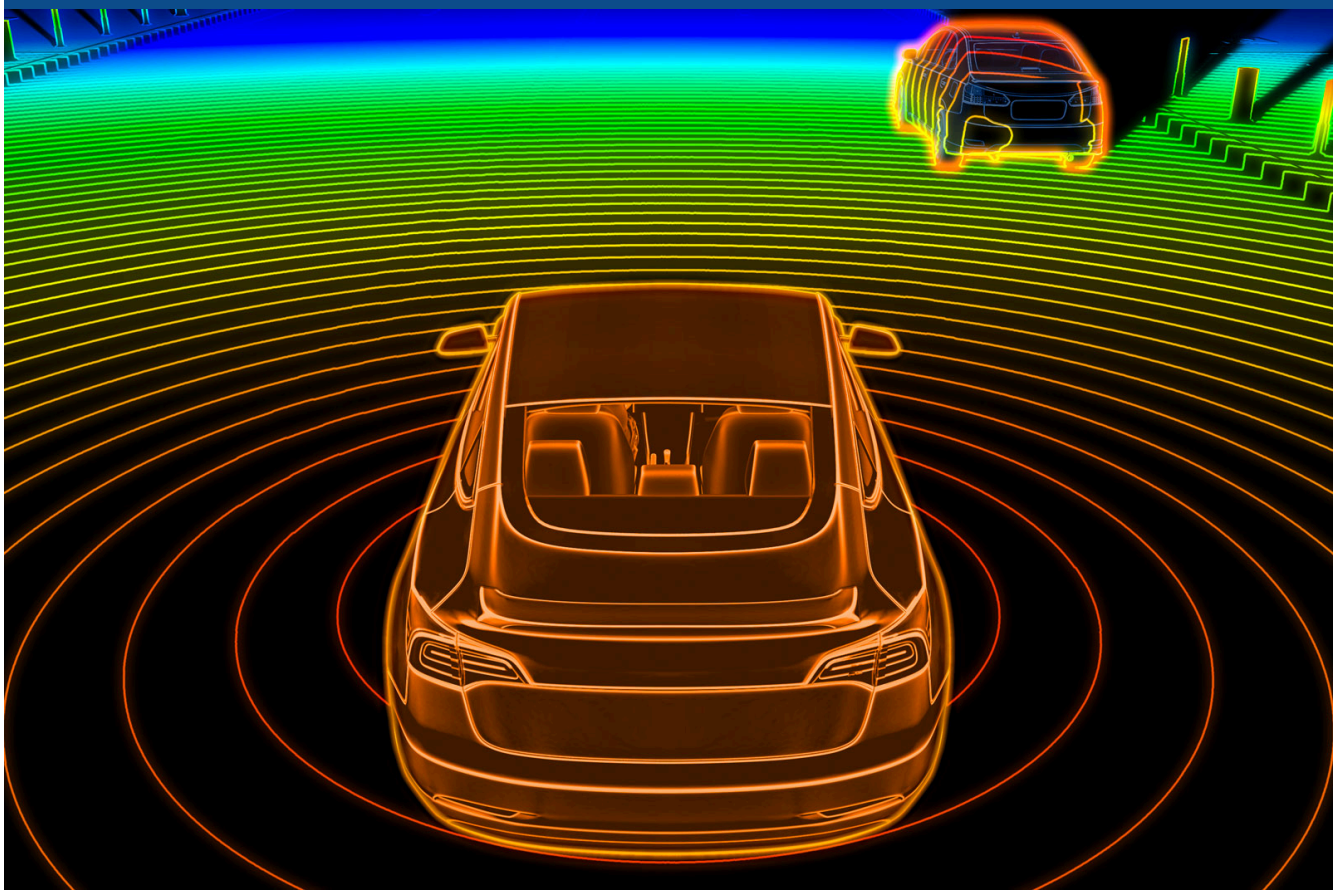
DVN
Lidar

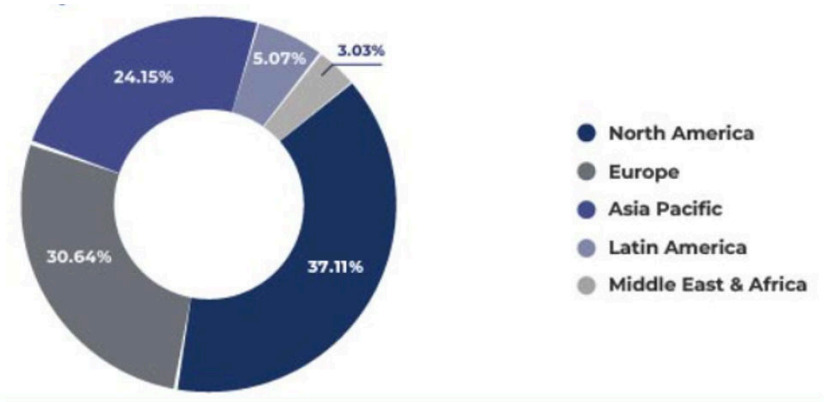
Monthly newsletter #30

SEPTEMBER 4, 2024



EDITORIAL

Lidar Market Dynamics: Will the US Be Part of the Game?



Global lidar market distribution 2023 (all applications)

The USA is leading the global lidar business, but the US automotive lidar companies—Cepton, Luminar, AEye, and Aeva—are lagging behind strong competitors like Hesai, Robosense, and Valeo. Some of the American outfits are restructuring, as we cover in this newsletter's Business Newsbites. Some have phased out of the automotive business altogether, and others do not have a mature technology.
One reason: the lidar market in the US is too small. Will that change any time soon? Maybe, with NHTSA's new rule requiring accurate pedestrian-detection after dark. Help could also come from the robotaxis market, which is slowly moving forward—find more details in the Business Newsbites. China is moving fast on AVs and Robotaxis (16.000 AVs test permits released), as you'll read in the AD Newsbites.

In this newsletter we also bring you an interview with Renesas, who are now targeting fusion systems including lidar applications, and we've also got a preliminary docket for our 2024 DVN Lidar Conference.

Forthcoming DVN-Lidar Events 2024

- Deep Dive 3 Workshop in Detroit, 12 September
- Lidar Conference in Wiesbaden, 18-19 November

We're ever so glad you're here with us in the DVN-Lidar community. Enjoy this 30th newsletter!

All best,

Alain Servel

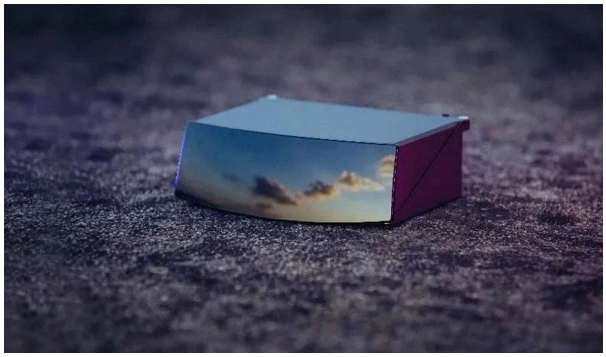
DVN LIDAR ADVISOR

LIDAR BUSINESS

Lidar Business Newsbites

	Jul., 2024	YTD, 2024
Outputs	**984**	**5,914**
BEV	569	3,559
PHEV	415	2,351
FCV	1	3
Sales	**991**	**5,934**
BEV	551	3,570
PHEV	438	2,361
FCV	1	3

Chinese NEV Production Zooms Along
In July 2024, China produced 984,000 NEVs, a 22.3-per-cent jump year-on-year. NEVs made up 43.8 per cent of China's total new vehicle sales in July. In 2024 through July, China's NEV production and sales volumes totalled 5.914 million units, a 29-per-cent increase compared to 2023. NEVs represents 36 per cent of the total auto sales in the period.

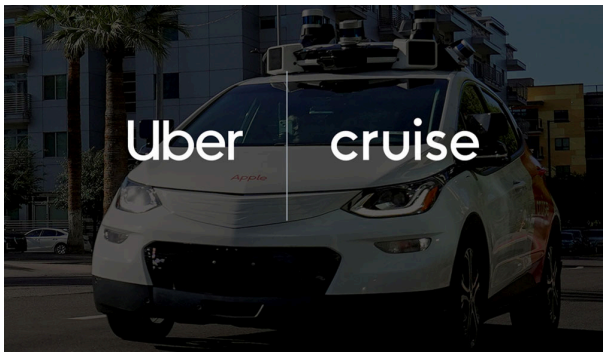


Hesai Margins Up Despite Production Delays
Hesai has again lowered their full-year sales forecast due to delays in customer production. With June quarter sales of C¥459m ($63m) from over 80,000 lidar shipments, the company predicts annual revenues between $280m and $320m, down from earlier projections exceeding $400m in March, and revised to $350m in May. In S1-24, Hesai delivered 145,627 units, of which 133,235 for ADAS applications. By the end of June 2024, Hesai had secured mass production orders with 19 automakers for over 70 vehicle models.

RoboSense Spikes H1 2024 Revenue
RoboSense's H1 2024 results show growth fueled by the automotive and robotics sectors. The company posted total revenue of C¥727m ($102m), a 120-per-cent increase year-over-year. Revenue from ADAS lidar products was C¥610m, up 314 per cent from the same period in 2023. Lidar sales reached around 243,400 units, nearly matching the entire volume of 2023. The company's gross profit rose to C¥98.6m in the first half of 2024, with the margin rising from 3.9 to 13.6 per cent.

US Lidar Firms Hang On for Key Orders
Latest results from Cepton, Luminar, AEye, and Aeva show production ramp-ups are still on hold, waiting for a surge in demand from key automotive customers. Cepton is currently being acquired by their main investor, Koito. Despite a late-2023 setback —GM cancelled a project—Cepton has recently reported improved figures for the quarter ending June 30, with revenue reaching $10.4m, significantly up from $2.8m during the same period last year.

Investor Koito Takes Control of Cepton
California-based Cepton, will become a subsidiary of Japan's Koito Manufacturing. Koito plans to buy all outstanding Cepton stock for $3.17/ea, nearly $50m in total, pending shareholder approval. The firms have partnered since 2018, with Koito proposing the acquisition after General Motors cancelled an ADAS project using Cepton sensors.

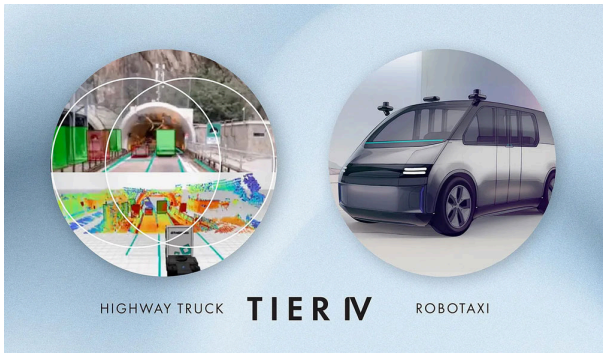


Uber, Cruise to Put AVs on Uber
Uber and Cruise have announced a strategic partnership to integrate Cruise autonomous vehicles into the Uber platform over several years. They plan to start next year with a fleet of Chevy Bolts. When users request an eligible ride on the Uber app, they may have the option to take a trip in a Cruise autonomous vehicle.

Uber, Waywe to Speed AV Deployment
Uber and Waywe have announced a strategic partnership aimed at accelerating the development and deployment of AVs. Uber has invested in Wayve, enabling the two companies to work closely with automakers to integrate Wayve's 'AI' into consumer vehicles. The partnership will also work toward bringing Wayve-equipped AVs to Uber's network in markets worldwide.

Huawei Alliance Delivers 44k Cars in July
Huawei's Harmony Intelligent Mobility Alliance (HIMA) delivered 44,090 new vehicles in July 2024, marking the second consecutive month surpassing 40,000 deliveries. Aito, the premium new-energy SUV brand co-developed with Seres, delivered 18,047 units of the M9 model in July. The M9 has Huawei lidar, and consistently achieved monthly deliveries above 15,000 units for three straight months.

Zeekr, Mobileye to Speed China Cooperation
Zeekr and Mobileye plan to speed up the integration of Mobileye's technology into Zeekr vehicles. Since late 2021, Zeekr has delivered more than 240,000 units of their 001 and 009 models, both featuring Mobileye's SuperVision™ lidar.



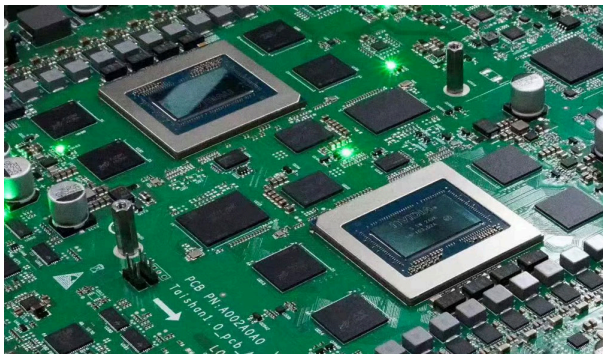
Tier IV to Lead Japan Robotaxi, Auto-Truck Project
Tier IV has been chosen by Japan's Ministry of Economy, Trade and Industry to spearhead a project focused on deploying robotaxis for transportation and autonomous trucks for logistics. The project has been allocated a grant of up to $4.5m for FY24. This past May, Tir IV announced plans to launch a robotaxi business in Tokyo.

Fangchengbao, Huawei Ink Smart-Drive Pact

BYD's Fangchengbao brand and Huawei have signed a strategic agreement to collaborate on intelligent driving technology.

iMotion in JV with Hangsheng for Smart Driving, Cockpit Development

AD technology company iMotion has entered a joint venture with Shenzhen Hangsheng Electronicsin Suzhou, Jiangsu Province, China. The JV is dedicated to R&D, production, and sales of integrated driving and cabin products, and will have a proposed registered capital of C¥100m, with iMotion and HSAE each owning a 50-per-cent stake. Both companies will contribute C¥50m in cash towards the venture's registered capital.



Lenovo's New L4 AD Controller

Lenovo has launched their new AD1 L4 autonomous-driving domain controller, made in the company's largest manufacturing base in Hefei. This makes Lenovo among the first automotive tier-1 suppliers globally to implement the Nvidia Drive Thor platform. In the future, Lenovo will expand their offerings to include L3 and L2++ ADAS products. The Lenovo UltraBoost AI middleware will further enhance computational efficiency, operator enhancement, and task scheduling.

EVENT

Event in Brief: San Jose ADAS & Autonomous Vehicle Show

The ADAS and Autonomous Vehicle show was held at the San Jose Convention Center on 28 and 29 August. There were keynotes from Waymo, GM, and Torc, and a good number of exhibitors in the AV space. If you didn't get a chance to attend the show, here's a quick look:

AiMotive, a Hungarian AV software developer acquired by Stellantis in 2022, showed a full-stack AV solution developed on Nvidia, and also their own AI chip.

ETAS showed middleware for AV software development, including a data-collection and -tagging solution that reduces redundant frames by up to 80 per cent.

Imagry, based there in San Jose, showed a full-stack AV solution which needs no HD map and is in pilots on buses in Israel and elsewhere.

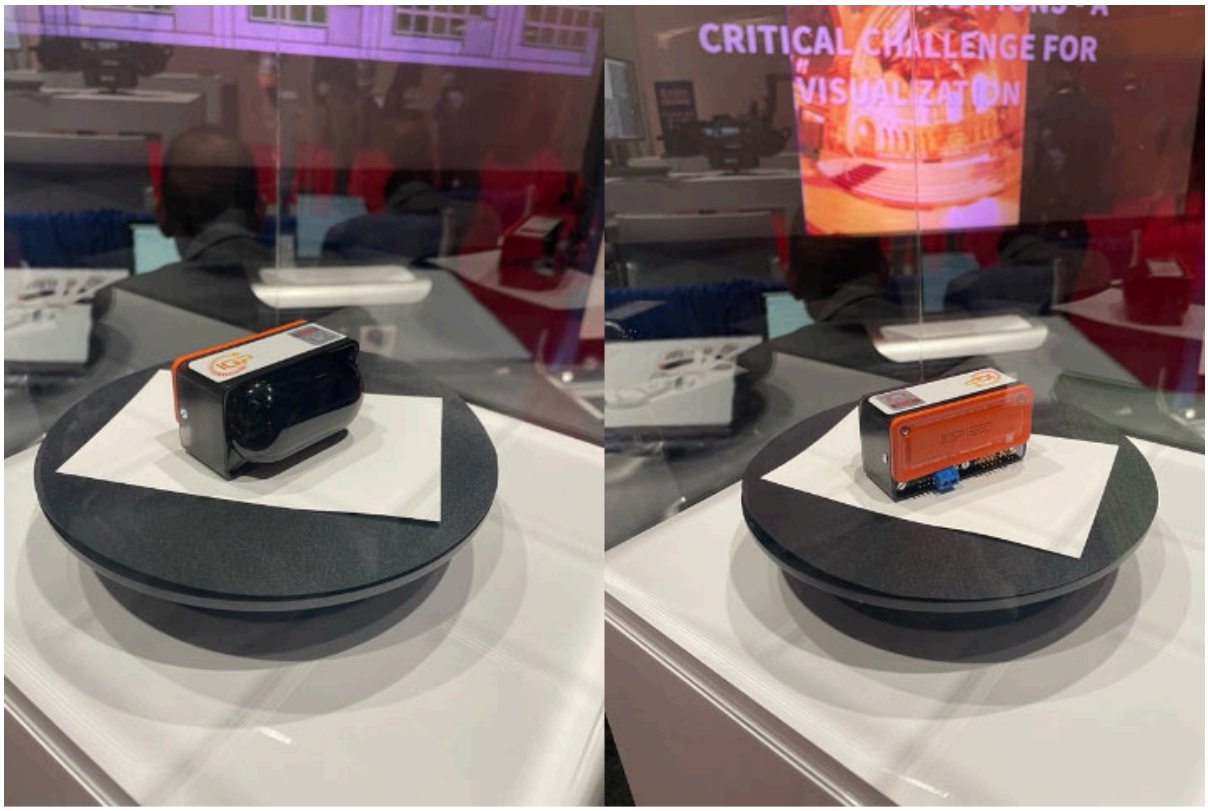
Cognata showed simulation tools that let you take a base scenario and add weather and other variants, running on AMD hardware in the Microsoft Azure Cloud.

IntoPix developed JPEG XS within the JPEG committee that allows for smaller datasets.

OSCP has a silicon photonics-based IMU.

Deontic is a startup using generative 'AI' (a combination of Open AI and Llama) to generate driving scenarios that can be fed into simulators like Siemens' Prescan from plain-text documents and UI.

IQP showed a prototype of a silicon photonics long-range flash lidar.



Tier IV is a Japanese open-source AV software outfit whose product is in use on buses in Japan.

Embed had a tool for dll model optimization that can work with various hardware platforms.

Terranet had a low-latency 905-nm laser-based scanner for AEB functions, to meet the EuroNCAP 2029 requirements.

INTERVIEW

DVN-Lidar Interview: Renesas' Leonard Germic

Leonard Germic is Renesas' Lidar Product Manager. He oversees the coordination of efforts across the R&D team, application and system engineering, and other stakeholders to drive innovation and business growth in lidar technologies.

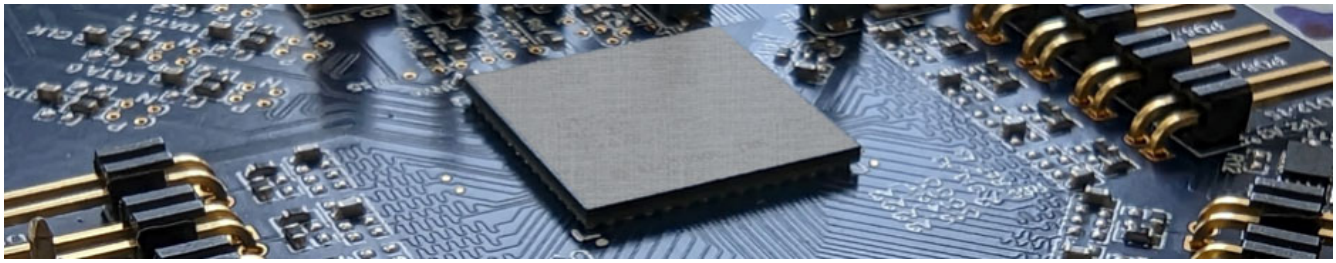
He joined Renesas in 2019 as a technical lead for validation, focusing on lidar front-ends. Before, Germic worked at Integrated Device Technology as a validation engineer for lidar front-end systems from 2018 to 2019. He began his career in academia, spending eight years as a scientist at the University of Bonn, where he completed his PhD in physics. His doctoral research concentrated on data-handling ICs and signal integrity for a pixel detector—part of one of the world's most sophisticated experiments, in Tsukuba, Japan.

DVN-Lidar: Renesas! Tell us about Renesas.

Leonard Germic: Renesas stands at the forefront of innovation, offering an expansive portfolio of cutting-edge technologies and solutions. Our products range from advanced connectivity devices and intelligent power solutions to AI-enabled System-on-Chips (SoCs), serving a multitude of industries. Renesas is uniquely positioned to deliver comprehensive, end-to-end solutions, seamlessly integrating sensing technology with cloud processing. In the area of sensing, we are enhancing our robust presence in automotive and industrial sectors, while also exploring new applications and achieving deeper vertical integration across hardware and software.

DVN-L: What can you share about your sensor developments?

L.G.: At the core of our business line lies our dedication to sensor development. Our diverse portfolio includes resistive and capacitive signal sensor conditioners (SSCs), environmental sensors, optical sensors, cutting-edge inductive position sensors, and state-of-the-art lidar analog front-end (AFE) solutions. Our lidar AFE captures and processes signals from photodiodes simultaneously, using an advanced sampling architecture to leverage full waveform data. This technology enables multi-echo detection, which is crucial for precise distance measurements and detailed point cloud reconstruction. Such precision and reliability are essential for the safety and efficiency of Advanced Driver Assistance Systems (ADAS) and autonomous driving technologies. Moreover, our lidar AFE solutions serve as heart of the lidar system. This ensures synchronized and efficient data collection, crucial for generating high-quality data. Our advanced AFE technology guarantees the delivery of high-resolution, reliable lidar data, addressing a wide range of automotive and industrial applications.



DVN-L: Where are you in lidar technology development?

L.G.: We are working on two solutions at the moment. The first solution is production-ready, while the second generation is nearing completion. Renesas is actively collaborating with development partners and key market players to stay ahead of the latest trends and meet evolving customer needs.

DVN-L: What makes Renesas lidars different?

L.G.: A key highlight of our lidar AFE solution is its exceptional integration level, which includes the implementation of vital Functional Safety (FuSa) mechanisms on-chip. Our platform, the "Renesas lidar Receiver and Control solution" (RxC), seamlessly integrates our lidar AFE with data processing SoC/MCU platforms, forming the heart of each lidar system. It is specifically designed to leverage the unique hardware accelerators in our R-Car SoCs, enabling efficient processing of lidar data streams alongside other ADAS functionalities. This makes the RxC platform an ideal choice for L^{2+} and L^{3} automated driving systems. The compact size and cost-effectiveness of the RxC platform, combined with a short time-to-market, represent the core values we deliver to our customers.

DVN-L: What are your main target markets?

L.G.: Our offering is highly adaptable. As an ASIL B-certified solution, it is well-suited for automotive applications, ensuring compliance with stringent safety standards. At the same time, the high level of integration makes this product highly attractive for industrial and robotics markets. The flexibility of our lidar RxC platform allows us to seamlessly meet a diverse range of customer needs and application scenarios, including delivery systems, precision farming, warehouse automation, manufacturing, drones, surveillance, autonomous shuttles, and various automotive uses. This adaptability ensures that our solutions can effectively address the demands of both emerging and established markets.

DVN-L: How do you manage safety and reliability, and how does this play into your pricing?

L.G.: Safety and reliability are highly developed in our lidar solutions. Our systems are designed with high-level functional safety (FuSa) in mind, ensuring they meet stringent automotive (ASIL B) safety standards. Moreover, by integrating our solutions into embedded systems, we can significantly reduce both the size and cost of lidar solutions. This miniaturization and cost-efficiency are crucial for broad adoption in various applications. By leveraging our extensive expertise in semiconductor solutions, especially in automotive sensors, we ensure that our lidar systems are not only efficient but also reliable and safe for deployment in ADAS, autonomous driving, and industrial applications.

DVN-L: What's in the pipeline?

L.G.: Looking ahead, we're dedicated to further enhancing our lidar systems to deliver the best possible experience for our customers. Our goal is to provide a plug-and-play platform, making integration as seamless as possible. We're focusing on expanding the capabilities of our existing product portfolio to offer a comprehensive system embedded within a robust software stack. This platform will enable our customers to easily incorporate their own perception algorithms, providing a flexible and powerful foundation for various applications.

DVN-L: Thank you for your thoughts! Is there anything you'd like to add?

L.G.: At Renesas, we are dedicated to driving innovation in the industrial and automotive markets. Our goal is to provide comprehensive, end-to-end solutions that address the complex challenges of autonomous vehicle and system designs. We believe that through continued collaboration and technological advancement, we can contribute significantly to the development of safer and smarter vehicles for the future; making our lives easier.

LIDAR AND IMAGING RADAR TECHNOLOGY NEWS

AMS Osram's New Lidar Laser

AMS Osram has launched a new 8-channel, 915-nm SMT pulsed laser. The SPL S8L91A_3 A01, housed in a QFN package, significantly enhances long-range lidar systems, boosting their efficiency and reliability for AVs. It simplifies system design and elevates performance.

The new laser has a monolithic 8-channel architecture, yielding a total peak optical power of 1000 W, with each channel supplying 125 W. The four individually-addressable anodes offer flexibility in designing end products.

The single laser package streamlines the design and production process, reduces development times, and increases system reliability. Additionally, the integration of AMS Osram's unique wavelength-stabilization technology optimizes performance by minimizing wavelength shifts due to temperature variations, thereby improving the system's signal-noise ratio; this means better detection range and overall system efficiency.

It is compliant with AEC-Q qualification standards, ensuring its robustness and suitability for automotive applications. And beyond automotive uses, this laser also has potential applications in industrial domains such as robotics, surveillance, and smart city technologies.

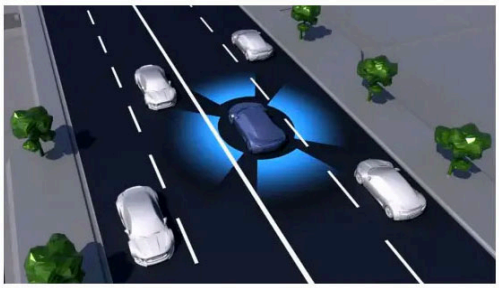
The SPL S8L91A_3 A01 is scheduled for launch in autumn. Further details about lidar and autonomous driving advancements can be found on the AMS Osram website.

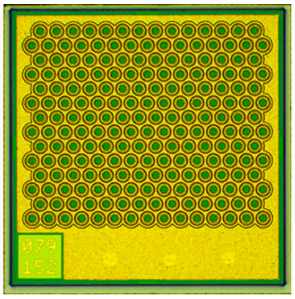
DVN comment

Beyond simplifying the design and production of long-range lidar systems, AMS Osram's new laser enhances reliability by substituting eight lasers with a single module. This architecture stands to boost the performance of long-range lidar systems vital for autonomous highway driving, and to eliminate the need for alignment among multiple lasers.

LIDAR AND IMAGING RADAR TECHNOLOGY NEWS

Vertilite's High-Performance VCSELs





Established in 2015, Vertilite is a startup focused on developing and marketing fast, high-power vertical-cavity surface-emitting lasers (VCSEL) and modules. The company has successfully launched products for applications including 3D sensing, optical communications, industrial automation, biomedical uses, automotive technologies, consumer electronics, and lidar. The primary automotive markets they serve include:

- **Driver and Occupant Monitoring Systems (DMS/OMS)**

With Euro NCAP standards and European Commission (EC) regulations requiring driver monitoring systems (DMS) starting from 2022, and recommendations from the U.S. National Transportation Safety Board (NTSB) for semi-autonomous vehicles, VCSEL-supported DMS/OMS are becoming crucial. These systems act as advanced in-cabin, near-IR cameras, keeping track of driver and passenger positions, sizes, and actions. Essential for L^3 AD systems, VCSEL-based illuminators provide greater uniformity and narrower FWHM compared to IREDs, resulting in a better signal-noise ratio in 2D and 3D systems.

- **Lidar**

Lidar greatly benefits from VCSEL technology. The higher frequency of laser diodes allows for high resolution, excellent concealment, robust anti-interference, superior low-altitude detection, compact size, and light weight. VCSELs surpass LEDs and edge-emitting lasers in performance and cost, making them optimal for lidar applications. In drones, VCSEL-equipped lidar supports altitude holding, terrain simulation, and landing; in vehicles, it aids in collision avoidance and autonomous driving. Robots using lidar can navigate autonomously, with additional applications extending to AGV collision avoidance, intelligent transportation, and automatic toll booths.

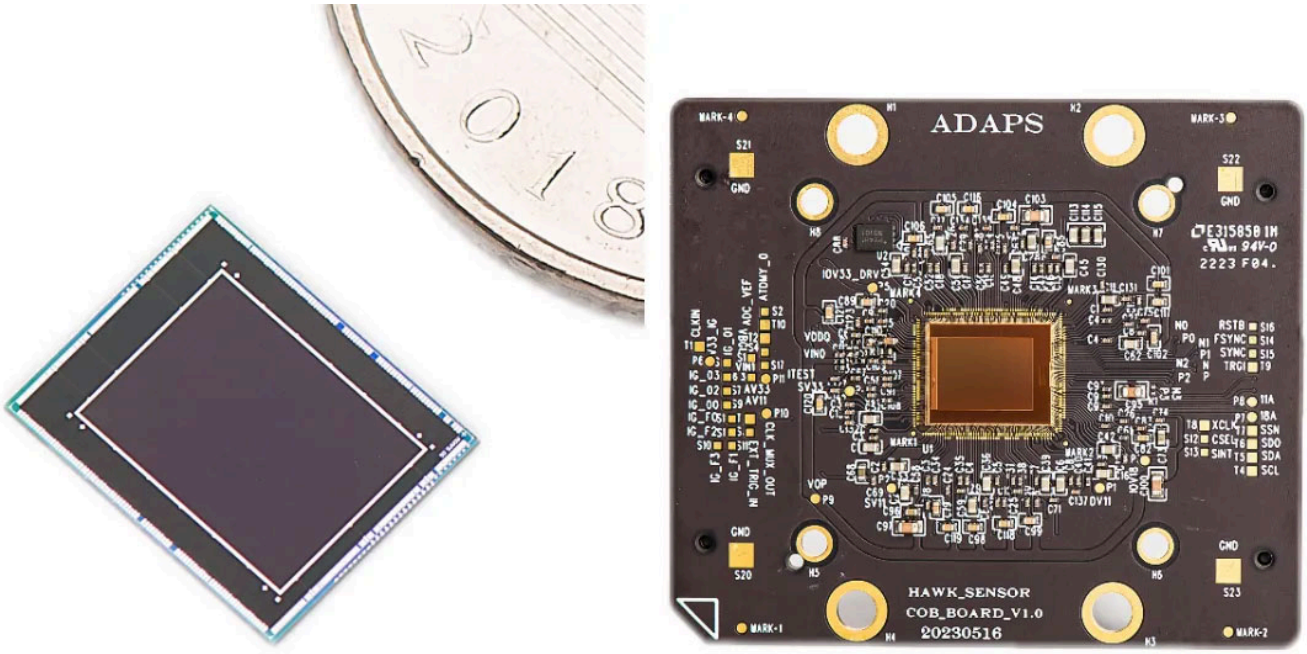
More broadly, Vertilite VCSEL technology enables success across a variety of markets such as 3D sensing, gesture recognition, and IR illumination. Through close collaboration with clients, bespoke VCSEL solutions are provided to foster growth, innovation, and achievement.

DVN comment

The numerous benefits provided by VCSEL technology can be summarised by their wavelength uniformity and spectral width, high-temperature operation, wavelength stability, manufacturability, scalability, and affordability.

LIDAR AND IMAGING RADAR TECHNOLOGY NEWS

Adaps, Hasco Jointly Develop SS Lidar



Adaps Photonics and Hasco's automotive electronics subsidiary have collaborated to develop a core sensor, the all-solid-state lidar, achieving a significant breakthrough in the application of core chips (such as SPAD chips). Hasco's subsidiary is a professional and comprehensive automotive parts system integration supplier, while Adaps specializes in 3D sensor chips and systems. Their strategic partnership aims to enhance ADAS performance and provide users with a safer, 'smarter' driving experience. The new solution has high-integration chips using large silicon wafer bonding technology, enabling the miniaturization of solid-state lidar. It also achieves high-density pixels, ensuring excellent range performance for lidar, real-time obstacle detection, and more precise environmental sensing. The rapid progress in lidar technology based on pure solid-state image-level SPAD chips also suggests its broad future application in smart vehicles. Amidst fierce global competition in the sensor field, we will further strengthen joint development efforts with major partners, continuously advancing solid-state lidar to achieve image-level 3D perception capabilities, fully supporting the future upgrade of 3D perception systems in smart vehicles.

About Adaps Photonics

Adaps Photonics, established in May 2018 by Ph.D. graduates from Stanford and Delft Universities, has extensive expertise in SPAD technology. The company excels in full-stack SPAD device design, and holds numerous patents. Their offerings include SiPM, single-photon imaging SPAD array chips, and multi-point dToF chips.

In 2021, they produced 3D-stacked SPAD array chips and achieved the world's highest pixel SPAD array chip by 2023, enabling solid-state 3D camera imaging. Their 905-nm SiPM set a world record with a 25-per-cent PDE and earned an AEC-Q102 Grade-1 automotive certification.

The company's products are integrated into various leading manufacturers' supply chains. Adaps is China's sole 3D sensing chip design company competing globally, and focuses on advancing array and solid-state technologies. Their high-resolution ADS6311 chip, released in August 2023, features a 768 × 576 SPAD array and 256 × 192 point cloud resolution, making it a leader in automotive and robotics lidar applications.

About Hasco

Hasco is an automotive component supplier with over 40 business areas. The company has 28 directly invested subsidiaries, many of which have more than 30 years' history. There are 465 R&D, manufacturing, and service bases and over 120,000 employees worldwide.

DVN comment

In 2021, Hasco initiated a partnership with Opsys Tech for a China-market joint production plan for customized lidar products based on Opsys Tech lidar technology.

LIDAR AND IMAGING RADAR TECHNOLOGY NEWS

Webasto Roof Sensor Modules for AD

Venerable roof system supplier Webasto flourished into the autonomous driving space with their Roof Sensor Module (RSM) for passenger cars. Now, they are expanding their RSM range to include robotaxis and autonomous trucks.

Webasto integrates individual static and extendable lidar modules into cars, and also develops comprehensive roof modules equipped with various sensor technologies like cameras, radar, and lidar. The company has secured a customer project to supply the RSM for a robotaxi maker in the USA.

Webasto combines innovative automated cleaning and thermal management systems with sensor solutions to achieve this. Features for cleaning, de-icing, defogging, and cooling sensors maintain their availability under various weather conditions. Depending on customer needs, different sensors are combined in the RSM to create visually appealing solutions.

Since 2021, Webasto has collaborated with Canatu to integrate a fixed-film heater into the RSM. This module provides automakers with options to incorporate ADAS sensors and functions related to sensor availability into the vehicle's roof—such as cleaning, cooling, de-icing, and anti-fogging. The roof is prime real estate for sensors, as it allows optimal detection due to the all-around view and elevated position. Including Canatu's de-icing and anti-fogging system in the RSM ensures reliable ADAS sensor performance even in severe weather. The same Canatu film heaters can also be used for camera systems.

Automakers all over the world are heavily investing in developing lidar sensor systems to advance L^3 and L^4 driving —with the increasingly questionable exception of Tesla, whose owner Elon Musk doggedly insists he is right and everyone else is wrong. Still, adverse weather conditions pose a significant challenge for lidar technology's full adoption. In wintry or humid environments, lidar sensors often become obscured with ice, fog, and snow, compromising their ability to detect objects and measure distances reliably. The Canatu film heater resolves this by keeping the sensor cover clean, ensuring dependable lidar sensor functionality and supporting autonomous driving in challenging weather.

Webasto's Thomas Schütt says, "The next major advancement will be in autonomous trucks. The requirements for sensor integration—concerning vibration, environmental detection, and runtime—are more stringent, allowing us to leverage our expertise from the passenger car sector effectively. For example, Webasto's compact sensor strip, which integrates various sensors and sensor availability functions, reliably transmits signals and crucial environmental information to the vehicle's control unit. For Webasto, this technical development signifies a strategic extension of our product portfolio, now including sensor modules for passenger cars, robot taxis, people movers, and autonomous trucks".

DVN comment

The Canatu film heater is lidar-transparent and entirely wireless, offering fast, uniform, energy-efficient heating across its surface without optical distortion. It is manufactured on a polycarbonate foil and integrated into the RSM cover via film insert moulding (FIM) in mass production.

GENERAL TECHNOLOGY NEWSBITES

Arbe Works to Revolutionize Truck Safety with Imaging Radar

Arbe Robotics specializes in perception radar solutions, and have now partnered with a major European truck manufacturer to integrate Arbe's automotive-grade imaging radar technology into the manufacturer's next-generation sensor suite as part of their transition to an advanced implementation phase.

Arbe Robotics 4D Imaging Radar Specifications

Frequency range: 76 - 81 GHz

Bandwidth: Up to 2 GHz

Resolution (3-dB beam width):

Range: 9.5 cm @ 36m; 60 cm @ 300 m
Azimuth: 1.25°
Elevation: 1.5°
Doppler: 0.1 m/s

Detection space:

Range: Up to 300 m
Azimuth: -50° to +50°
Elevation: -15° to +15°
Doppler: -70 to +140 m/s

Point cloud data size per frame: Max 250k detections (ethernet limitation)
Update rate: Up to 30 FPS in 4D mode

Arbe's imaging radar technology effectively tackles the unique challenges faced by trucks, such as their larger size, the necessity for greater braking distances, and higher impact potential. With the largest channel array in the industry, Arbe's radar offers exclusive functionalities including enhanced perception, free-space mapping, and handling complex scenarios such as detecting lost cargo on the road and spotting pedestrians—even at night. This cutting-edge technology boosts driver assistance and supports L^4 autonomous driving, which is vital for the trucking industry and its specific business models.

The European truck manufacturer—as yet unnamed publicly—has conducted extensive evaluations of Arbe's imaging radar chipset. The process included equipping a fleet of trucks, performing comprehensive field trials, and compiling extensive data to quantify the performance of imaging radar versus other front sensors like lidar and conventional radar. The manufacturer is now installing state-of-the-art radars based on the Arbe chipset in trucks for the next phase of developing safety and autonomy applications for its next-generation vehicle platform.

"We are thrilled to deepen our collaboration with a leading European truck manufacturer," said Kobi Marenko, CEO of Arbe. "Our joint efforts have demonstrated the exceptional capabilities of imaging radar, and as we embark on this development phase, we are confident that this partnership will drive groundbreaking advancements in vehicle sensor technology. Together, we are setting new benchmarks for safety and innovation in the trucking industry."

Arbe, headquartered in Tel Aviv, Israel, says their radar technology is 100 times more detailed than any other radar available and is a critical sensor for L^{2+} and higher autonomy. The company also has offices in China, Germany, and the United States.

DVN comment

Imaging 4D radar is a high-resolution, long-range sensor technology offering numerous advantages over 3D radar, especially in determining an object's height and an immediate detection of object's relative speed. This technology is crucial for the development of ADAS for certain L2 and L3 functions, and serves as a key enabler for L4 and L5 automated vehicles. In the past, radars suffered from poor angular resolution, this is less and less the case and this makes them competitive with lidars.

GENERAL TECHNOLOGY NEWSBITES

New EU Safety Regs Require ADAS

Starting from 7 July 2024, new regulations concerning active safety features in vehicles, such as speed limiters, entered force in the European Union. The New-Vehicle General Safety Regulation (GSR2) revises the minimum performance standards for type-approval of motor vehicles in the EU, mandating the implementation of certain advanced driver assistance systems: intelligent speed assist (ISA), autonomous emergency braking (AEB), driver drowsiness and attention warning (DDAW), and emergency lane-keeping systems (ELKS).

GSR2's implementation phases are:

- July 2022: New technical requirements for new vehicle models.
- July 2024: New units of existing vehicle models must include ISA, AEB, DDAW, and ELKS.
- July 2026: Inclusion of advanced driver distraction warning (ADDW) and extra pedestrian and cyclist AEB.

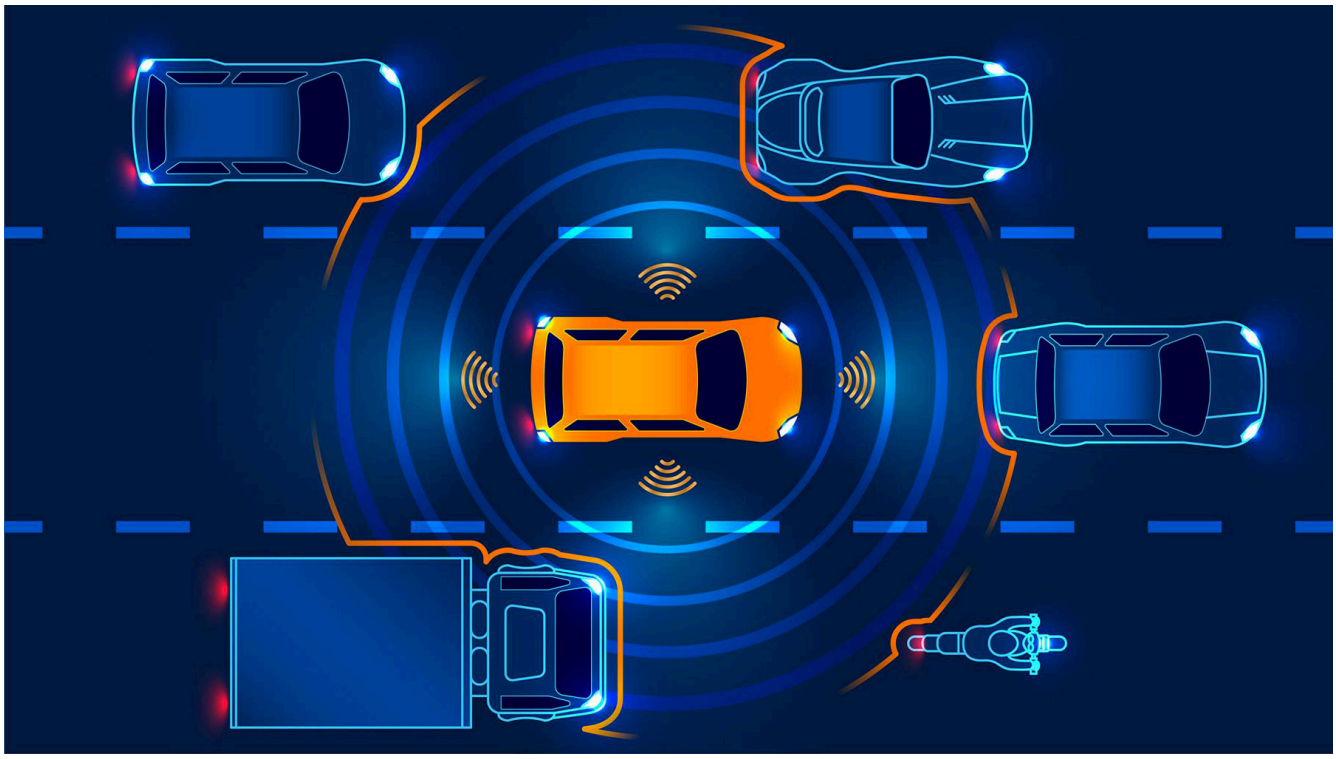
ISA detects traffic signs and issues a speed limit warning via a camera and map data. AEB uses sensors (camera, radar, lidar) to cut collision rates—50 per cent for rear-end and 30 per cent for pedestrian collisions.

ELKS keeps vehicles in their lanes using corrective steering, using sensors like cameras for lane detection, or potentially lidar for lane and obstacle detection.

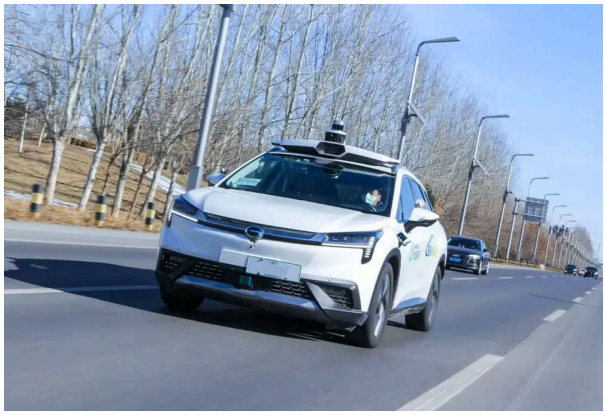
Other new features required by GSR2 include AIIF (Alcohol Interlock Installation Facilitation), EDR (Event Data Recorder), ESS (Emergency Stop Signal), RD (Reversing Detection system), and TPMS (Tire Pressure Monitoring System).

AUTOMATED DRIVING

AD Newsbites



Ford Blue Cruise Available in 17 Countries
Ford's BlueCruise hands-freehighway driving technology is now available in 17 countries, including 15 in Europe, after receiving approval from the European Commission. BlueCruise now covers over 132,000 km of highways in Europe, known as Blue Zones. Initially launched in Britain, it is now also available in Austria, Belgium, Czechia, Denmark, France, Germany, Greece, Hungary, Italy, Netherlands, Poland, Portugal, Spain, and Sweden. With over 420,000 BlueCruise-equipped vehicles on the road globally, customers in the U.S. and Canada have driven more than 340 million hands-free kilometers.



ChinaIssued 16,000 AV Test Permits
Chinese authorities have so far issued 16,000 autonomous vehicle testing permits and opened 32,000 kilometers of public roads for autonomous vehicle testing. In November 2023, the Chinese Government introduced regulations to pilot market access for AV products that have passed technical tests and are ready for mass production. Once approved, these vehicles can be insured, registered, and used in pilot programs within designated areas. The relevant ministries have jointly issued a notice detailing management measures for road traffic safety and cybersecurity, promoting the application of "vehicle-road-cloud integration" systems.

Waymo's 6th-Gen AD System
Waymo's 6th-generation autonomous driving system has improved sensor technology and enhanced safety features. It costs less, and enables quicker deployment and better functionality in tough weather. This new hardware includes 13 cameras, 4 lidars, 6 radars, and external audio receivers, detecting objects up to 500 meters away under various conditions.

Tesla Robotaxi event scheduled on October 10
Tesla is set to unveil its highly anticipated Robotaxi at an event on October 10, 2024, at the Warner Bros. Discovery movie studio in Burbank, California. Tesla initially planned to reveal the purpose-built Robotaxi on August 8. The delay will allow the Tesla team to develop additional prototypes and refine the vehicle’s design.

Mercedes Gets Chinese L^4 Test License
Mercedes-Benz has received a permit for L^4 automated driving tests on specific urban roads and highways in Beijing. This is part of their broader technology research in developing autonomous driving software and hardware. Earlier, they were among the first to get L^3 testing approval in Beijing by the end of 2023.

Nvidia, Zoox Celebrate 10-Year Partnership
In a recent fireside chat, Nvidia founder and CEO Jensen Huang joined Zoox CEO Aicha Evans and cofounder and CTO Jesse Levinson to celebrate Zoox's 10th anniversary. They discussed the progress and innovations in autonomous vehicle (AV) technology and took a ride in Zoox's robotaxi, highlighting the decade-long collaboration between the two companies.

Karsan's New Autonomous e-ATAK
Karsan has introduced their autonomous e-ATAK in Switzerland. It is an L^4 driverless public transport vehicle, the country's first autonomous bus. The e-ATAK will cover a 2.2-kilometer route in Arbon. With lidar sensors, advanced radar systems, RGB cameras, and thermal imaging, the e-ATAK is designed to perform complex tasks independently, delivering safe and reliable transport under various weather conditions. It can go up to 50 km/h while smoothly navigating intersections, traffic lights, and other complex urban scenarios.

Ontime Approved for Robotaxi Road Tests in Hengqin

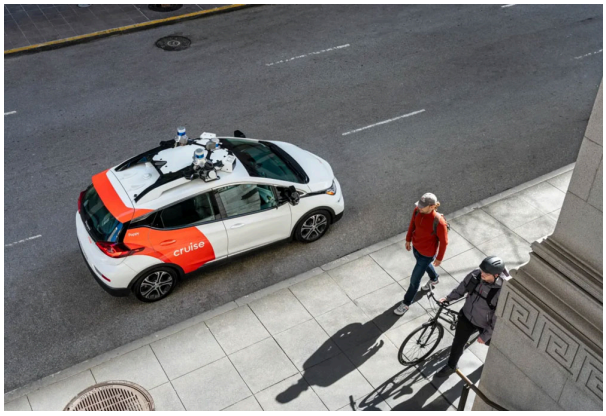
Ontime, the GAC Group's mobility service platform, has secured a permit for robotaxi road tests in Zhuhai city's Hengqin Guangdong-Macao In-Depth Cooperation Zone. After meeting test targets and gaining necessary approvals, Ontime will start demonstration operations. Back in April 2023, Ontime earned the qualification for intelligent vehicle operations in Guangzhou's Nansha District, deploying their own Robotaxi fleet and becoming the first domestic platform to do so.

Pony Gets AV Test License

Pony.ai has received a permit for AV testing in Shenzhen city. This permit allows Pony to conduct robotaxi road tests on expressways including the Guangzhou-Shenzhen Riverside Expressway, Nanping Expressway, and Shuiguan Expressway. Pony operates nearly 1,500 pickup and dropoff points in core regions such as Qianhai, Bao'an Central District, Houhai in Nanshan, and Shenzhen Bay. To date, Pony has gatherered over 35 million km of AV test experience, including more than 3.5 million km of driverless testing.

WeRide Can Carry CA Passengers Without Drivers

WeRide has received approval to test their driverless vehicles with passengers in California. The California Public Utilities Commission granted WeRide two crucial permits, including a pilot permit with drivers onboard and a driverless pilot permit. Both permits allow WeRide to test autonomous vehicles on public roads in California while carrying passengers. However, these permits do not yet allow WeRide to charge passengers, and the service is not open to the public.

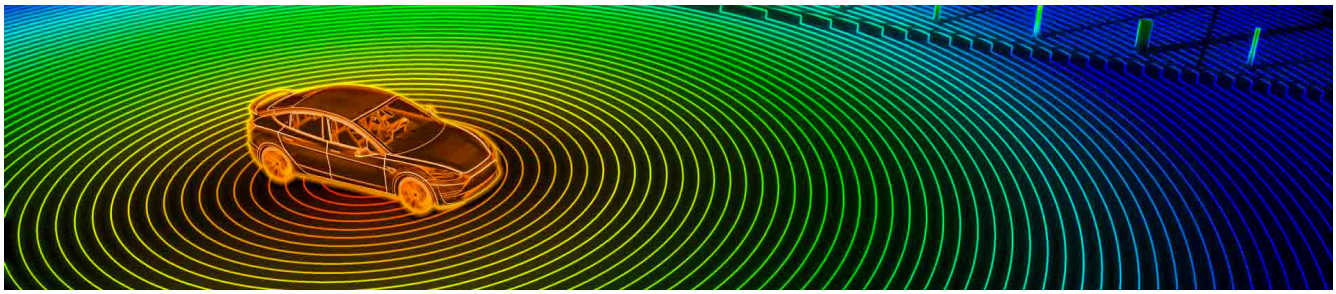


Cruise Issues Recall for Automated Driving System

NHTSA has finalized their preliminary evaluation of Cruise's automated driving system, and the result is a substantial safety recall. Initiated in December 2022, the investigation examined reports of excessive hard braking and vehicle immobilizations in Cruise ADS-equipped cars. After an in-depth review, Cruise implemented a recall to address software issues responsible for these safety problems.

LIDAR CONFERENCE

DVN-Lidar Conference Preliminary Docket



The DVN-Lidar conference is scheduled for Wiesbaden (near Frankfurt, Germany) on 18-19 November of this year. The docket is still in development; here is where it presently stands:

Monday, 18 November: Lidar Applications; Ecosystem

Following speakers are planned & partly tbc.

11:20-12:45 REGISTRATION AND LIGHT WELCOME LUNCH
TEST Democars:Robosense, Seyond, Valeo, Vueron

12:45-13:40 OPENING the Conference by DVN CEO (Paul-Henri Matha)
KEYNOTE 1: FORD – Peter Zeegelar / LiDAR's essential role in highway automated driving
KEYNOTE 2: VALEO – Joachim Mathes (tbc) / AV Sensors for a safe L2+/L3 driving

13:40-14:45 SESSION 1 - LIDAR APPLICATIONS 1
HYUNDAI MOTORS – K.C.Kweon
LYNK & Co, NIO, STELLANTIS (tbc)
GRVA/UNECE – Francois Guichard
Q&A

14:45-15:20 COFFEE BREAK-1 + TEST Democars

15 :20-16:25 SESSION 2 - LIDAR APPLICATIONS 2
CONTINENTAL – Wolfgang Schultz
FRAUNHOFER ILT – Dr Gillner
AGC Wideye – Raed Elmakhour
CEPTON (tbc) – Henry Haeffner
Q&A

16:25-16:40 COFFEE BREAK-2 (Exhibition Platform)

16:40-17:45 SESSION 3 - LIDAR ECOSYSTEM
SCHOTT – Maximilien Glanzer
DEXERIALS – speaker tbd
YOLE – Pierrick Boulay
Fka GmbH – Amogh Sapkal
Q&A

17:45-18:10 DISCUSSION PANEL I

Lidar Growth and Safety Benefits, the key-factors

18:10-20:00 SOCIAL COCKTAIL + TEST Democars
Start-up Pitch x3 (new technos for AVs: FMCW Lidar, 4D Radar, IR)

20:00 WELCOME DINNER (Conference Room)

Tuesday, 19 November: Lidar Technology; AV Sensors & Fusion

Following speakers are planned & partly tbc.

07:00-08:30 BREAKFAST in Hotel

08:30-09:00 KEY-NOTE-3:
ROBOSENSE – speaker tbd

09:00-10:05 SESSION 4 – LIDAR TECHNOLOGY 1 / Sensors
HESAI – Tilman Gasche
SCANTINEL – Davide Canavesi
SEYOND – Oliver Ramoli
MOBILEYE, LIDWAWE (tbc) – Avraham Itzakhi

10:05-11.20 COFFEE BREAK 1 + TEST Democars

11:20-12:00 SESSION 5 – LIDAR TECHNOLOGY 2 / Sensor Assembly
TRIOPTICS – Dirk Seebaum
FICONTEC (tbc) – Simon Viets

12:00-13:45 LUNCH & NETWORKING + TEST Democars

13:45-14:50 SESSION 6 – LIDAR COMPONENTS / ELectronics
ams OSRAM – Clemens Hofmann
SUNA Optec – speaker tbd
RENESAS – Leonard Germic
SONY Semiconductors (tbc) – Alexis Van der Biest

14:50-15:30 COFFEE BREAK 2 + TEST Democars

15:30-16:35 SESSION 7 - AV SENSORS & FUSION, SW TOOLS
ANSYS-OnSemi – Pascal Auger
VUERON – Shino Yoon
VANJEE – Zhai Zhao
ZKW, DEEPEN.ai (tbc)

16:35-17:00 DISCUSSION PANEL II
Affordable Lidars & Safe L2+/L3 driving

17:00-17:15 CLOSURE (Program DVN 2025)