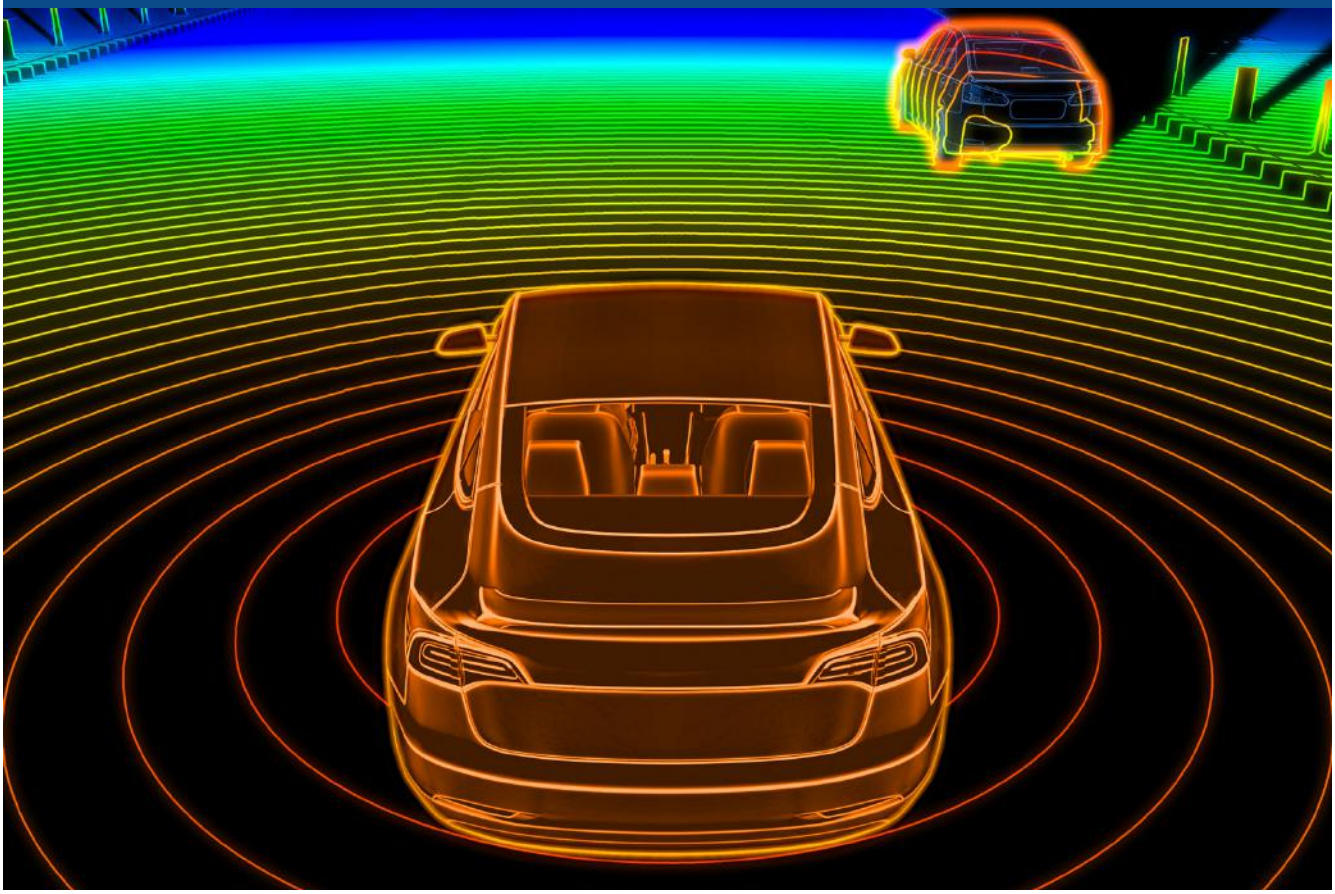
DVN
Lidar

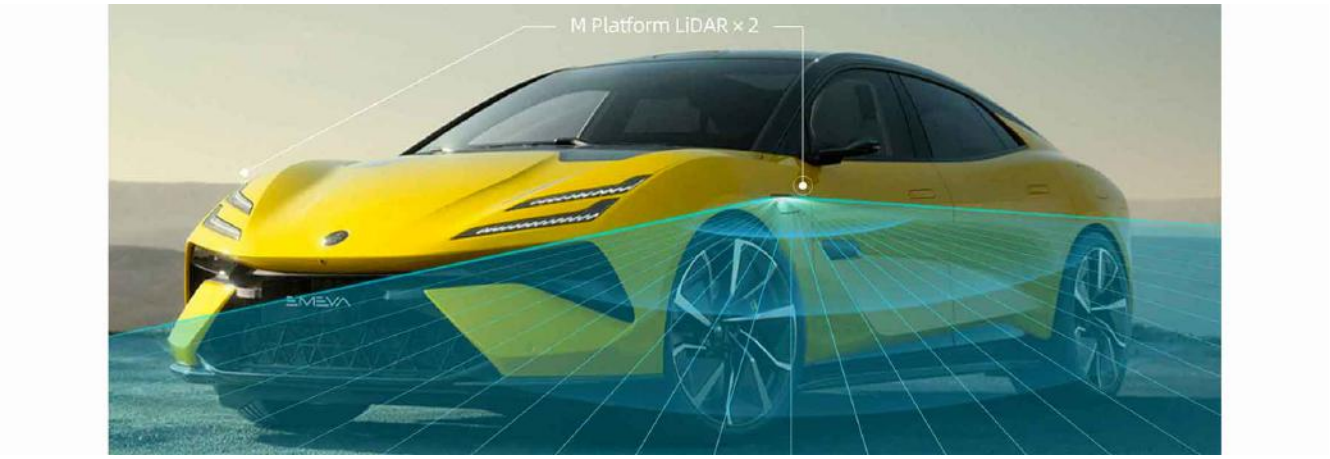
Monthly newsletter #24

MARCH 6, 2024



EDITORIAL

Shift and Drift: Lidar Suppliers' Competitive Positions



What did 2023 show us about the competitive positions of lidar suppliers? Quite a lot of shift and drift! Robosense and Hesai grew into high-volume suppliers, securing significant market share in China for popular NOA applications (navigation on autopilot). Valeo has the technical lead for L^3 applications with multiple western customers, but with low volumes linked to the limited ODD (limited to 60 km/h in many lands) and resultant limited customer demand. Suppliers like Luminar and Innoviz, also focused on L^3 applications, are just starting production on account of program delays from customers like Volvo and BMW. They do not have significant revenue yet and are still burning cash.

In this edition of your DVN-L Newsletter, we bring you an interview with Luc Bourgeois, who was Renault's leading expert for ADAS & AD systems before joining our team as a senior advisor. Welcome, Luc!

DVN-Lidar events 2024:

- Deep Dive I in Stuttgart (9 April)
- EAC Lidar Expo in Suzhou (21-22 June), co-hosted by DVN
- Deep Dive II 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 24th newsletter!
All best,

Alain Servel

DVN LIDAR ADVISOR

LIDAR BUSINESS

Lidar Business Newsbites

Hesai is disputing their inclusion on a U.S. Military no-go list. The company says being **listed** by the U.S. Department of Defense as a company which aids and abets the Chinese Government and its military is "unjust, capricious, and meritless", adding that they have a strict policy against military sales: "Hesai lidars are for civilian use only. We do not sell our products to any military in any country", the company stated. Whether their objection to the listing could lead to a reconsideration remains to be seen. Hesai, having first turned a profit in Q1-2023, has been listed on NASDAQ, making them China's first US-listed lidar company.

Li Auto reported their first-ever annual net profit. They raked in a gross profit of about USD $1.38bn and delivered 131,805 vehicles in the 4th quarter of 2023, nearly triple the number of vehicles in the same period a year prior. Whole-year 2023, they delivered 376,000 vehicles. The margin is also interesting: 22.7 per cent on a per-vehicle basis during Q4-2023.

Mercedes-Benz will launch an ugraded version of their Drive Pilot L^3 system, raising its maximum operating speed from 60 to 90 km/h. The new version will be launched in Germany first, by the end of 2024. Eventually, the next step will be to raise the operating speed to 120 km/h.

LUMINAR

Luminar announced a Q4-2023 Revenue of USD $22.1m, with a gross loss of $21.6m on a GAAP basis and $16.6m on a non-GAAP basis. Revenue for the year was $70m, and 2023 ended up with $290m in cash and equivalents. Delays of the Volvo EX90 launch affected revenue. The company broadened their Mercedes relationship to include additional future models, and did their first joint vehicle win with Mobileye's Chauffeur platform. Luminar's order book stands at $4bn (assuming 25 per cent take rate).

INNOVIZ™
TECHNOLOGIES

Innoviz reported their 2023 financial results. Revenues in Q4 were USD $14.9m, and operating expenses $29.5m. Whole-year revenue was $20.9m; operating expenses $121m (versus $124.6m in 2022). Liquidity as of 31 December 2023 amounted to about $150.2m in cash and equivalents. Current Innoviz programs are the BMW i7 and VW ID.Buzz.

China news roundup: Shenzhen-based lidar maker LSlidar (Leishen Intelligent System Co) secured hundreds of millions of yuan in their D-round funding. Tanway got over C¥100m in series A+ financing. Benewake is partnering with American manufacturing services company Jabil for lidar production and delivery of Benewake's AD2 auto-grade lidar. And Innovusion has renamed themselves Seyond.

ADAS & AUTONOMOUS VEHICLE TECHNOLOGY

2023 AD Deployment Activities in China

The implementation of advanced autonomous driving technology is making progress in China, along with new government policies and infrastructure developments.

Regulation

On 17 November 2023, China's Ministry of Industry and Information Technology, Ministry of Public Security, Ministry of Housing and Urban-Rural Development, and Ministry of Transport jointly issued a notice regarding pilot work for the admission and on-road operation of intelligent connected vehicles.

It was announced that intelligent connected vehicles equipped with L^3 or L^4 autonomous driving capabilities, and meeting the conditions for mass production, will be allowed to conduct on-road pilot trials within designated areas after obtaining admission permits. The notice also clarified that operating entities bear responsibility for accidents occurring during autonomous driving.

Subsequently, over 30 cities, including Beijing, Shanghai, and Guangzhou, issued licenses for L^3 autonomous driving road tests to automakers including GAC, BYD, Seres, Changan, IM Motors, BMW, and Mercedes-Benz.

AD deployment

Huawei's automaker partner Seres has secured L^3 autonomous vehicle test licenses in both Chongqing and Shenzhen cities.

The Hongqi-based L^4 robotaxi built by the AI development arm of FAW passed its unmanned test license examination in the Beijing High-level Automated Driving Demonstration Area (BJHAD).

BYD has been granted a conditional L^3 autonomous driving vehicle testing license in Shenzhen, becoming the first automotive company in China to receive this permit.

Deepal, Changan's NEV brand, obtained an autonomous driving test permit last November for highways and expressways in Chongqing.

Arcfox, BAIC's premium EV brand, has been granted an L^3 highway autonomous driving testing license in Beijing.

IM Motors' vehicles with L^3 capabilities have received a highway/expressway autonomous driving test license in Shanghai.

Mercedes-Benz quickly became an initial recipient of Beijing's L^3 highway conditional autonomous driving test license.

Dongfeng Sharing has an autonomous driving road test license from Gansu province.

BMW-group has got a license to test their L^3 vehicles on highways and expressways in Shanghai.

WeRide's Robobus autonomous mini-bus started providing passenger journeys from Qingdao Jiaodong airport to the airport food court.

WeRide has also received permission from Singapore's Land Transport Authority to obtain a Milestone 1 unmanned vehicle public road testing license and a T1 assessment self-driving vehicle public pathway testing license.

China has approved a pilot open-road program for L^3 and L^4 intelligent connected vehicles. On 17 November 2023, China's Ministry of Industry and Information Technology, Ministry of Public Security, Ministry of Housing and Urban-Rural Development, and Ministry of Transport jointly released a notice, titled "Notice on Conducting Pilot Program for Intelligent Connected Vehicles".

Pony.ai and Toyota unveiled a cooperatively-developed electric Robotaxi concept car at 2023 CIIE.

Senior has been granted a commercial vehicle autonomous driving road test license in Tianjin.

TuSimple completed their first round of L^4 autonomous truck testing on the Tokyo-Nagoya expressway in Japan.

DiDi Autonomous Driving secured a significant investment from GAC Group.

KargoBot received a notice of permission for road testing their factory-built L^4 autonomous freight trucks in the Beijing High-level Automated Driving Demonstration Area.

Pony.ai obtained Shenzhen's first-ever demonstration application license for unmanned autonomous driving services. They also obtained an autonomous heavy truck demonstration application notice from the Beijing High-level Automated Driving Demonstration Area, in collaboration with Sinotrans.

Baidu's Robotaxi service Apollo Go got permission to conduct paid unmanned Robotaxi trial service to the public in Beijing.

General Motors China has got an ICV (intelligent connected vehicle) road testing qualification permit in Shanghai, which allows L^4 autonomous road testing within the designated demonstration areas.

Utopilot, TuSimple, SAIC AI Lab, and Pegasus were awarded China's first batch of national autonomous driving test licenses for 15 vehicles in Shanghai's Lin-Gang Special Area.

DiDi Autonomous Driving signed a strategic cooperation and investment agreement with Valeo.

AutoX has a commercial operation permit to run their fully autonomous robotaxi pilot in Shenzhen. DiDi Autonomous Driving and Aion, GAC's NEV unit, have launched their cooperative AIDI Plan, a project to develop and mass-produce autonomous new energy vehicles, and they plan to build a joint venture.

INTERVIEW

Interview: DVN-L's Newest Advisor, Luc Bourgeois

Luc Bourgeois' passion for embedded systems and automation led him to work for 13 years in the aircraft industry at various positions at Thales, developing avionics such as flight management and guidance systems.

In 2000, he joined the Renault Group as Manager of Embedded Software and Systems control. Starting in 2012, he was the company's Expert Leader for ADAS and AD Systems.

He is also President of the SIA (French society of automotive engineers) ADAS and AD community, and is the FISITA representative to the World Forum for Harmonization of Vehicle Regulations (WP.29). And now he is DVN-Lidar's newest Senior Advisor!

DVN-L: Welcome to the team! What brought you to join us?

Luc Bourgeois: In 2021 I created Nautilus, a company that help automotive players to understand where the ADAS and AD technologies and business are going. I also lead the SIA think tank for ADAS and AD , with the participation of Renault, Stellantis, Bosch, Valeo, Continental, Michelin, AVL, UTAC, and LAB representatives.And I'm also the FISITA member towards the WP.29 regulation on DCAS (driver control assistance systems).

My first contact with DVN happened through Benazouz Bradai from Valeo. Benazouz told me about the need to reinforce the DVN lidar team. Then I had contact with Hector Fratty and Paul-Henri Matha.

Three things led me to choose to join DVN:

- Quality of the managing team: I have a very positive experience with Paul-Henri at Renault.
- Technology: lidar is clearly at stake for ADAS and AD.
- Networking: quality of the automotive network is key to succeed in the ADAS and AD systems.

DVN: How do you see DVN-Lidar today, and how do you foresee your contribution?

L.B.: I'm impressed by the worldwide DVN Lidar community. But some important legacy and disruptive automakers and tier-1s are missing, and I think we will have to convince them to join the community.

I think also that lidar technology is still foreseen by generalist automaker as research and therefore the DVN lidar topic should be extended to include sensor architecture for AD; safety of lidar-based architecture, validation of lidar-based architecture, and more.

My background is more at system level rather than technology; therefore, I foresee my contributions in helping to close the gap between the expectation of technology players and the expectation of automakers and suppliers.

DVN: What do you consider the key factors influencing the adoption rate of automotive lidar?

L.B.: The cost of the lidar technology is the main thing to consider in order to boost the adoption rate for generalist automakers. Benchmark: radar cost is less than USD $40, camera is less than $70. There is also the ease to integrate the lidar in the car, which needs to be considered, as well as the lidar packaging.

DVN: What did you learn about lidar benefits at Renault?

L.B.: Renault developed a lot of prototypes using Valeo Scala lidar, either on ZOE or specific prototypes. We found three main benefits: redundancy for the safety concept; extended ODD for some ADAS and AD functions when the camera faces performance limits, and lidar can replace radar and a lot of perception functions managed by cameras for L^1 and L^2 ADAS.

DVN: For automakers like Renault-Nissan, with a focus on family cars, how do you see a future adoption of lidar?

L.B.: Adoption of lidar for family cars is mainly a question of cost. The known road map of lidar cost, whatever the technology (mechanic, MEMS, flash) is not yet relevant for family cars. Targeted cost should be less than $50. Unfortunately, the road map for 2030 is showing higher cost than that.

DVN: For safe $L^{2+,3,4}$ systems, are cameras, radars, and lidars sufficient?

L.B.: ADAS up to L^{2+} (hands on) only need camera plus radar or lidar (at relevant cost). L^3 and L^4 need triple redundancy with camera plus radar plus lidar and also specific sensor like tire monitoring, sound monitoring, infrared camera, and connectivity with infrastructure.

The safety targets have been demonstrated only for a very restrictive ODD: L^3 up to 60 km/h on limited highways in Germany and Japan. All other configurations (L^3 high speed or L^4) are only 'prototypes' that are hitting a glass ceiling to prove the safety.

DVN: What do you think of artificial Intelligence in perception and control systems?

L.B.: Artificial Intelligence (deep learning) has been introduced step by step since 2015 in the perception function. It allows to deliver real time information for almost all the driving scene, but the safety of the information is not at the relevant level for safety critical applications. Therefore, automakers have tuned their ADAS function to avoid false positive situation which led to the appearance of false negative situations. This compromise is possible for ADAS functions because the driver is doing the safety loop. But this compromise is not applicable for AVs.

AI for control systems is a very powerful tool as long as it is not asked to manage safety critical functions. The automotive industry still has a long road map to deliver safety critical driving functions relying on AI .

DVN: For what type of ADAS function would you prefer lidar over other technologies?

L.B.: In the time being, due to the cost of the lidar, there are no candidate ADAS functions to be delivered by lidar technology. Meanwhile, lidar technology can combine specific detection capabilities of radar (real time relative speed of objects) plus camera (classification and lateral positioning) and then to replace radar plus camera configuration for ADAS such as ACC (Adaptative Cruise Control) ; AEB (Advanced Emergency Braking); LCA (Lane Centering Assist) and more.

DVN: Luc, we thank you for this interview and we are pleased to welcome you as a team colleague and promoter of lidar sensor technology!

LIDAR AND IMAGING RADAR TECHNOLOGY NEWS

Valeo Scala 3: What is a Long-range Lidar Sensor?

Building on over 12 years' automotive-grade lidar experience, Valeo's 3rd-generation Scala long range lidar sensor offers outstanding performance. It enables L^{3-4} highway and urban autonomous driving, enhancing both safety and L^{2+} functions. It builds on Valeo's substantial experience in automotive-grade lidars, including the successful 2nd-generation Scala, the key enabler for the Mercedes L^3 Traffic Jam Pilot. Valeo is the leader in automotive lidar expertise with almost 200,000 Scala units on the road. Their in-house software stack ensures optimal real-life perception, making the Scala-3 a key enabler for automakers with approved L^3 functions on the road.

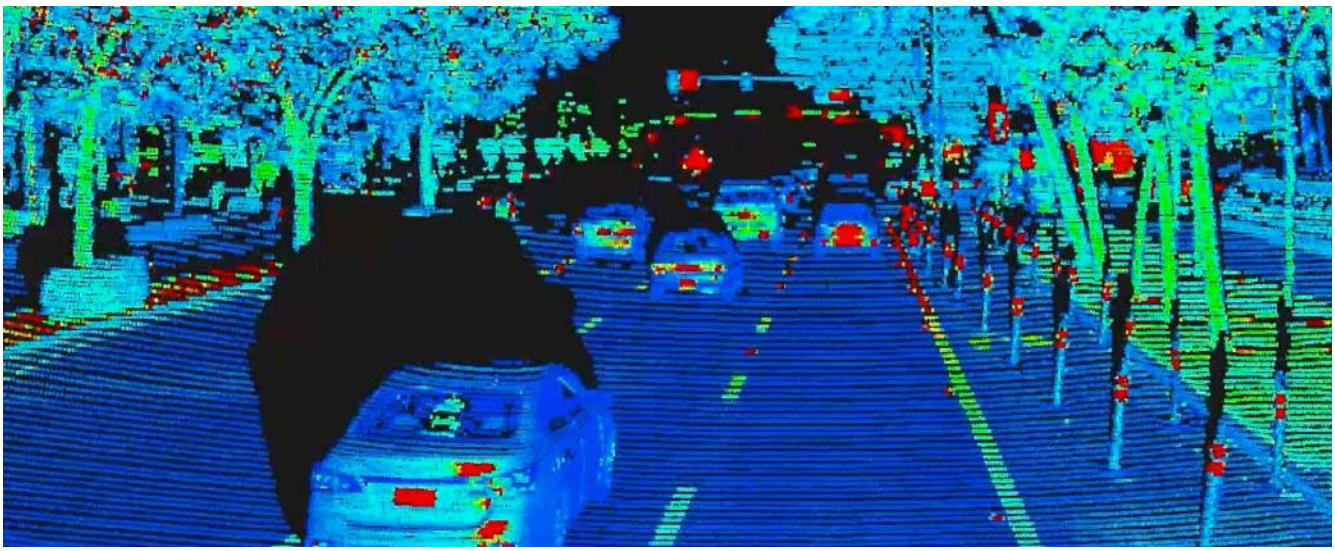
The Scala-3 offers a superior performance balance, providing excellent range-resolution and frame rate for its point cloud data. It can effectively detect and classify objects in all kinds of weather conditions. It gives the reliable small-object detection crucial for high-speed highway driving, and great lane marking detection. To guarantee performance in all conditions, Valeo has integrated lidar sensor heating and an in-house-developed cleaning system.

DVN comment

Valeo's leadership in automotive lidar expertise is evident. Their Scala-3 exemplifies the company's commitment to advancing autonomous driving technology. It delivers superior performance, versatility, and reliability in a compact design, reinforcing its position as a leader in automotive lidar innovation.

LIDAR AND IMAGING RADAR TECHNOLOGY NEWS

Seyond Says They're Ready to Meet Automotive Lidar Demand



Seyond makes image-grade lidar technology. Launched as Innovusion in 2016, they rebranded as Seyond in December 2023. They are crafting lidar solutions to elevate autonomous driving and fuel the advancement of smart infrastructure development. The company's portfolio includes products like:

• The Falcon K, the world's first automotive-grade high-performance lidar. It features more than 500-meter range with resolution of 0.05° × 0.05°. Over 200,000 Falcon units are in use, and the product remains in mass production.

• The Robin E, which features 200-meter range at 10-per-cent reflectivity with 0.1° × 0.1° resolution to ensure the perception and safety requirements of assisted driving.

• The Robin W, which offers an ultra-wide 120°W × 70°H field of view, with broader side-view detection and no blind zone.

Seyond also provides a perception service software platform called OmniVidi. It currently powers automotive and ITS solutions for the likes of Nio, Faraday Future, Exwayz, and Hexagon.

Seyond supplied 200,000 vehicle units in 2023. This established the company as the leading lidar supplier to the automotive industry, according to Yole Intelligence's Global Automotive lidar Market and Technology Report 2023.

DVN comment

In 2023, Seyond announced partnerships with companies such as Wideye, Exwayz, and D2 Traffic, fostering collaboration and knowledge exchange to optimize products and solve customer problems. The company plans to advance lidar functionality with the introduction of new product families like the Robin W, featuring a wide field of view.

LIDAR AND IMAGING RADAR TECHNOLOGY NEWS

The Spectacular Moments of VanJee Lidar at CES

At CES 2024 last January, VanJee Technology showcased a wealth of lidar products and groundbreaking C-V2X autonomous driving solutions. Their presentation comprehensively demonstrated VanJee's innovation prowess and conveyed a strong confidence in deep commitment to the global market.

Among the show-and-tell objects was the international debut of the company's WLR-740 lidar, with a real-time point cloud display area. The large screen vividly and intricately depicted pedestrians and the surroundings of the exhibition hall, attracting numerous visitors to stop and watch.

It is an automotive-grade lidar with 144-line performance, designed primarily for use in passenger vehicle advanced driver assistance scenarios. It meets the demands of mass production and offers excellent performance: detection range of 200 meters at 10-per-cent reflectivity, a 120°-wide fielf of view, and angular resolution of 0.1°H × 0.17°V. Its precision in structured design results in a compact volume of only 136 × 130 × 45mm.

Balancing safety and cost is a major challenge in autonomous driving. VanJee's C-V2X-based Vehicle-Road Coordinated Autonomous Driving Solution provides its own answer. By integrating real-time traffic information from the road, it reduces the reliance on excessive sensors and redundant data computations for individual vehicles. This cuts costs and ensures the safety of autonomous driving.

In complex intersection scenarios, traffic data collected by the intelligent base station at the intersection is transmitted in real-time (200 ms) to autonomous vehicles via C-V2X. This data includes traffic information and traffic light status, enabling vehicles to make safer decisions.

This facilitates real-time sharing of roadside information, including long-range integrated perception, intelligent intersection with comprehensive elements, and traffic light data. On the vehicle side, it integrates two VanJee 144-line lidar WLR-740 and two VanJee 64-line blind spot lidar WLR-721, achieving full coverage of vehicle perception. Through the integration of vehicle and roadside information, VanJee provides global customers with the safest and most intelligent autonomous driving solution.

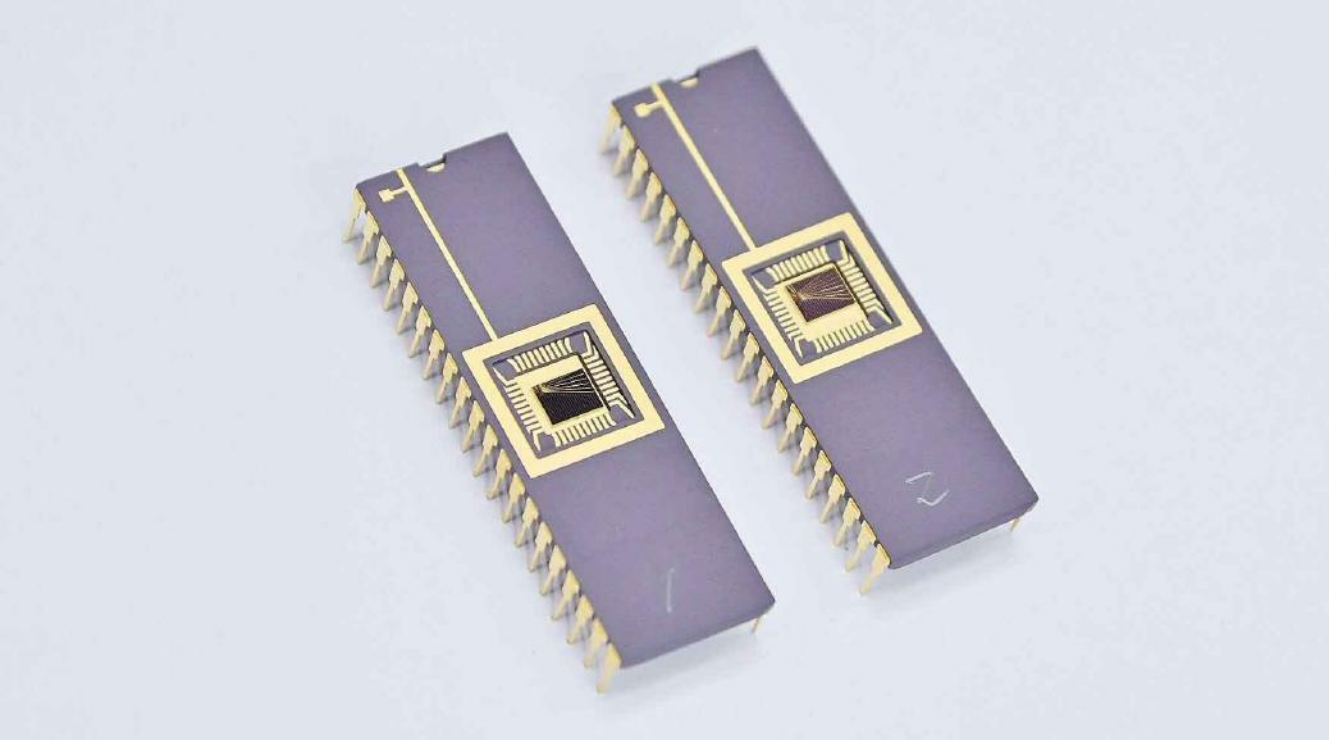
VanJee lidar has been deeply involved in the field of robotics for many years, cultivating numerous leading robot clients. At this exhibition, a prominent cleaning robot company from Singapore showcased its star robot product, R3, at VanJee booth. The 'eyes' on the front of the R3 robot are VanJee lidar WLR-716Mini. Thusly equipped, the R3 is receiving high praise from customers for both product performance and delivery completeness.

DVN comment

The approach considering lidar’s integration in C-V2X cooperative systems aims to balance safety and cost in autonomous driving, providing a more efficient and cost-effective solution. In complex intersection scenarios, traffic data is transmitted in real-time to autonomous vehicles via C-V2X, enabling safer decision-making. That is an efficient solution to reduce costs.

LIDAR AND IMAGING RADAR TECHNOLOGY NEWS

KIST Team Develops Advanced SPAD for Lidar Sensor



Lidar sensors are indispensable for the realization of advanced technologies such as advanced driver assistance systems (ADAS), autonomous driving, and AR/VR. In particular, short- and mid-range lidar used in AR/VR devices and smartphones requires better distance (depth) resolution to detect the shape of a person or object more accurately, and so a single-photon detector with better timing jitter performance is required.

The Korea Institute of Science and Technology (KIST) announced that a team led by Dr. Myung-Jae Lee at the Post-Silicon Semiconductor Institute has developed a single-photon avalanche diode (SPAD), based on a 40nm back-illuminated CMOS image sensor process, which can identify objects at the millimeter level

SPADs, which are ultra-high-performance sensor devices that can detect single photons, are extremely difficult to develop. Only Sony of Japan has successfully commercialized SPAD-based lidar based on their 90-nm back-illuminated CMOS image sensor process; they supply it to Apple.

The semiconductor chip with ultra-high-performance sensor elements was developed by Dr. Myung-Jae Lee's research team at KIST's Advanced Semiconductor Devices and Systems Laboratory (ADS Lab).

Sony's SPAD shows better efficiency than back-illuminated SPADs reported in the literature, but its timing-jitter performance of about 137 to 222ps is insufficient for user discrimination, gesture recognition, and accurate shape recognition of objects required in short- and mid-range lidar applications.

The single-photon sensor element developed by KIST has significantly improved the timing-jitter performance by more than two times to 56ps, and the distance resolution has also been improved to about 8mm, which has great potential for use as a short- and mid-range lidar sensor element. In particular, since the SPAD was developed based on the 40nm back-illuminated CMOS image sensor process, a semiconductor process for mass production, through joint research with SK hynix, it is expected to be immediately localized and commercialized.

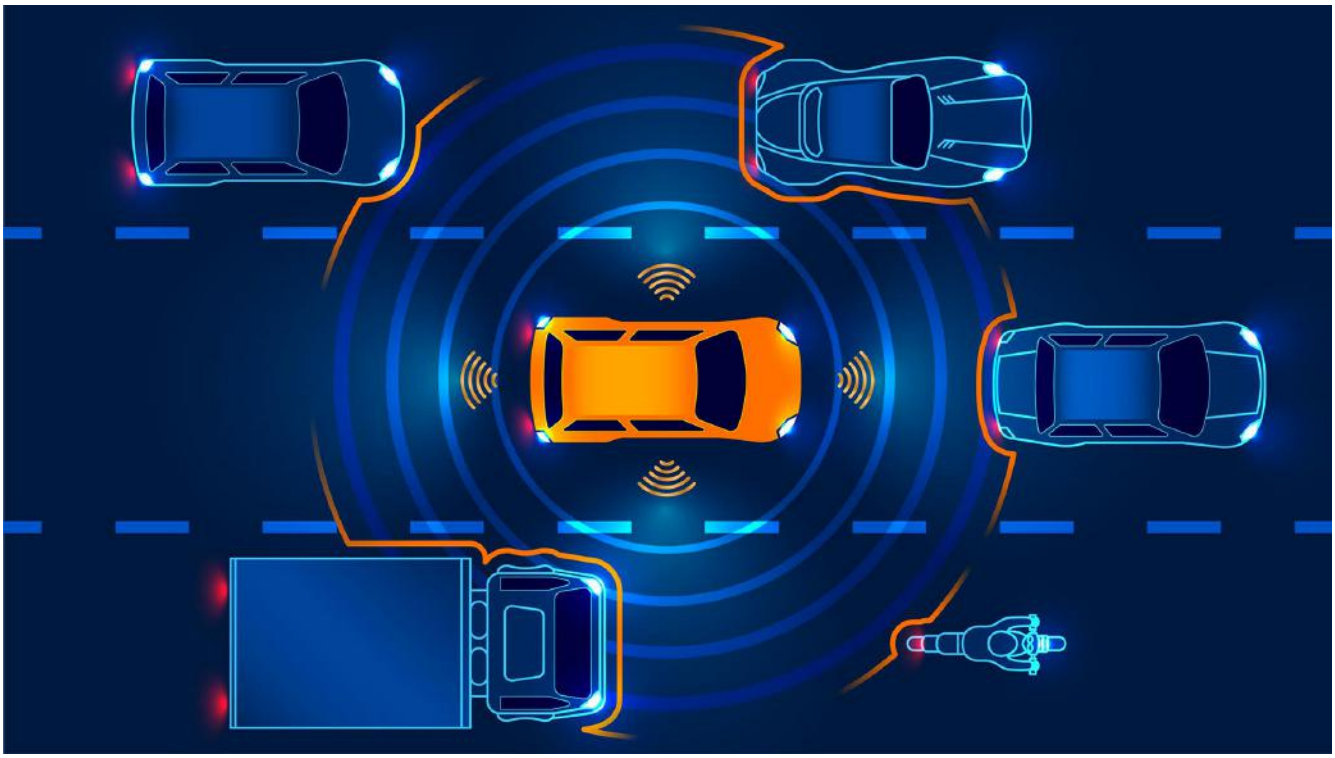
"If commercialized as a core source technology for semiconductor lidar and 3D image sensors, it will greatly enhance our competitiveness in next-generation system semiconductors, which are Korea's strategic industries," said Myung-Jae Lee, principal investigator at KIST.

DVN comment

Currently, Sony is the only company that has successfully commercialized SPAD-based lidar, but its timing-jitter performance is considered insufficient for certain applications. KIST's SPAD technology, with its improved performance, has the potential for utilization in next-generation lidar and 3D image sensors.

AUTOMATED DRIVING

AD-Newsbites



Pony.ai has launched pilot Robotaxi service between Beijing Yizhuang, Beijing Daxing international airport. Other companies such as Baidu, WeRide, and AutoX are also among the enterprises permitted to conduct Robotaxi shuttle service between Beijing Daxing and the Yizhuang area. The operational route covers both urban and expressway scenarios, spanning approximately 40 kilometers, including multiple highways.

WeRide robotaxi vehicles are now authorized to conduct passenger-carrying demonstration operations between Beijing Daxing airport and the Beijing Economic-Technological Development Area.

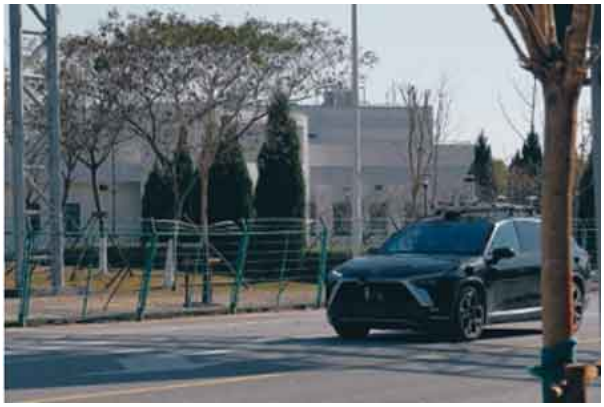
Baidu's robotaxi service platform, Apollo Go, has gained approval for demonstration of passenger-carrying Robotaxi service on the expressways to Beijing Daxing airport and certain areas within the airport. As the world's largest autonomous driving mobility service provider, as of 30 September 2023, Apollo Go had accumulated over 4.1 million ride orders. In Q3-2023 alone, Apollo Go provided 821,000 rides.

Toyota Sienna-based robotaxis equipped with Pony.ai's sixth-generation L^4 autonomous driving software and hardware has been granted permission to conduct unmanned passenger-carrying demonstration in Beijing with remote monitoring. The car has a new and upgraded multisensory solution, establishing a multi-layered redundancy mechanism.

KargoBot, the autonomous driving truck solution provider backed by DiDi, officially commenced autonomous freight operations in Xinjiang, China. As a crucial hub for comprehensive energy resources in China, Xinjiang possesses vast coal and resource-rich areas, making it a key demand center for long-haul transportation, with multiple highways carrying annual volumes in the tens of millions of tonnes.

Avatr, the NEV brand jointly backed by Changan, Huawei, and CATL, announced the Avatr 12 model's full-scale activation of urban NCA (navigation cruise assistance) intelligent driving function, which operates independently of high-precision maps. The car's high-end intelligent driving system, Huawei ADS 2.0, comes standard with 3 lidar units, enabling long-range detection.

GAC Group and OnTime will jointly launch an advanced intelligent driving mobility service this year. Last December, GAC became one of the first automotive companies to obtain an L^3 autonomous driving road testing license. In 2024, OnTime will launch GAC's L^3 AVs in Guangzhou, providing users with advanced ride-share services. Adigo Pilot can switch from L^3 autonomous driving to L^{2+} navigation-assisted driving. When road conditions allow, the system activates L^3 autonomous driving with the TJP function (traffic jam pilot).



ZF has recently secured their first L^4 autonomous driving test license in China, making them the first foreign auto parts enterprise to obtain such a permit in Shanghai. ZF will conduct open-road testing in designated areas within the city. The AD system integrates ZF's cutting-edge technologies and algorithms based on 4D millimeter-wave radar, BEV Transformer's visual + 4D millimeter-wave fusion technology, a comprehensive auto labelling toolchain, and Cubix vehicle control algorithms.

Baidu's autonomous robotaxi service, Apollo Go, received a license for intelligent connected-vehicle unmanned commercial trial in Shenzhen's Bao'an District. This milestone allows Apollo Go to initiate fully autonomous commercial operations and charge fares there, following their successful deployment in the Pingshan District. In recent years, Apollo Go has been steadily expanding its presence across various cities, currently serving Beijing, Shenzhen, Wuhan, and Chongqing with fully unmanned robotaxi fleets.

Pony.ai received an unmanned intelligent connected vehicle commercial pilot license from Shenzhen's Bao'an District. This marks the commencement of the country's first commercial operation of unmanned Robotaxis in the central urban areas of a first-tier city. Pony.ai has so far deployed unmanned Robotaxi fleets in Beijing, Shanghai, Guangzhou, and Shenzhen, initiating commercial fee-based services in these cities.

WeRide has deployed self-driving sanitation vehicles in Zhengzhou, Henan Province. The robosweepers feature L^4 autonomous driving technology, operating at speeds of 5-10 km/h during sanitation work. Currently, the Zhengzhou Economic Development Zone autonomous sanitation project covers 16 complex urban roads, totaling 21.8 kilometers.

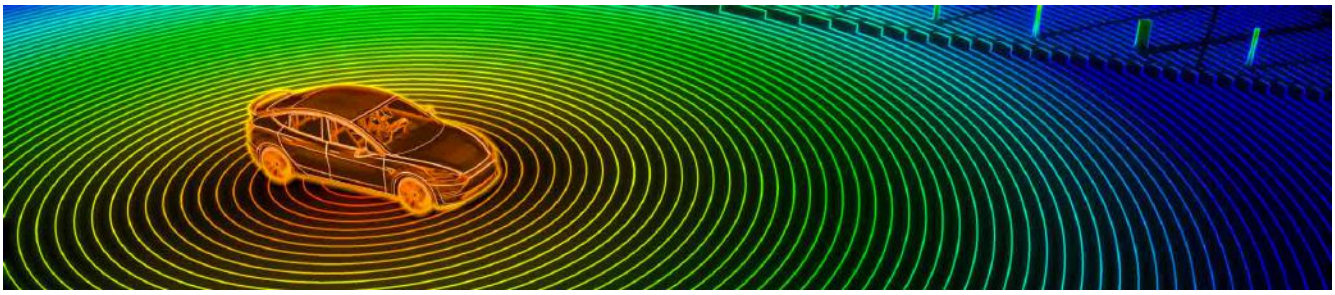
The California Public Utilities Commission has suspended Waymo's robotaxi expansion in Los Angeles and San Mateo counties for at least 120 days, pending further review. This decision, effective immediately, follows recent safety concerns linked to Waymo's autonomous vehicles— including two crashes in Phoenix, Arizona, in December 2023, and another incident involving a cyclist in San Francisco.

General Motors has significantly expanded their Super Cruise hands-free driving network, now offering around 750,000 miles of compatible roads across the United States and Canada. Over 80 per cent of users report a more relaxing driving experience, making it a top reason for their vehicle choice, Unique features include Lane Change on Demand, Automatic Lane Change, and the industry's first hands-free trailering capability. The system has accumulated a track record of over 160 million miles driven without accidents.

Benteler subsidiary Holon is on the brink of securing a multimillion-dollar investment from Tasaru Mobility Investments. This investment is aimed at acquiring a minority stake. Tasaru, a Saudi Arabian firm with a focus on automotive innovations, plans to invest a nine-digit sum, marking a strategic partnership that underscores the global confidence in Holon's innovative approach. The agreement between the two companies anticipates Tasaru obtaining up to 38 per cent of Holon, with the deal unfolding in stages—the first expected by April, pending regulatory approval.

DVN-LIDAR DEEP DIVE

DVN-Lidar Deep Dive I Docket



8 April – Evening

19:00 Cocktail & Welcome Dinner, DVN members

9 April – Full Day

08:20 Opening of the Deep Dive

08:30-09:30 SESSION 1: APPLICATIONS 1 - "Lidar for L2+ & L3 Applications"

Robosense – Felix Yang – "Navigating Urban Landscapes: Exploring LiDAR's Role in NOA"
Hesai – Tilman Gasche – Title tbd
Porsche - Tbc
Q&A

09:30-10:30 SESSION 2: TECHNOLOGY 1 - "Scanning Technologies & Solid State"

Microvision - Hanno Holzhüter, Preliminary title: " Scanning Technology Overview and position of MEMS"
Scantinel - Oliver Ramoli, Preliminary title: " Scanning by Optical Enhanced Array (OEA) "
Cepton - Henri Haefner, Preliminary title: " Scanning by Micro Motion Technology (MMT)"
Q&A

10:30-10:50 Coffee Break

10:50-11:50 WORKING GROUPS & SHARING

11:50-13:10 Lunch Break

13:10-14:00 SESSION 3 – APPLICATIONS 2 "AD Regulation Status L2+ & L3"

GRVA – Francois Guichard, " Update on recent regulatory activities at UNECE related to Automated and Connected Vehicles"
fka GmbH – Amogh Sakpal, Preliminary title : " ADAS and AV regulation "
Q&A

14:00-14:50 SESSION 3: TECHNOLOGY 2 “AV sensors & Fusion – Lidar, Radar, IR”

VALEO – A. Aaddaj El Oudrhiri, “ High-definition sensors redundancy for AV′ extended ODD”
VANJEE – Zhao ZHAI “ VANJEE Lidar+C-V2X solution to empower AD vehicles”
Q&A

14:50-15:10 Coffee Break

15:10-16:10 WORKING GROUPS & SHARING

16:10 Closure

16:15-17:45 Option 1: Ride & Drive (pending demo cars availability)

16:15-18:00 Option 2: Visit Porsche Museum