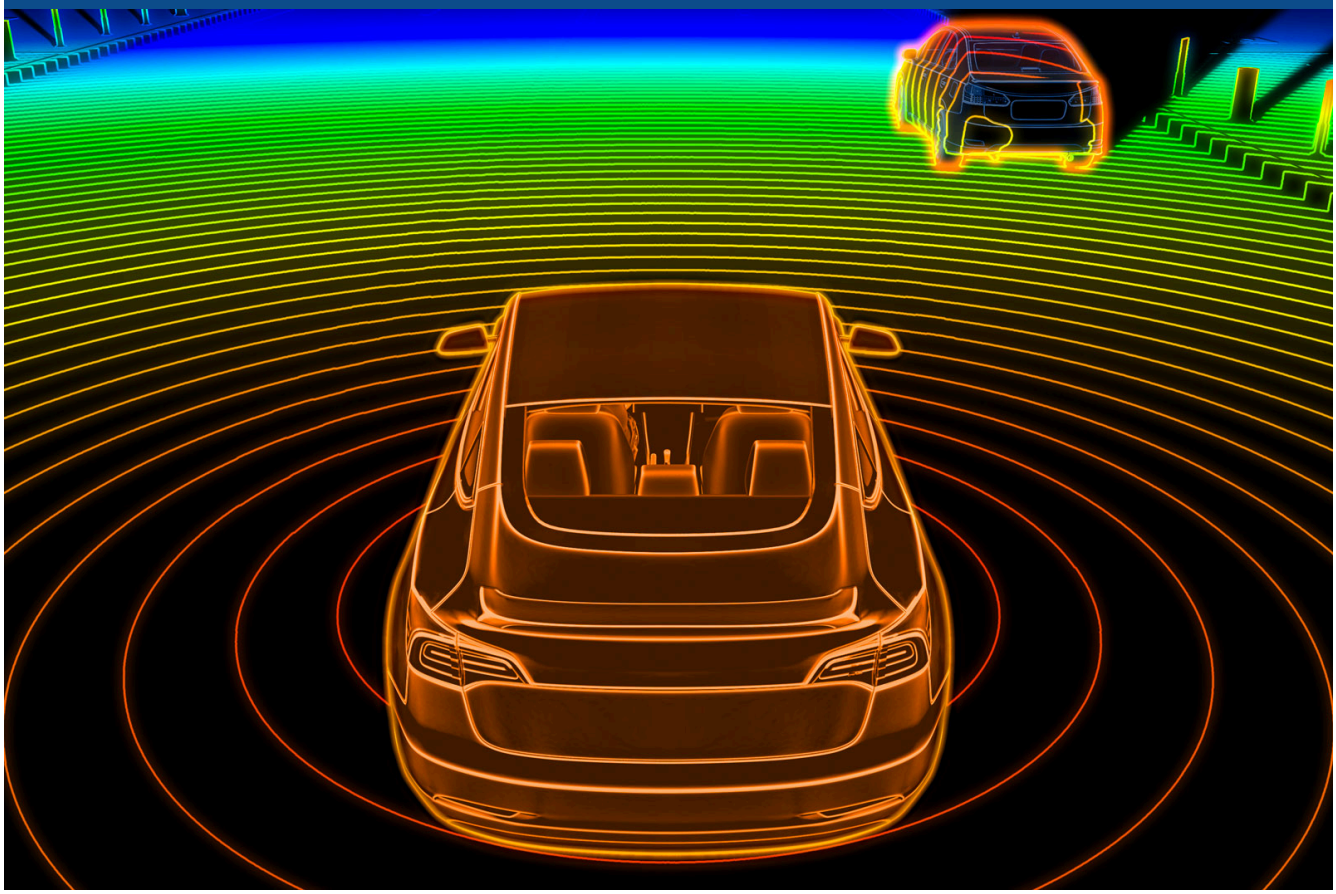
DVN
Lidar

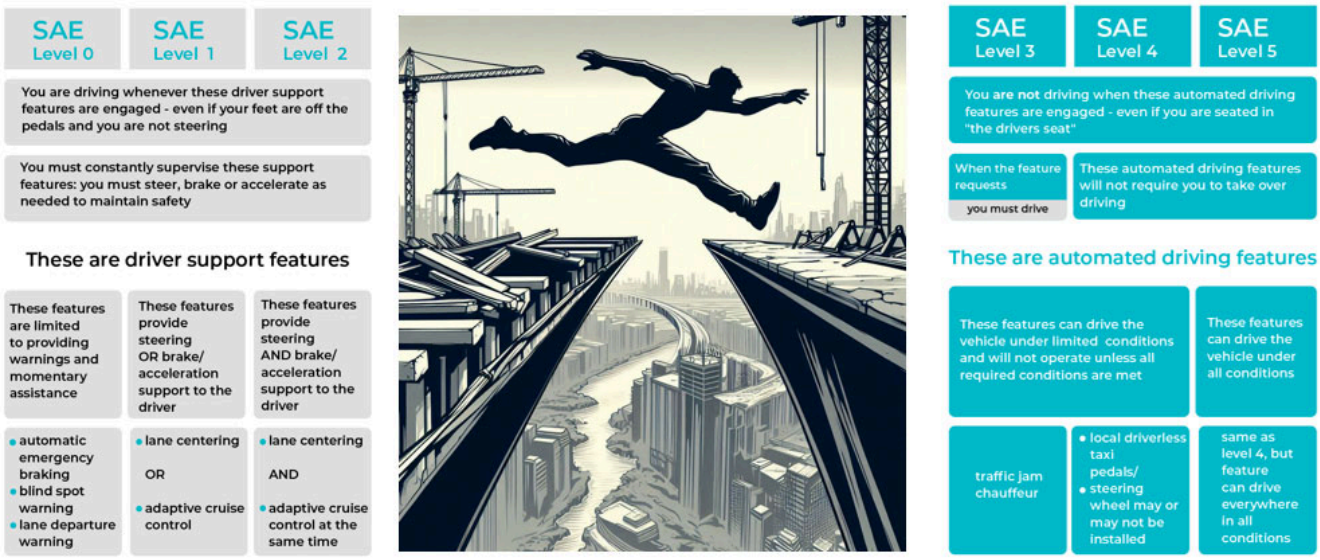
Monthly newsletter #33

DECEMBER 4, 2024



EDITORIAL

7th DVN Lidar Conference; New Scope for '25



Giant gap between L2+ and L3,4,5 applications (Innoviz graphic)

The 7th DVN Lidar Conference on 18-19 November in Wiesbaden gathered 150 people including automaker representatives, exhibitors, and 33 speakers. It was, yet again, the top ultra forum to get a clear understanding of the market and developments in automotive lidar technology.

Lidar volume growth for L^{2+} NOA (navigation on autopilot) applications in China will continue in 2025, on strength of the fast-dropping price of automotive lidars. Western automakers will have to propose similar features, at least in China, to compete with local makers there. L^3 and L^4 applications (and apposite regulations) will come later in Chinese and Western markets, on account of the massive validation work required to assure adequate safety performance.

In this edition, we bring you a special report on the competition between Huawei and Tesla for Autopilot applications in China. We've also got news related to thermal cameras and high-resolution radars being developed to meet new safety standards and support AD implementations.

In 2025, DVN Lidar will become DVN Sensing and Functions!

The scope will be extended to cover innovations in automotive sensing including lidar, but also radar, cameras. Functions will play a bigger role. There will be *two* newsletters, one for sensing and one for ADAS/AD. Watch for details in the next Newsletter. Meanwhile, here are the DVN Sensing and Functions events planned for 2025:

- AEB Workshop (US): sensing solutions for FMVSS 127 in Detroit, 9-10 April
- Lidar Tech Expo (China): co-hosted by DVN and EAC in Hangzhou, 6-8 June
- DVN Sensing Conference (Europe): NOA & Lidar in Wiesbaden, 17-18 November

We're ever so glad you're here with us in the DVN-Lidar community. Enjoy this 33rd newsletter!

All best,

Alain Servel

DVN LIDAR ADVISOR

REPORT

7th DVN Lidar Conference

The 7th annual DVN Lidar Conference was held on 18-19 November in Wiesbaden, Germany. With 150 attendees representing automakers, suppliers, and the research community; 20 exhibitors, and 30 speakers, it was—yet again!—a great success despite the current difficulties for the automotive business in Europe. The detailed DVN Report and VODs are available for all attendees, with presentation source material available to gold members. Here are some key takeaways:

- Market growth is accelerating in China, where volume will exceed 1.2 million units in 2024. The number of design wins increased from 34 in 2023 to 68 presently, and 14 vehicle models get lidar on each and every vehicle.
- This is pushed by the high take rate of NOA applications for NEVs, which has doubled in one year to 40 per cent. NOA is much easier to implement than L^3 (traffic jam/highway pilot).
- $L^{3,4,5}$ applications are not yet mature. Everybody is waiting for the first L^3 highway pilot (130 km/h) launch, which should happen in 2027. Even so, the huge development and validation effort required to launch these applications means we should not expect significant volume in this decade. Robotaxis, shuttles, and logistics vehicles are also maturing auto-lidar applications.
- Market growth is also pushed by a steep price reduction curve. The $200 lidar price (Chinese NOA specs) will be reached in 2025.
- So far, the competition with high-resolution radar has a limited impact on lidar growth in China; cheap lidars can do the job better, which helps to get short development and validation time. A few car models are being built with vision-only systems in the D segment, but with more limited features.
- Lidar integration is growing easier. Bumper and rooftop integration are already validated, and behind-the-windshield will come after some work to optimize the performance.

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Special thanks to our exhibitors, speakers, and sponsors who contributed to the conference and allowed us to have a clear view of the status and directions of the lidar technologies and market.

SPEAKERS DAY 1

KEYNOTE

FORD
Peter Zegelaar

VALEO
Antoine Lafay

SESSION 1 • LIDAR APPLICATIONS 1

MERCEDES
Konstantin Fichtner

VALEO
Clement Nouvel

HYUNDAI MOTORS
Youhoon Park

HYUNDAI MOTORS
K.C.Kweon

Wideye by AGC
Raed El Makhour

SESSION 2 • LIDAR APPLICATIONS 2

CONTINENTAL
Wolfgang Schultz

FRAUNHOFER ILT
Arnold Gillner

CEPTON
Henri Haefner

KOITO
Sakurai Kazutoschi

GRVA/UNECE
Francois Guichard

SESSION 3 • LIDAR ECOSYSTEM

SCHOTT
Maximilian Glanzer

SCHOTT
Sandra von Fintel

DEXERIALS
Ryosuke Endo

YOLE Group
Pierrick Boulay

Fka GmbH
Amogh Sapkal

SPEAKERS DAY 2

KEYNOTE

ROBOSENSE - Felix Yang

SESSION 4 • LIDAR TECHNOLOGY 1 / SENSORS

SEYOND
Leilei Shinohara

HESAI
Tilman Gasche

INNOVIZ
Nir Goren

SESSION 5 • LIDAR TECHNOLOGY 2 / MEASUREMENT & VALIDATIONS

TRIOPTICS
Dirk Seebaum

SCRAMBLUX
Mirvais Yousefi

KONRAD
Urban Claus

DEKRA
Uwe Burkhardt

SESSION 6 • LIDAR COMPONENTS

ams OSRAM
Clemens Hofmann

Suna Optoelectronics
Laurent Lengignon

RENESAS
Leonard Germic

ANSYS-OnSemi
David Auger

ANSYS-OnSemi
Colin Barry

SESSION 7 • NEW TECHNOLOGIES

PERSIVAL
Christoph Popp

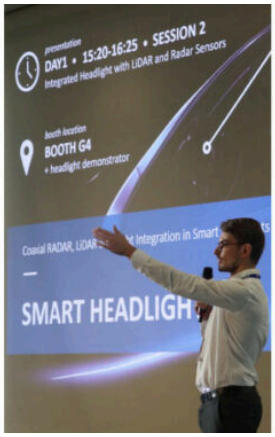
VOYANT
Chris Phare

SCANTINEL
Stanislav Aksarin

VANJEE
Zhai Zhao

Special thanks also to demonstration-vehicle exhibitors Cepton, Robosense, Seyond, Valeo, and Vueron.

Some pictures of the conference and exhibition:




OPERATIONAL DESIGN DOMAIN
PUSHING THE BOUNDARIES
3
Vehicle Speed
Traffic situation
State of the art
Driving task
Road type
Lighting condition
Road condition
Weather condition
Minimal Risk Maneuver
Valeo


DVN
7th DVN-Lidar Conference
(18-19 Nov. 2024 – Wiesbaden)
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DVN Li


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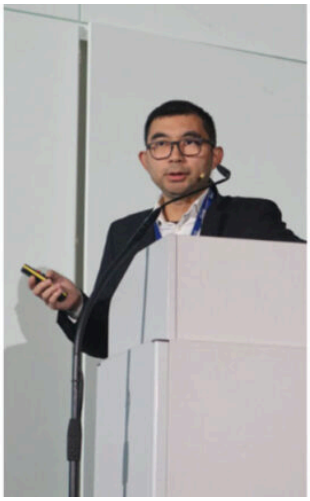
L2/
rd · L2+




SCHOTT
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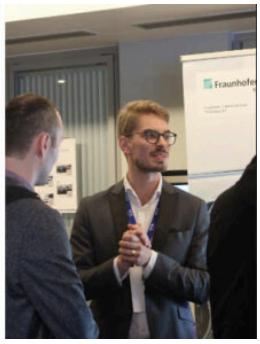
konrad
technologies
EXPERTISE IN ADAS TEST

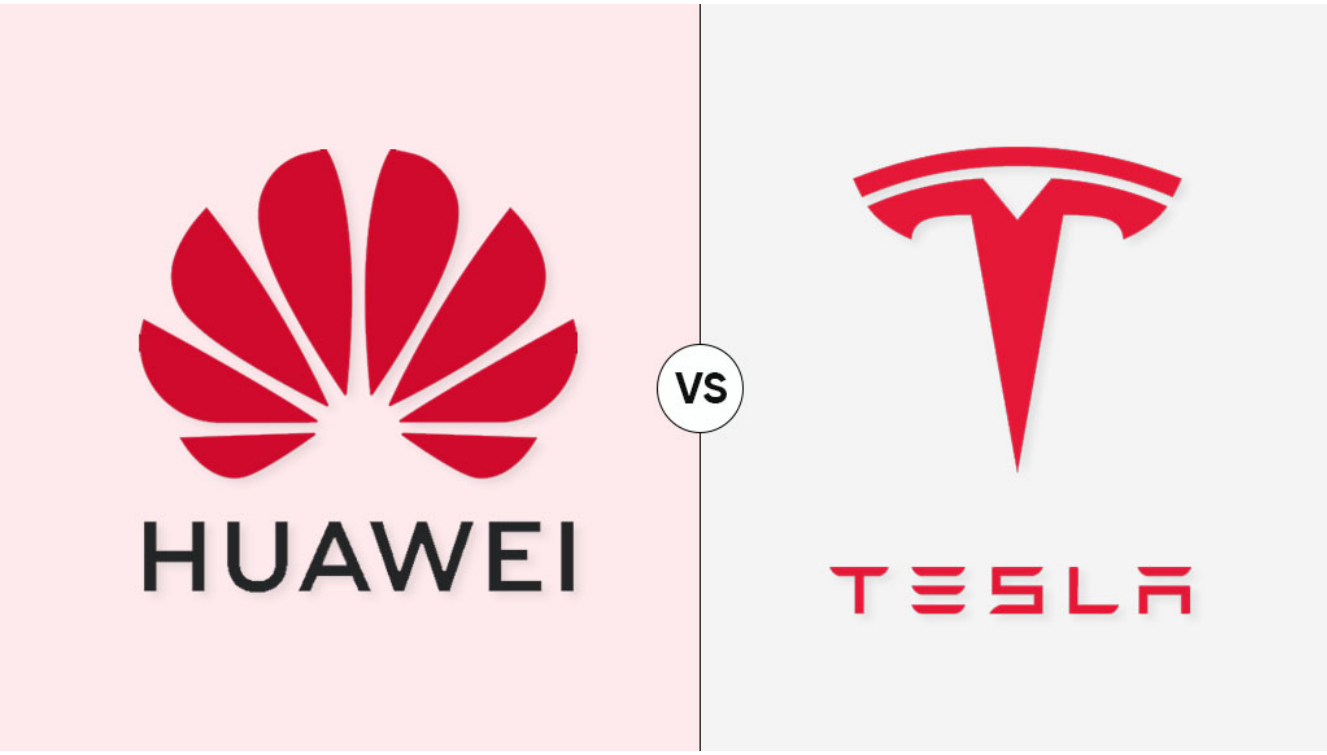

VANJEE


SUNA
Shared Platform
for Chip R&D
and


Fraunhofer

SPECIAL REPORT

DVN-Special Report: will Huawei take the lead in the self-driving tech race?



Next year, Tesla intends to enter the Chinese self-driving technology market.

Tesla's Full Self-Driving (FSD) can detect cyclists, pedestrians, cars. It can also maintain speed and distance from the car in front of you, slow down or stop at traffic lights, and more.

According to some sources, the Tesla FSD was scheduled to arrive in China by the end of this year. But it has not yet received regulatory approval. As a result, Tesla has postponed its entry until the beginning of 2025.

Tesla may face a fierce competition in Chinese self driving market: Huawei will be a strong competitor. Yu Chengdong, the chairman of the Huawei Automotive Solutions Business Group stated that

- Huawei's Intelligent Driving system ADS 3.0 can outperform Tesla with a sensor suite including Lidar. A pure camera solution without LiDAR will leave the camera blind in some cases such as in bad weather conditions.
- ADS 3.0 is not L3 yet but is designed based on L3 standards. Huawei is working with many car manufacturers

All Huawei-powered smart cars have been upgraded to ADS 3.0 in Sept. 2024

On September 10, Huawei announced that it will upgrade all the smart cars under the HarmonyOS Intelligent Driving Unit with ADS 3.0 for a better driving experience.

Huawei said the ADS 3.0 is an advanced smart car technology. While most of its rivals are still using ADS 2.0-like techs, the company has achieved the next level of driving experience already. ADS 3.0 brings smart features such as enhanced AEB/AES and Parking features. It has also added AI safety checks to keep the car functioning in most scenarios.

Adding more details, Yu Chengdong stated that all Huawei-powered smart cars under the HIMA umbrella will get the ADS 3.0 upgrade immediately. The list counts AITO M5, M7, and M9 and their variants, STELATO S9, Luxeed S7, and their versions.

With this upgrade, smart cars will be able to drive anywhere in China with confidence. ADS 3.0 is the safest driving solution so far and delivers the best experience.

Up to September 2024, the ADS 3.0-equipped smart cars have avoided more than 560.000 possible collisions. It is working in all scenarios and weather conditions.

ADS 3.0 Features

Huawei Qiankun ADS 3.0 introduces an end-to-end architecture, based on a multi-sensor fusion solution, and Huawei will continue using a Lidar in the perception system.

Lidar will allow the introduction of L3 functionalities. In Jin Yuzhi's view, some manufacturers are gradually downgrading lidar in order to reduce costs, "but we are different." We're not just going to be at L2, we're going to continue to move up to L3 and beyond, with all-weather adaptability and better detection of small targets such as tires, warning triangles and traffic cones. WE have upgraded the specifications of LiDAR and millimeter-wave radar, especially the new generation of LiDAR sensor D3P, planning stronger all-weather detection and long-distance detection capabilities".

On the basis of the previous CAS 2.0, Huawei has once again launched the omnidirectional collision avoidance CAS 3.0, which improves the ESA emergency steering assist capability. In case the AEB braking distance is insufficient, CAS 3.0 can achieve automatic emergency steering obstacle avoidance, without the need for a person to hit the steering wheel first, and lateral active safety also supports more scenarios, such as vehicles that support diagonal and traversal crossing, bicycles and electric vehicles.

Huawei 192-line LiDAR included in the high-end versions of ADS 3.0

The new LiDAR is a 905nm hybrid solid state Lidar. It has a four-sided rotating prism and offers a 120-degree horizontal by 20-degree vertical field of view with a quick scan rate of up to 20Hz.

The detection range can reach 180m@ 10% reflectivity, and the resolution is 0,10° x 0,25°.

AITO M7 Ultra solutions (Image Credits: Huawei)

ADS 3.0 Computing Power

Huawei recently launched a series of new solutions with intelligent driving as the core brand, **"Qiankun",** as well as 10 new products, including Qiankun ADS 3.0 high-end intelligent driving and Qiankun XHUD 2.0 AR navigation. The system makes the switch from BEV (bird's eye view) to a GOD (general obstacle detection) network which allows it to truly understand obstacles and scenarios like a human. In terms of computing power, Huawei mentioned, the training computing power could reach 3.5E FLOPS, the amount of training data reached 30 million kilometers per day, and the growth rate of the model had tripled in half a year, and the update speed of the model could even reach an iteration every 5 days.

Enhanced Parking Feature

T there will be no system degradation when approaching the destination or parking lot, and there is no need to take over. From public roads to park roads, either for the outdoor to the indoor parking place, intelligent driving can be realized. Jin Yuzhi particularly emphasized that there is no need to rely on the memory route to drive in the parking stage in the park.

In terms of automated parking, the "walk-and-go" function of ADS 3.0 has covered 48 commercial parking lots in 8 cities and 43 community or office parking lots in 6 cities. Jin Yuzhi said that the goal is to cover 100 commercial parking lots and 2,000 community or office parking lots by the end of the year.

A deployment over 500.000 vehicles

At the press conference, Jin Yuzhi mentioned 2024 is the first year of large-scale commercial use of intelligent driving. At the same time, more than 500,000 vehicles will be equipped with Huawei's intelligent vehicle solutions this year.

Let see the multiple models launching with the Huawei intelligent driving system

- BYD and even Audi have been included in the list of partners recently.

Huawei wants to top the flagship car market with self-driving tech (Sept. 2024)

Yu Chengdong, Executive Director, Chairman of Consumer BG, and Chairman of Smart Automotive Solutions BU said that Huawei will top the Chinese flagship car market with its self-driving technologies. The automotive chief said Huawei makes cars with several brands including Aito, BAIC, and others. He pointed out that the company has already become successful in the high-end market citing the Wenjie M9 vehicle with robust sales.

“Although the four-world cars are made by different car manufacturers, Huawei is in control of the experience and underlying technology,” said Chengdong.

Today, Huawei announced that the AITO M9 has crossed 130000 orders in 8+ months after its launch. The AITO M9 SUV has also been the winner of the 500.000 yuan and above smart car category for five months. Huawei launched the car in December last year and it is still doing great in the Chinese automobile contest.

The executive further states that AITO M9 has surpassed the total sales of its other nine competitors in the top 10 rankers in July this year. These models were BWM X5, Zeekr 009, NIO ES8, Toyota Century, Mercedes-Benz EQE, Mercedes-Benz V-Class, Mercedes-Benz E-Class, Ideal MEGA, and Volvo XC60 smart cars.

Huawei EV Stelato S9 opens pre-sales, has 800 km range and advanced 3.0 driver assistance (May 2024)

The large sedan jointly produced by Huawei and BAIC is available for pre-orders priced between 450,000 and 550,000 yuan (57,250 – 75,950 USD).

The car is designed to compete with German premium cars like the Audi A8 and Mercedes-Benz S-class but it is fully electric. The S9 will be the first car to use the Huawei's Qiankun ADS 3.0 intelligent driving system including the lidar technology and will use the HarmonyOS system.

Huawei AITO M7 Ultra SUV unveiled with upgraded smart driving solutions (June 2024)

Huawei and SERES introduced the ultimate AITO M7 Ultra SUV version. AITO is a premium brand by SERES which has partnered with Huawei to fetch the advanced and most efficient smart car solutions. Both firms have brought in many creations like M5, M7, and AITO M9 smart car models for consumers so far.

AITO firm expects a record of 20.000 units shipment of the respective within this month, starting from June 02 (tomorrow) onwards.

AITO M7 Ultra uses CDC damping shock absorbers and an upgraded ADS 2.0 solution, enhancing the overall driving and safety aspects. It uses a 192-line LiDAR for quick scanning of objects.

Huawei Voyah Dreamer MPV debuts with ADS 3.0 and LiDAR solutions (August 2024)

Voyah Automobiles has unveiled the Huawei-backed Dreamer MPV with ADS 3.0 and other solutions. It's the first Lantu model to use the Qiankun autonomous driving solution for a safer, smarter, and more convenient experience.

Another feature is an upgraded LiDAR 192 system and an improved millimeter-wave radar system. Huawei Voyah Dreamer further contains 27 smart sensing components to utilize the equipped driving solutions completely. Describing the model, Voyah said:

"The all-new Dreamer brings the dream of smart mobility into reality, saying goodbye to traditional MPVs from now on."

Avatr 07 unveiled at Chengdu Auto Show with pre-orders open (August 2024)

Avatr officially unveiled its latest model, the Avatr 07, a mid-sized SUV, expected to be priced between 250,000 to 350,000 yuan (35,250 to 49,350 USD), targeting a competitive segment in the Chinese automotive market. The Avatr 07 features both fully electric and range-extended powertrains.

The Avatr 07 also has Huawei Qiankun ADS 3.0, LiDAR, parking assistance, upgraded urban navigation capabilities, and a new collision avoidance system.

Huawei backed Luxeed R7 luanches with 802 km range (September 2024)

On September 24 the Luxeed R7 launched. Luxeed is a brand co-developed between Chery and Huawei using Huawei's Harmony Intelligent Mobility Alliance (HIMA) ecosystem. Prices for the Luxeed R7 range from 259,800 to 339,800 yuan (36,950 – 48,300 USD). The Pro version will come with the vision-based Huawei Qiankun ADS 3.0 system. Both the Max and Ultra versions add a 192-line Huawei Lidar unit to use the full Qiankun system.

The R7 is the second model from the Luxeed brand. Although an SUV coupe, its general design is similar to that of the first model, the S7 sedan. Mass deliveries Of the Max and Ultra versions are set to begin on October 15.

BYD launched Leopard 8 smart car with Huawei ADS 3.0 solution (Nov. 2024)

BYD launched its most appealing Leopard 8 car with the Huawei ADS 3.0 and HiCar. This is the first BYD car running on Huawei's advanced smart car solutions.

ADS 3.0 uses CAS 3.0 (all-directional anti-collision) technology that avoids collision with crossing pedestrians. It automatically changes the direction when detects any passer-by or object on the road or parking slot, leading to safer driving.

It also comes with auto-parking features and parks the car at an accurate place even when the driver is not inside the vehicle. Users get an efficient driving experience with the ADS 3.0 smart car solution.

BYD Leopard is available in four versions with the following price tags:

- Smart and Brave Deluxe Edition (7 seats): 379.800 yuan
- Flagship model with 6 seats: 407.800 yuan

Huawei, JAC plans to sell 35000 units of MAEXTRO cars yearly (SOP in Q1-2025)

Huawei and JAC Motors will launch their MAEXTRO brand cars in Q1 2025 and aim to ship around 35000 units yearly. The MAEXTRO smart car will cost nearly 1 million yuan ($140K). With a luxurious design and advanced smart driving solutions, the new sedan will likely give a tough fight to its rivals in the Chinese automobile market.

It seems to be a large EV that could easily excel Maybach and Rolls-Royce.

A LiDAR sensor solution is also visible on the MAEXTRO car's roof which will help with the real-time scanning of objects. It ensures the safety of the driver as well as the vehicle.

GAC Trumpchi Concept 1 – first collaboration with Huawei (SOP in Q1-2025)

GAC Trumpchi debuted its 1 Concept. It is a near-production-ready sedan and the first of three models developed in cooperation with Huawei. The subsequent two will be an SUV and an MPV.

At the 2024 Beijing Auto Show in April, GAC Trumpchi announced a joint innovation plan with Huawei to launch models equipped with Huawei's Qiankun ADS 3.0 intelligent driving system and Huawei's latest generation HarmonyOS cockpit system.

According to previously released information, the production version of the GAC Trumpchi 1 Concept should launch in the first quarter of 2025. The concept has a roof-mounted Lidar unit, suggesting that the car will use the highest-capability version of the Qiankun system. It is an NCA system that support

LIDAR BUSINESS

Lidar Business Newsbites

NEVs, YTD-Sep 2024 BEVs + PHEVs	CAR	SUV	TOT
BYD	1511	1133	2644
Tesla	270	406	676
Geely Auto	342	226	568
SAIC-GM-Wuling	315	28	343
Changan	207	149	356
Li Auto		334	334
Seres (lidar)		273	273
Cherry	91	180	271
Leapmotor	54	116	170
GWM		158	158
GAC AION (Lidar)	93		93
NIO (lidar)		87	87
XPENG (lidar)	28	53	81
FAW-Hongqi	76	6	82
Xiaomi	71		71
Start-up Brands with Lidar			534

NEVs – China Volumes
October production of NEVs stood at 1.46 million units, up 48 per cent year over year. NEVs had a total market share in China of 49.6 per cent.

In the January-October period of this year, 24.5 million vehicles were produced in China, a 1.9% rise year-on-year.

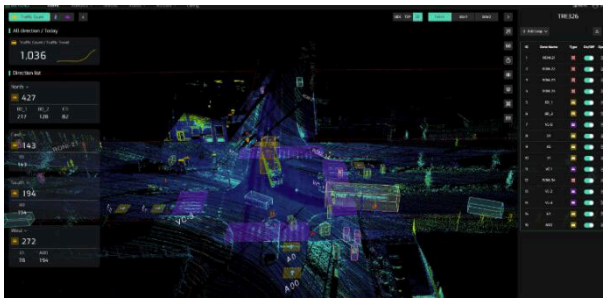
NEV startups offering lidars are growing continuously, and for the first time shipped more than 500,000 vehicles.

Hesai Q3-24 Results
Hesai Group announced their unaudited financial results for Q3, the three months ended 30 September 2024: the company launched their top-of-the-line 360° long-range OT128 lidar, and ADAS lidar shipments were 129,913 units, versus 40,593 in Q3-23. The company is on track to achieve $100m in quarterly revenue, and $20m in GAAP profit.

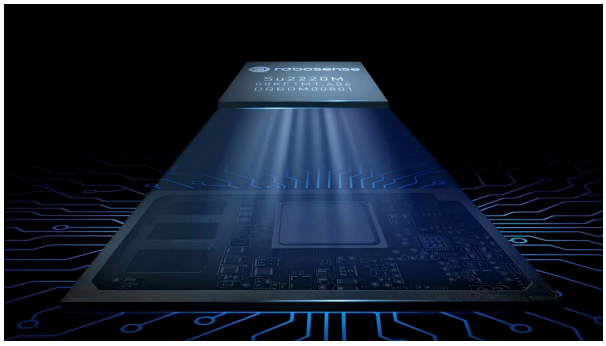
RoboSense, GAC AION Expand Lidar Partnership
RoboSense has announced expanded strategic cooperation with Chinese EV maker GAC AION. The announcement included includes several new design wins for GAC AION models. This partnership aims to enhance autonomous driving capabilities by integrating advanced RoboSense lidar technology into GAC AION's vehicles.

Flasheye

Opsys, Flasheye Partner for Lidar Volume
Solid-state scanning lidar leader Opsys has partnered with perception software specialist Flasheye to accelerate the widespread adoption of lidar in volume markets. This partnership will initially focus on intelligent transport systems to improve safety and efficiency.



Seyond, Normivalaistus Partner for Lidar-Driven Traffic Management
Lidar supplier Seyond and infrastructure-deployment specialists Normivalaistus are working in partnership to deliver cost-effective, reliable detection for intersection actuation, making advanced traffic management accessible to cities of all sizes. This partnership lays the foundation for a smarter and safer future by combining the cutting-edge Seyond ITS Management Platform (SIMPL) with Normivalaistus' deep expertise in infrastructure deployment.



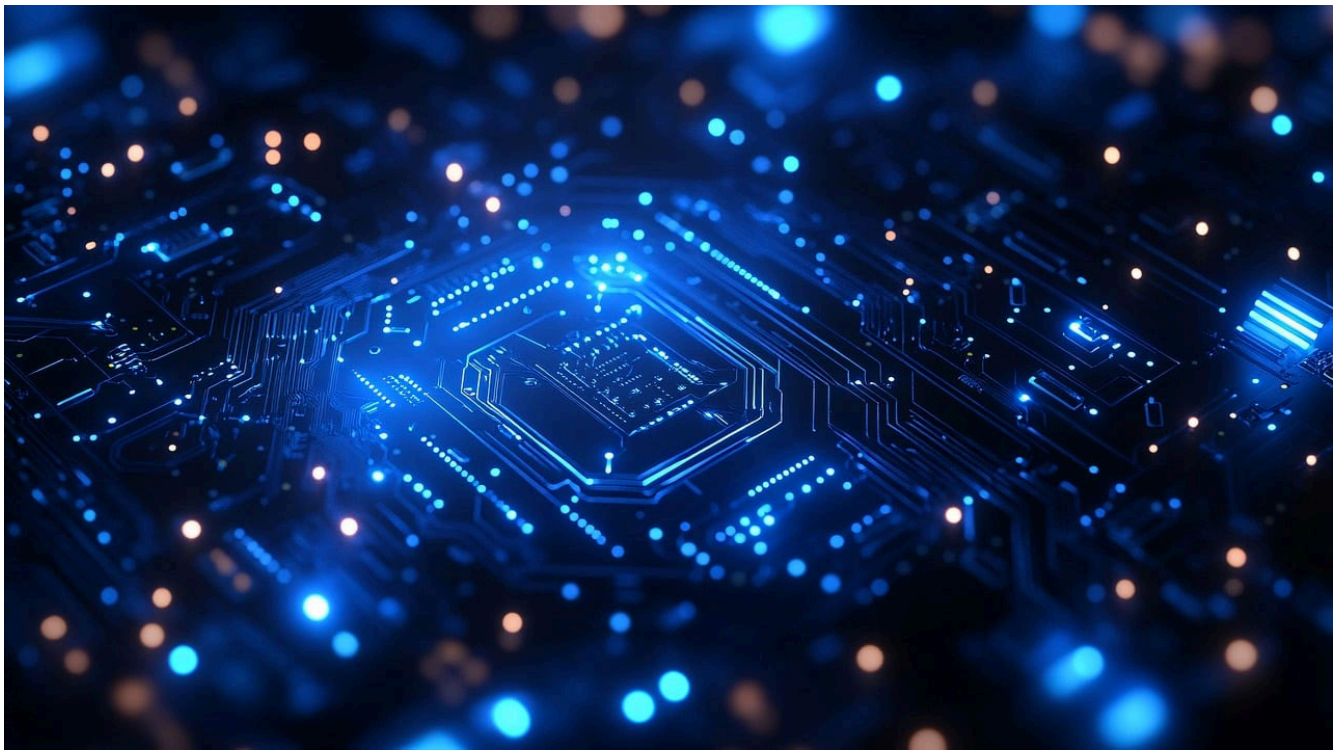
RoboSense Lidar-Specific SoC Gets AEC-Q100 Certification
RoboSense's M-Core SoC has received the AEC-Q100 automotive-grade reliability certification—making it the first lidar-specific SoC to achieve this standard. The M-Core-enabled MX lidar is expected to enter mass production in early 2025. It integrates essential lidar components—laser emission control, signal processing, MEMS management, and DDR chip—into a single unit, improving data processing capabilities and precision while halving circuit board size.

Subaru Specs Onsemi Hyperlux Sensors
Subaru has selected Onsemi Hyperlux AR0823AT image sensors for the automaker's new EyeSight 'AI-integrated' stereo camera system. The Hyperlux sensors will improve safety by improving driver assistance technology. Subaru and Onsemi's partnership aims to create safer driving environments and achieve zero fatal road accidents by 2030.

Dexerials Buys Into SemsoTec Group
Dexerials develops, makes, and distributes electronic parts, adhesive and optical materials, and other functional materials for the likes of smartphones, laptops, and automobiles. The company has newly invested and begun a capital and business alliance with SemsoTec, a corporate group centered around the German automotive design house SemsoTec Holding. This alliance is aimed at establishing a stronger partnership and increasing business collaboration.

LIDAR AND IMAGING RADAR TECHNOLOGY NEWS

Indie's Advanced Optical Component Integration



Indie Semiconductor has broadened its photonics portfolio by adding internal capabilities for system testing, packaging, and photonics integration. By combining a class-leading optical component portfolio from the company's previous acquisitions of TeraXion and Exalos with advanced in-house automated assembly, packaging, and optical test capabilities, Indie can now offer customers comprehensive photonics subsystems for rapid solution evaluation, pre-production validation, and low-volume production. This strategic capability is crucial for developing automotive and mobility applications such as ADAS sensing, head-up displays, gyroscopes, and adjacent industrial segments that demand levels of precision, quality, and reliability similar to the automotive sector.

In 2023, the market for optical components in the automotive segment was estimated at $6.5bn by S&P Global Mobility. This figure is projected to rise to $9.2bn by 2030. The integration of discrete optical components—lasers, superluminescent emitting diodes (SLEDs), photodiodes, and gratings—into photonic subsystems provides substantial additional value by enabling system integrators and automakers to deploy optics-enabled capabilities into their end-user applications swiftly and efficiently, resulting in significantly simplified supply chain logistics and increased reliability.

Through organic growth and strategic acquisitions, Indie Semiconductor has assembled a portfolio of high-quality optical components. The company has received requests from key customers to address challenges related to component integration, reliability, and supply chain logistics by providing comprehensive photonics subsystems, in addition to innovative optical components. A diverse customer and segment base will benefit from indie's turnkey photonic design, integration, and full-system test capability, which will facilitate time-to-market and commercial deployment opportunities.

Indie Semiconductor is currently developing commercial photonics integration solutions for customers, with initial production deployments expected in the first half of 2025.

DVN comment

Making lidar systems more affordable and lightweight requires tighter integration of optical components and higher volume manufacturing. For example, integrated photonics can address solid state scanning through optical phased arrays (OPAs). OPAs split a tuneable laser's output into multiple channels, apply different time delays to each channel, and then recombine them. This process steers the light beam from a semiconductor chip at various angles with fewer secondary beams and no moving parts.

LIDAR AND IMAGING RADAR TECHNOLOGY NEWS

Innoscience's New GaN Devices for Automotive Lidar

Innoscience Technology has two new 100V automotive-grade GaN devices: the INN100W135A-Q (RDS(on),max = 13.5 mΩ) and the compact INN100W800A-Q (RDS(on),max = 80 mΩ). Both have received AEC-Q101 certification, and are optimized for automotive applications such as lidar, DC-DC converters, and Class-D audio systems.

These devices, featuring WLCSP packages measuring 2.13 × 1.63 mm and 0.9 × 0.9 mm respectively, provide significant advantages in terms of size and power efficiency. They support L^{2+} and L^{3} drive-assist systems with switching rates up to 13 times faster and reduced pulsewidths compared to traditional silicon solutions. These and other advancements improve identification capabilities in the 200- to 300-meter range.

Innoscience says these GaN devices address the growing market demand for efficiency and precision in driver assistance and autonomous driving technologies, effectively replacing conventional silicon in critical automotive applications. Currently available in mass production, comprehensive specifications and simulation models can be accessed on the Innoscience website, where clients may also request samples.

DVN comment

Most lidar systems use time-of-flight (ToF) depth sensing. For better detection, higher emission peak power extends range, and shorter pulsewidth improves accuracy. Autonomous vehicle lidar systems need a detection range over 200 m with less than 5 cm measurement error in short-range areas. The laser's peak power should exceed 100 W, with an ideal pulsewidth of a few nanoseconds, determined by the laser drive circuit. Designing a high-power, narrow-pulsewidth laser drive circuit is essential. Additionally, ensuring the laser pulse is safe for human eyes is crucial.

LIDAR AND IMAGING RADAR TECHNOLOGY NEWS

Lumotive's New 3D Sensing Development Kit

The optical semiconductor specialists at Lumotive have launched their MD41 development kit. It's designed to augment the capabilities of Lumotive's open development platform, bringing advancements in 3D sensing technology with new levels of precision and adaptability.

The MD41 development kit integrates Sony sensor technology with Lumotive's Light Control Metasurface (LCM) technology; Sony's sensors provide exceptional photon detection efficiency and superior depth-sensing accuracy. Lumotive's LCM solid-state beam-steering solution eliminates the need for mechanical components, and delivers unprecedented stability and accuracy in 3D sensing. This combination enables the kit to meet the high demands of 3D sensing in real-world applications.

With the ODP's flexibility, the MD41 Development Kit enables developers to easily customize crucial components such as lasers, processors, and time-of-flight (ToF) sensors, while preserving important pre-configured features for smooth integration. This blend of modularity and built-in functionality can significantly cut development time, by reducing design cycles from 18 to just 3 to 6 months.

Compared to the MD42, the MD41 features improved depth-sensing performance by dint of Sony's sensor technology, which significantly boosts photon detection efficiency. While the MD42 offers a larger array size and higher resolution suitable for top-tier demonstrations and demanding applications, the MD41 is optimized for practical, mainstream deployment needs. These advancements give the MD41 an edge in difficult lighting conditions and improve its versatility for common uses like robotics and industrial automation.

DVN comment

Lumotive's LCM-powered digital beam steering can provide the performance of a scanning lidar sensor without the cost, size, and reliability issues of mechanical systems. This agile scanning solution could bring in in a new generation of lidar that makes high-quality 3D sensing accessible for a wider range of applications.

LIDAR AND IMAGING RADAR TECHNOLOGY NEWS

Raytron's IR Sensing Solutions

Raytron is a high-tech enterprise specializing in infrared technology. With nearly half of their employees in R&D, Raytron has filed nearly 2,100 patents. Their infrared thermal sensing and imaging technology effectively provides superior visibility in challenging conditions.

Integrating Raytron's infrared thermal sensors—such as their Horus 640-B automotive LWIR thermal imaging module—with radar and lidar allows automakers to provide vehicles with a comprehensive, high-performance, safely redundant vision system. Automakers including BYD, Geely, Dayun, and Shaanxi Automobile have built Raytron's solutions into their cars.

DVN comment

Raytron’s cameras can be effective for pedestrian detection when low beams are insufficient (which is often the case, just by the intrinsic nature of low beams). FMVSS 127 mandates that by 2029, all new passenger vehicles and trucks in the US must have AEB (automatic emergency braking) and FCW (forward collision warning), functional between 10 and 145 km/h (6 to 90 mph), must prevent collisions with stationary objects at up to 100 km/h (62 mph), and must detect pedestrians in both daylight and darkness.

LIDAR AND IMAGING RADAR TECHNOLOGY NEWS

Seek's Thermal Technology

Seek Thermal was founded in 2012 by two PhD scientists, Bill Parrish and Tim Fitzgibbons, with 40 years' combined experience advancing military and professional-grade thermal imaging technology.

Now Seek has a new readout integrated circuit (ROIC) and sensor specifically designed for the automotive industry. The sensor features integrated functional safety capabilities and high sensitivity, and is engineered to meet stringent automotive standards such as AEC-Q100 L2 and ISO 26262. This sensor is well suited to avoiding pedestrian collisions. Additionally, Seek has created automotive development cameras for testing and evaluation.

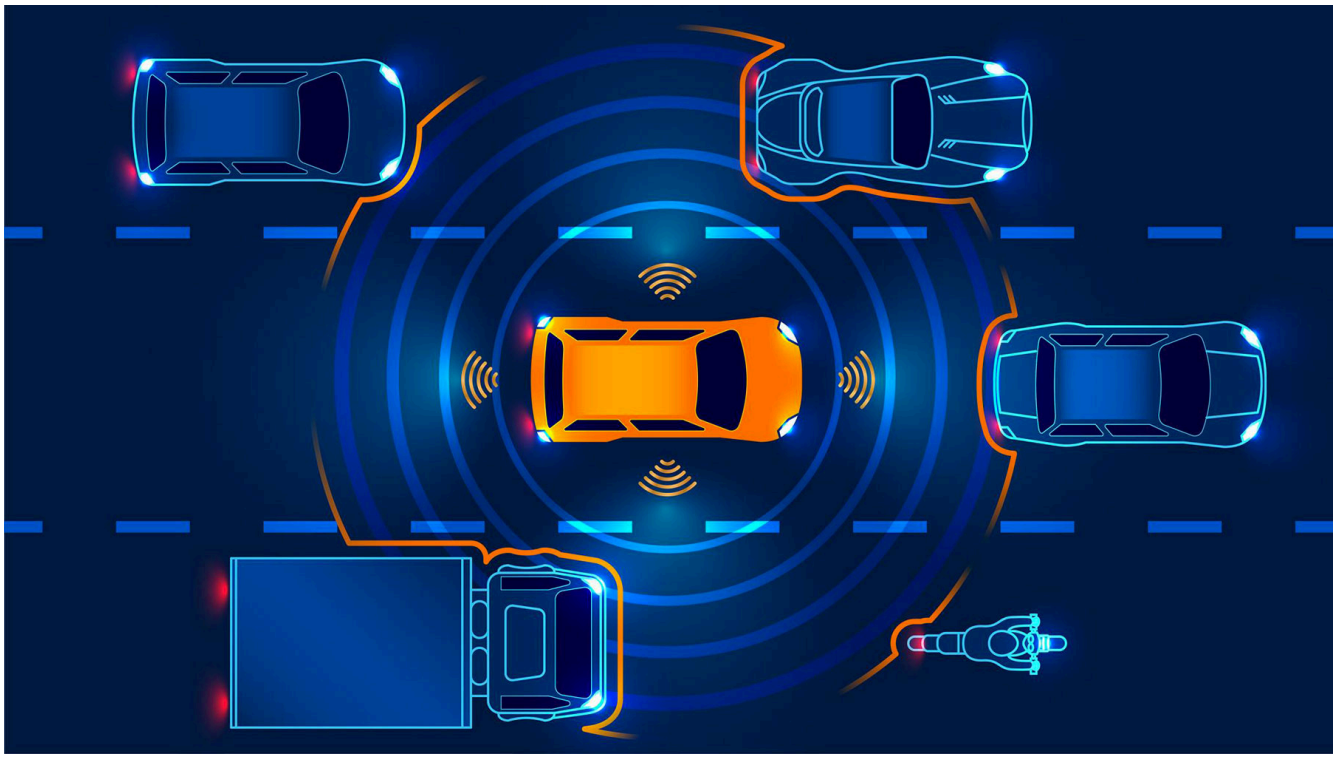
Pedestrian deaths account for a high proportion of roadway fatalities, particularly during the night. Seek's sensors detect the body heat of pedestrians in complete darkness and at extended distances, giving AEB systems what they need to prevent collisions at night or in other poorly-lit conditions.

DVN comment

Seek Thermal is a fabless designer and manufacturer of microbolometer detectors, and one of the few companies worldwide capable of creating thermal sensors. They have shipped hundreds of thousands of thermal imaging products globally, providing affordable and reliable thermal solutions to professionals and consumers at scale.

AUTOMATED DRIVING

AD Newsbites



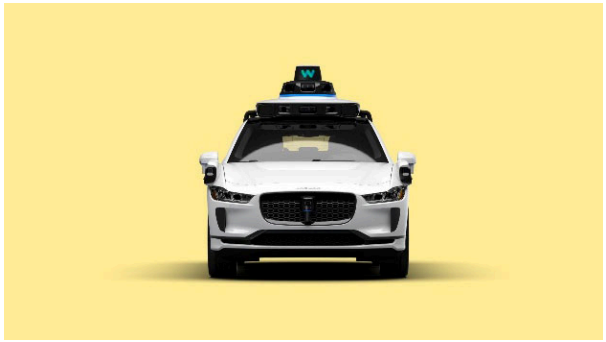
May Mobility Launches 2nd US Driverless Operation, Partners with Lyft

May Mobility has announced the launch of their second driverless operation in the United States, in Ann Arbor, Michigan. The company is working to bring commercial driverless services to both the U.S. and Japan, partnering with the likes of Toyota, NTT, and Lyft.

May Mobility also has partnered with Lyft to integrate autonomous vehicles into the Lyft platform. The companies plan to deploy in Atlanta in 2025, using May's Toyota Sienna 'Autono-MaaS' vehicles. This partnership aims to expand autonomous vehicle services across the United States, providing convenient and efficient rideshare options.

Elmo Advances Driverless Teledriving
Elmo, an Estonian company specializing in teledriving technology, has achieved official validation from the Estonian Traffic Department of their 'AI'-powered autonomous braking system. This approval enables Elmo's teledrive technology to operate without a safety driver, at higher speeds, and without area restrictions, marking a major advancement in driverless mobility.

Zoox, Williams Racing Form Alliance
Autonomous robotaxi company Zoox has entered a multiseason collaboration with Formula One team Williams Racing. This partnership aims to showcase the intersection of cutting-edge engineering and 'AI' in motorsport and autonomous mobility.



Waymo Now Open to All Residents in LA
Waymo is now accessible to all residents of Los Angeles, offering autonomous rides throughout the city at all hours. The service covers areas from Santa Monica to Hollywood Boulevard and the USC area. Waymo has noted significant interest from locals since starting commercial operations earlier this year. The company says nearly 300,000 individuals joined the waitlist, and these early users have completed numerous paid rides, with the service receiving an average rating of 4.7 out of 5 stars. Additionally, 98 per cent of surveyed riders indicated satisfaction, and 96 per cent found the service useful.

Growing Acceptance of Driverless Cars in the UK
New research reveals evolving attitudes towards driverless cars among UK road users, with 22 per cent expressing comfort in traveling with autonomous technology. Conducted by vehicle history and valuation specialists HPI, the survey polled over 2,000 adults across the UK, highlighting how factors like age, gender, and regional differences shape trust in autonomous vehicles.

Lyft, Mobileye Cooperate to Advance Autonomous Fleets

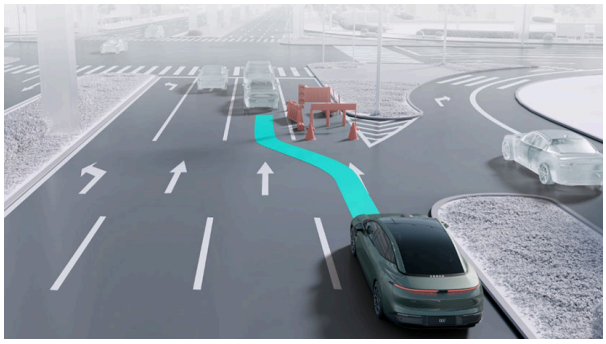
Lyft and Mobileye have announced an alliance aimed at facilitating the large-scale commercialization of autonomous vehicle services. The collaboration leverages Mobileye's self-driving technology and Lyft's transportation network to create an accessible platform for fleet operators. This partnership will help bring AVs to urban areas across North America, tapping into Lyft's extensive customer base.

Apollo Go to Test Hong Kong Market

Baidu's Apollo Go robotaxi platform is set to launch trial operations in Hong Kong, with initial testing at the airport expected to start by the end of this year. In Q3-24, Apollo Go completed 988,000 autonomous ride-hailing orders. As of 28 October 2024, the platform had completed over 8 million ride orders for the public. Fully driverless rides accounted for more than seven out of ten rides in Q3, and that figure grew to eight of ten in October.

GWM Rolls Out China-Wide NOA

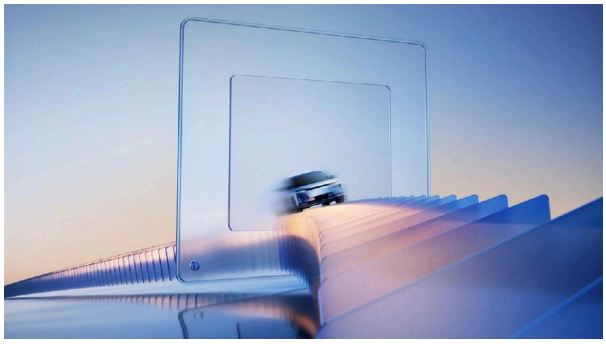
Great Wall Motor has announced nationwide availability of their all-scenario NOA (navigation on autopilot) functions in CHina. These functions, supported by over 9 million kilometers of real-world testing and 50 million kilometers of simulated testing, as well as multiple iterations, delivers seamless navigation across urban and rural areas, highways, and even narrow alleyways.



Zeekr Unveils Newest Intelligent-Drive Architecture

Geely's NEV brand Zeekr unveiled its advanced Haohan 2.0 Plus intelligent driving architecture, showcasing significant improvements in adaptive driving and obstacle avoidance. Haohan 1.0 was launched in December 2023. By the end of this past October, Haohan 2.0's HD map-free urban NZP (Navigation Zeekr Pilot) function had entered public testing, with a nationwide rollout planned before the end of this year.

The new urban NZP-commute mode allows users to set specific daily routes, which the vehicle learns and memorizes over time, enabling automatic navigation on frequently traveled paths. This HD map-free system is designed for nationwide adaptability, ideal for routine commutes across various cities without dependency on high-definition maps.



Horizon Robotics Shipments Soar

Horizon Robotics' cumulative shipments of its ADAS and high-level intelligent driving solutions Journey series products have surpassed 7 million units. Horizon has secured production contracts for over 290 vehicle models, over 130 of which are already on the market, and has formed partnerships with industry leaders such as Bosch, Continental, NavInfo, Freetech, QCraft, and PhiGent Robotics. This has led to many contracts, with multiple models expected to reach mass production by 2025.

Pony-Toyota Robotaxi to Hit Roads in '25

The bZ4X robotaxi, showcased at the CIIE, is the first vehicle introduced by the joint venture between Toyota and Pony.ai, and represents Pony's seventh-generation robotaxi model. Production preparations are underway, with a target rollout of 1,000 units in China’s major cities between 2025 and 2026, enabling fully autonomous robotaxi services.

Autonomous Trucking Breakthroughs by Bot Auto

Bot Auto has successfully completed hub-to-hub (H2H) driverless truck demonstrations in record time. In just under 3 months, the company advanced from track testing to conducting seamless H2H runs both day and night. The demonstrations began at a logistics hub in Houston, Texas, and highlight Bot Auto's rapid progress in autonomous trucking innovation.