There is a real-time perception problem inherent in moving vehicles, and centralised computing doesn't solve it. Today, powerful processors housed in a vehicle's onboard "computer farm" fuse and evaluate hundreds of billions of data points; most are deemed useless. AEye think intelligence must begin at the sensor layer, so pre-filtered information is passed to vehicle path-planning software. A car must be able to see, classify, and respond to an object, whether it be a parked car or a child crossing the street, in real time and before it's too late.

AEye think a vehicle's ability to scan the surroundings and quickly identify critical objects demands that it perceive like a person, but think like a robot. Mimicking human perception requires pushing intelligence and processing to the edge of the network, creating an integrated perception system of software extensibility, artificial intelligence, and smart, agile sensors. AEye's system architecture and algorithms are designed to emulate how the visual cortex pre-processes and customizes information sent to the brain. The system pre-fuses computer vision and 1550-nm-band lidar for intelligent data collection and rapid perception and motion planning.

AEye have also launched new AE200-series solid-state sensors for Level-3 ADAS applications. They feature an innovative software-definable intelligent agile lidar, industry-leading ADAS performance, and are SWaP-optimised for modular ADAS deployments capable of supporting all popular vehicle packaging locations.

Existing robotic sensory data acquisition systems, AEye say, have focused only on single sensor modalities: camera, lidar, or radar, dor example, and only with fixed scan patterns and intensity. Unlike humans, these systems have not learned nor have the ability to efficiently process and optimise 2D and 3D data in real time while both the sensor and detected objects are in motion. To effectively replicate the multi-dimensional sensory processing power of the human visual cortex will require a new approach to thinking about how to capture and process sensory data.

AEye's biomimetic system is called iDAR, for Intelligent Detection and Ranging. It'ss an intelligent artificial perception system that physically fuses a unique, agile lidar with a hi-resolution camera to create a new data type to biomimic the data structure of the human

visual cortex. Like the human visual cortex, the intelligence of these data is then integrated in the central perception engine and motion planning system which is the functional brain of the vehicle. They are dynamic because as they actively interrogate a scene and adjust to changing conditions, such as increasing the power level of the sensor to cut through rain, or revisiting suspect objects in the same frame to identify obstacles. Better data drives more actionable information.

AEye have entered strategic partnerships with Hella and LG Electronics. The AE200 Series will be one of the iDAR-based artificial perception systems both Hella and LG Electronics will be using to deliver ADAS solutions to global OEMs at scale.