



Press Release
11 November 2020 10:00:00 CET

OmniVision, Ambarella and Smart Eye Partner on Automotive Industry's First Combined Driver Monitoring and Videoconferencing Camera Solution

Reference design combines OmniVision's Dual-Mode Global Shutter Image Sensor for both RGB and IR imaging with Ambarella's Computer Vision Processor and Smart Eye's AI DMS Software Algorithm.

OmniVision Technologies, Inc., a leading developer of advanced digital imaging solutions, Ambarella, Inc. (NASDAQ: AMBA), an AI vision silicon company, and Smart Eye, a world leader in developing AI-powered eye, mouth and head tracking technology, today announced the automotive industry's first complete solution for dual-mode camera applications that simultaneously monitors drivers while capturing vehicle occupants for one-way videoconferencing. It features OmniVision's automotive industry-first OV2312 image sensor, with a dual-mode global shutter that captures both RGB color images and IR images under low-light conditions. These dual captures are then processed simultaneously by Ambarella's CV22AQ CVflow™ computer vision processor, which runs Smart Eye's algorithms to analyze the driver's state and alert the vehicle to any unsafe indicators, such as drowsiness. The companies worked together to integrate and fine tune this solution, which is available from OmniVision as a complete ASIL-compliant reference design, allowing automotive designers to focus on differentiating their final application while simplifying the overall design effort.

The three companies are currently in discussions with multiple automotive OEMs, covering a significant number of upcoming car models. This joint solution enables the full range of driver and cabin monitoring implementations, from safety applications to augmented reality displays and interior sensing with deep neural networks and AI. The solution's one-way videoconferencing allows remote conference participants to see those in the vehicle, while the vehicle receives only audio to reduce driver distraction.



Press Release
11 November 2020 10:00:00 CET

“Our CV22AQ offers best-in-class image processing and high-performance AI computing at low power consumption, typically below 2.5 watts,” said Fermi Wang, president and CEO of Ambarella. “While we have worked together to pretune this joint solution, designers still have the flexibility to further customize it to the needs of their specific implementations.”

“Our AI software makes it possible for automotive OEMs and tier-1s to deploy a new generation of driver and in-cabin monitoring systems with advanced AI features, increasing safety and convenience for drivers and passengers,” said Martin Krantz, CEO of Smart Eye. “This dual-mode joint solution has the unique ability to monitor the driver while simultaneously capturing images for videoconferencing, regardless of lighting conditions.”

“Our OV2312 is the only automotive image sensor that offers the combination of dual-mode RGB-IR capture and a global shutter,” said Mat Arcoleo, product marketing manager at OmniVision. “Without this combined functionality, the camera system designers would have to use two separate image sensors, which is too expensive for most vehicles. At the same time, the European Union is requiring that all automobiles have a driver monitoring system (DMS) camera by 2022, and our joint solution gives OEMs the flexibility to differentiate their vehicle features while meeting this mandate.”

The OmniVision OV2312 is a dual-mode automotive image sensor, enabling single-camera driver state monitoring and viewing applications, such as the videoconferencing capability in this reference design. It remains the automotive industry’s only RGB-IR global shutter image sensor, while offering the smallest size in its class of 2MP sensors. The OV2312 provides advanced ASIL functional safety and industry-leading near-infrared (NIR) light performance of 14% quantum efficiency at the 940nm wavelength, along with excellent modulation transfer function (MTF). Its power consumption is also industry leading, consuming just 190mW in typical conditions. The end result is that the OV2312 reduces the number of image sensors in the system, saving both power and space by eliminating the need for multiple rolling shutter sensors.

The OV2312 is the latest member of OmniVision’s automotive global shutter image sensor family. It is pin-to-pin compatible with the OV2310 and OV2311 family members, which provides designers with the flexibility to choose the best feature set for their needs.



Press Release
11 November 2020 10:00:00 CET

The Ambarella CV22AQ processor's powerful image signal pipeline, with support for OmniVision's dual-mode RGB-IR color filter arrays, enables high-accuracy detection and monitoring, even in low-light, in-cabin environments. Its high dynamic range (HDR) processing extracts maximum image detail in high-contrast scenes, further enhancing the chip's computer vision capabilities and the performance potential of Smart Eye algorithms.

Smart Eye's DMS solution offers eye tracking software for integration in passenger cars and other vehicles to facilitate better safety and other functions that improve the user experience. By studying a person's eye, face and head movements, Smart Eye's interior vehicle algorithms can draw conclusions about a person's alertness, attention and focus.

This joint reference design, including a demo board equipped with the three companies' pretuned devices and software, is expected to be available in INSERT DATE HERE from OmniVision. For more information, contact your OmniVision sales representative: www.ovt.com/contact-sales.

For more information

Smart Eye Media Contact:

Natasa Mirkovic, Smart Eye AB
Phone: +46 31-606160
Email: natasa.mirkovic@smarteye.se

Smart Eye Company Contact:

Martin Krantz, CEO Smart Eye AB
Phone: +46 70-329 26 98
Email: martin.krantz@smarteye.se

OmniVision Media Contact:

Eric Lawson, Kiterocket
Phone: +1 480.276.9572
Email: elawson@kiterocket.com



Press Release
11 November 2020 10:00:00 CET

OmniVision Company Contact:

Mengxi Liu, OmniVision Technologies, Inc.

Phone: +1 408.653.3484

Email: mengxi.liu@ovt.com

Ambarella Media Contact:

Molly McCarthy, Valley Public Relations

Email: mmccarthy@ambarella.com

Ambarella Investor Relations Contact:

Louis Gerhardy, Ambarella

Phone: +1 408 636 2310

Email: lgerhardy@ambarella.com

About Ambarella

Ambarella's products are used in a wide variety of human and computer vision applications, including video security, advanced driver assistance systems (ADAS), electronic mirror, drive recorder, driver/cabin monitoring, autonomous driving and robotic applications. Ambarella's low-power system-on-chips (SoCs) offer high-resolution video compression, advanced image processing, and powerful deep neural network processing to enable intelligent cameras to extract valuable data from high-resolution video streams. For more information, please visit www.ambarella.com.

About OmniVision

OmniVision Technologies, Inc. is a leading developer of advanced digital imaging solutions. Its award-winning CMOS imaging technology enables superior image quality in many of today's consumer and commercial applications, including mobile phones; security and surveillance; automotive; tablets, notebooks, webcams and entertainment devices; medical; and AR, VR, drones and robotics imaging systems. Find out more at www.ovt.com.

About Smart Eye

Smart Eye is leading the way towards safe and sustainable transportation. Every year, 1.2 million people lose their lives in traffic-related accidents around the world, another



Press Release
11 November 2020 10:00:00 CET

50 million are injured. Our firm belief is that science and technology can help turning this around.

For over 20 years Smart Eye has developed artificial intelligence (AI) in the form of eye tracking technology that understands, supports and predicts a person's intentions and actions. By carefully studying eye, facial and head movement, our technology can draw conclusions about a person's awareness and mental state. Our eye tracking technology is used in the next generation of cars, commercial vehicles and providing new insights for research within aerospace, aviation, neuroscience and more.

Smart Eye's solutions are used around the world by more than 700 partners and customers, including the US Air Force, NASA, BMW, Lockheed Martin, Audi, Boeing, Volvo and GM.

Visit www.smarteye.ai for more information.

Visit our investor web for more financial information: <http://www.corp.smarteye.se/en/>

Smart Eye is listed on Nasdaq First North Growth Market. Erik Penser is Certified Adviser and can be reached at +46-8-463 8000 or certifiedadviser@penser.se.

Attachments

[OmniVision, Ambarella and Smart Eye Partner on Automotive Industry's First Combined Driver Monitoring and Videoconferencing Camera Solution](#)