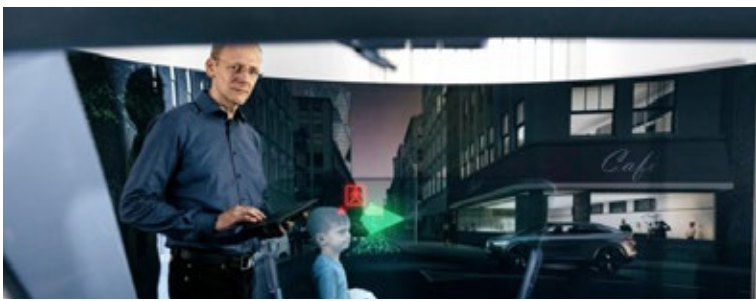
Learn more about how eye tracking plays a critical role in SeeReal 3D holographic technology for in-vehicle displays.

SeeReal + smart eye

Research Instruments

Customer testimonial

How Eye Tracking helps improve road safety by fighting driver distraction together with SeeReal's holographic 3D solutions.



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Background

Every year, distracted drivers account for about 2.5 million car crashes worldwide.
SeeReal Technologies, a design house with minority from Volkswagen, derives key know-how to make driving even safer and more convenient in the future. The company has designed a true 3D holographic system that presents information in the driver's line-of-sight. The main reasons to use such a floating Heads Up Display (HUD) are to reduce traffic accidents caused by inattention and to improve the driving experience with point of interest or navigational data. The driver will be presented with information regardless of where he or she is currently looking.

smart eye

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SeeReal needed a competent and professional partner and they chose Smart Eye. The reason being that Smart Ewye can provide an eye tracking solution (both hardware and software) that fulfills the strict requirements necessary to operate holographic 3D display applications. Smart Eye Pro provides true 3D pupil tracking with precise metric positions (X, Y + Z) with at least 2 cameras and also fulfills the requirements to be implemented in 3D holographic displays.

- Enrico Zschau Head of Software Engineering and IT at SeeReal Technologies GmbH

SeeReal

3D holographic display

smart eye

The Problem

One of the challenges to enable this technology was to exactly determine the eye pupil location in X, Y, Z space related to the holographic 3D display. This is required to provide real holographic 3D information with millimeter-precision exactly to the eye pupils. Key to that challenge are low latency and high reliability of the processing chain.

To realize their vision, SeeReal had first developed a good working custom eye tracking solution in the past, but research and development in the field of eye tracking is not SeeReal's core competence. They began their search for a competent and professional partner who could provide an eye tracking solution (both hardware and software) while also fulfilling the strict requirements to holographic 3D display applications.

The Solution

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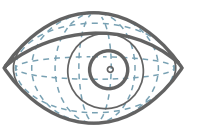
SeeReal first got experience with an earlier model of Smart Eye Pro, which they observed could do the job. The Smart Eye head and eye tracker is able to deliver both eye position and the gaze direction.

The robust Smart Eye Pro dx and Smart Eye XO systems operate with high enough accuracy and offer sufficient data availability over a substantial part of the population. No other eye tracker on the market is able to perform at this high level. Smart Eye is able to provide this unique performance because we have worked with the automotive industry for over 20 years. The eye tracking algorithms have been improved continuously, and today they work with multiple systems from Smart Eye, including the latest and newest releases.



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Though they spent time evaluating other technology providers (such as Tobii Pro), SeeReal chose the Smart Eye Pro solution because of its ability to provide true 3D pupil tracking with precise metric positions (X, Y + Z), low latency and high reliability (dropped frames). Smart Eye Pro also fulfills the requirements to be implemented in 3D holographic displays.

With these results, SeeReal was able to focus on development of holographic 3D solutions and no longer required to invest into its own eye-tracking development as the Smart Eye commercial system fulfills their needs. On the latest exhibition with a large audience, Smart Eye Pro did a great job tracking each one of the visitors trying out their holographic 3D HUD demonstrator. SeeReal's eye-tracked 3D holography enables viewers to see live action 3D holograms with all natural visual cues, incl. free eye focus, convergence and look around exactly as experienced with natural viewing in daily live.

Further development talks are in place with car integration, including smaller form factor, embedded software, and software features like auto user profile setup, automatic tracking and possibly simultaneous multi user tracking–required for other display applications in addition to automotive.

The Results

smart eye

About Smart Eye

Smart Eye is the global leader in Human Insight AI, technology that understands, supports and predicts human behavior in complex environments. Bridging the gap between humans and machines for a safe and sustainable future. Smart Eye was founded in 1999, is publicly traded and headquartered in Sweden with offices in the US, UK, Germany, Denmark, Egypt, Japan, Singapore and China. Through our Research Instruments, Smart Eye offers the world's most advanced eye tracking systems for analyzing human behavior. Offering unparalleled performance in complex environments, our carefully crafted instruments enable unparalleled insights into human behavior and human-machine interaction in automotive, aviation, assistive technology, media & marketing, behavioral science and many more fields. Today, our technology is used by NASA, Airbus, Boeing, Toyota, Daimler, Audi, GM, Harvard University and hundreds of research organizations and universities around the world. For more information visit www.smarteye.ai.