Visteon®

NEWS RELEASE

Augmented reality brings visual information to the windshield

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First shown at CES® 2017, Visteon's augmented reality (AR) demonstration vehicle combines a view of the vehicle's road ahead with audio, light and video to create a multi-modal AR experience designed to enhance a driver's awareness of the driving situation by alerting them to potential risks that would require action. This new windshield head-up display (W-HUD) application uses AR graphics to overlay road information directly in the driver's field of vision, providing an intuitive user experience that captures the dynamics of traffic participants in real time.

As vehicles become more laden with driver assist systems that will eventually lead to fully autonomous cars, AR plays a critical role in easing the amount of visual information a driver needs to process. AR can translate visual alerts into a graphically rich representation of the vehicle's environment, and display information exactly where the driver needs it – in their direct view through the windscreen – to respond quickly. In assisted driving situations, AR can also help build driver confidence in the vehicle's automated features such as collision avoidance and brake assist.

Visteon's AR head-up display (AR-HUD) concept is based on a sensor-driven approach that applies advanced data processing and sensor fusion technologies to ensure the vehicle recognizes its precise positioning and what is happening within its immediate surroundings. It goes beyond conventional W-HUD technology by projecting recommended – or automated – courses of action on the windshield as part of the real-time driving experience.

Complementing the vehicle's HUD, embedded front-view and driver monitoring cameras trigger "smart alerts" in the form of lights and sounds when the driver is not paying attention to the road, if the vehicle strays from its lane or is at risk of potentially hitting an object. For example, when a pedestrian or bicycle is present on the side of the

road, an LED light projects onto the windshield within a 90-degree angle of the driver's line of sight, giving a visual alert without the driver needing to turn his or her head.

In addition to delivering the benefits of AR, the W-HUD in the demonstration vehicle has a wide-field image, which, at 10°x4°, is about twice the size of a normal display and allows the driver to see information not usually shown in HUD systems, such as menus for multimedia and simple maps. The image is projected at 10 meters from the eyes, instead of the normal 2 meters. This is designed to place less strain on the driver and to help minimize fatigue that can occur when a driver's eyes continually shift from the windshield to the instrument cluster.