

## Augmented reality windshield from GM to show drivers potential hazards (w/ Video)

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(PhysOrg.com) -- General Motors and scientists from the University of Southern California and Carnegie Mellon University are developing a windshield display that will highlight obstacles or objects on the road to warn drivers of hazards in dark or foggy conditions.

The “enhanced vision system” also highlights road edges and landmarks, and operates in real-time. Some cars already have information displayed on the windshield or side-view mirrors, and these displays work by projecting light onto the glass.

The GM head-up [display](#) (HUD) was created by SuperImaging and uses a windshield made of a special glass coated with transparent phosphors, which are clear synthetic materials that glow red or blue when stimulated

by tiny UV laser beams bounced off mirrors bundled together near the windshield.

The system also includes three cameras to track the driver's head and eyes to determine where he or she is looking, and an array of infrared and visible sensors to identify objects outside the car, the edges of the road, vehicles in the driver's blind spot, or moving animals at the side of the road.

Laboratory Group Manager for GM's [Human Machine Interface](#) group, Thomas Seder, said the virtual image on the windshield is meant to augment the view of the real external world rather than compete with it. He said the display has been tested in simulations with a number of [drivers](#), who were found to perform better with navigation information displayed using the HUD system than with the more common head-down navigation systems. Seder said they are still researching the cognitive effects of the display to ensure it augments the information available to drivers, but does not distract them.

Seder said the system is still in the research stage and would not be seen in cars until 2016 or later, when it will probably be paired with other systems such as night vision, or automated sign reading to help reduce costs. It may also include a display of GPS directions directly on the windshield.

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