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Quantum Signal Combines Road Sign Detection with Vision-based Safety Features to Reduce Traffic Fatalities

Ann Arbor, Michigan – Approximately 40,000 traffic-related fatalities occur in the United States each year, at a cost of more than $44 billion. Passive safety components such as seat belts and air bags save tens of thousands of lives during accidents, but active safety components can actually help prevent accidents—perhaps reducing fatalities by as much as 30%.

The distracted driver is responsible for an estimated 25% of all automobile accidents. Thus an active safety system that can help mitigate driver distractions would significantly improve road safety and save thousands of lives each year. Alerting drivers to critical road signs such as Do Not Enter, One Way, Stop, Yield, and Railroad Crossing could play a key role in reducing fatalities and serious injuries. A system that can integrate this technology with lane departure warnings and headway monitoring would truly provide a next-generation safety system. Quantum Signal, an advanced engineering company specializing in image processing and simulation, has developed a state-of-the-art proprietary image processing technology called ESARR: Enhanced Situational Awareness via Road sign Recognition, and will be showing off the forward-looking vehicle safety system based on ESARR at Convergence 2010.

ESARR captures road sign images from video or still images, reads the sign text and interprets the symbols, then visually communicates the information to the driver in real-time. This system is based on a combination of advanced image processing techniques that operate robustly day and night across weather conditions. ESARR is currently being developed for defense applications and will be available to provide safety, navigation, and telematics-related information in passenger cars, trucks, and other vehicles. No other commercial system is capable of duplicating ESARR's road sign reading capabilities.

ESARR also leverages its vision-based technology to integrate several core safety components, including lane departure warnings and a real-time synthetic radar that accurately provides headway monitoring and warning. An accurate, vision-based speedometer can also provide speed compliance warnings based on permanent and temporary speed limit signs. Each of these features performs reliably across all lighting and weather conditions.

This technology uses a single, windshield-area mounted monocular grayscale camera and computing resources. It requires no additional information from the vehicle. The current version, still under development, is completely software based and runs in real time under a Java implementation on a standard, consumer-grade laptop PC. It is not tied to any particular hardware processor or dedicated architecture, and can be ported to a variety of hardware platforms and embedded systems. QS is seeking suppliers and OEMs interested in incorporating ESARR into their vehicle products!

This combination of active safety functionalities integrated into one system makes ESARR a truly revolutionary technology that can lead the automotive safety industry in new and exciting directions. For more information, please contact Dr. Mitchell Rohde, COO, Quantum Signal LLC, at rohde@quantumsignal.com or (734) 429 - 9100 x11, or visit the QS booth at Convergence 2010.