



ESARR

Enhanced Situational Awareness via Roadsign Recognition

Performs reliably across lighting and weather conditions

Very fast capture rate < 1 ms per sign

Maximum function, minimum cost: no special hardware or software platforms required

Capable of integrating with GIS data to provide location and geo-bounding



Approximately 40,000 traffic-related fatalities occur in the United States each year, at a cost of more than \$44 billion. The distracted driver is responsible for an estimated 25% of all automobile accidents.

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. And a system that can integrate this technology with lane departure warnings and headway monitoring would truly provide a next-generation safety system.

Quantum Signal has developed a state-of-the-art image processing technology called ESARR: Enhanced Situational Awareness via Road sign Recognition. ESARR captures road sign images, reads the sign text and interprets the symbols, then visually communicates the information to the driver in real-time.

ESARR also integrates 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. This system is based on a combination of advanced image processing techniques that operate robustly day and night across weather conditions.



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. ESARR 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. 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.

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Quantum Signal, LLC

Signal Processing Solutions

ESARR

Enhanced Situational Awareness via Roadsign Recognition

