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DRIVSCO 'learning vehicles' alert their drivers to dangers

By Jeff Salton

01:48 September 23, 2009 PDT

The DRIVSCO system learns from driver's good behavior and reconognizes changes in driving patterns

Scientists from six European countries have collaborated to develop a new computer system that enables vehicles to recognize their drivers' normal behavior and therefore avoid accidents caused by unusual behavior. The DRIVSCO system detects the anomalies, often caused by inattention or poor visibility, and signals an alarm that warns drivers to beware early enough to give them time to react.

The researchers say DRIVSCO goes far beyond a computer vision system for driving

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assistance, like thermal imaging, as used in other similar concepts. This system relies on the car 'learning' a driver's typical approach to a corner, curve, intersection or obstacle, regardless of their driving style (sporty or conservative) and applying that knowledge to every driving situation.

For instance, during night driving, if the vehicle detects a deviation in the driver's normal behavior when approaching a curve, it interprets this being due to a lack of visibility (as the driver has a limited visibility from his low beam headlights, whereas the car's night vision system is much more powerful and has a longer range). Therefore, the vehicle generates alarms to warn the driver of his 'unusual behavior when approaching the curve'.

Accidents at night

The scientists responsible for the project's findings state that 42 percent of fatal traffic accidents happen at night, according to the data of the European Car Council, "an extremely worrying figure if we consider that traffic drops about a 60 percent during night hours." This is due, among other factors, to the reduced visibility during night driving.

The research group of the University of Granada has developed a system of artificial vision (analysis of the scenario) in a single chip. The device receives input pictures and produces a first "interpretation of the scenario" in terms of depth (3D vision), local movement, image lines, etc. Scientists say their system can be applied to different types of vehicles in the future and it is hoped that by using 'reconfigurable hardware', the system can adapt itself to new applications.

Promising results

During the trials, a group of drivers drove using the DRIVSCO system so that the car could learn from their driving style. The car also had a differential GPS incorporated (with several centimeters of precision), which gave accurate readings of wheel turns, braking, etc, so that the researchers could check in great detail the style of driving in every case, and the performance of the system. The first tests have offered promising results and proved the usefulness of the new concept.

University of Grenada's Prof Eduardo Ros Vidal says: "we do not intend to develop automatic driving systems (as it would be very difficult for insurance agencies and car companies to come to an agreement in the event of a crash), but advanced driving assistance systems."

DRIVSCO's final goal is to avoid car accidents by keeping drivers alert.

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