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## Intelligent car learns from owner's driving, warns him in case of accident

September 22nd, 2009



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This is the screen of the DRIVSCO system. Credit: University of Granada

Scientists from six European countries have developed a new computer system called DRIVSCO that allows vehicles to learn from the behaviour of their drivers at the wheel, in such a way that they can detect if a driver presents an "unusual behaviour" in a curve or an obstacle on the road and generates signals of alarm which warn him on time to react.

Un like other similar projects, DRIVSCO goes far beyond a computer vision system for driving assistance. The concept investigated was how to get that a car learns from the user's driving facing a curve or an approaching intersection, a pedestrian or another vehicle. Regardless the type of driving of the driver, sporty or conservative (as it adapts to his driving), the system obtains a driving behaviour pattern.

Thus, during night driving, if the vehicle detects a deviation in his way of driving in face of a curve, it interprets that it is due t the lack of visibility of the driver (as the driver has a limited visibility of the low beams field, whereas the car's night vision system is much more powerful and has a longer range). Therefore, it generates signals of alarm to warn the driver of his "unusual behaviour when approaching a curve", or the detection of a potentially dangerous object, for instance.

### Accidents at night

The persons in charge of this project state that 42 per cent 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% during night hours". This is due, among other factors, to the reduced visibility during night driving.

The Spanish representation in this project fell on a research group of the Department of Computer Architecture and Technology of the [University of Granada](#) (Spain) led by professor **Eduardo Ros Vidal**. DRIVSCO also has the participation of scientists from Germany (University of Göttingen, University of Münster and the company Hella & Hueck), Denmark (University of Southern Denmark), Lithuania (University Vytautas Magnus), Belgium (Catholic University of Leuven) and Italy (University of Geneva).

The research group of the [University of Granada](#) has developed a system of artificial vision (analysis of the scenario) in an only chip. Such device receives input pictures and produces a first "interpretation of the scenario" in terms of depth (3D vision), local movement, image lines, etc, everything in an only electronic chip. This system can be assembled in different types of vehicles in future. In addition, they have used a "reconfigurable hardware", so that the system can adapt itself to new field of application.

### Promising results

During the tests, a group of drivers drove using DRIVSCO system so that the car could learn from their driving style. The car had also a differential GPS incorporated (with several centimetres of precision), detection systems of wheel turns, braking, etc, so that the research groups managed to 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 have proved the usefulness of the new concept.

Professor Ros highlights that with this project "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 and contribute to keep drivers alert, focusing their attention to the maximum.

Part of the results of this project has been published in the renowned scientific journals *IEEE Trans on Image Processing*, *IEEE Trans. on Vehicular Technology* and *IEEE Transactions on Circuits for Video Technology*.

Source: University of Granada

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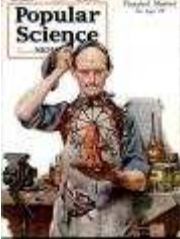
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