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New night vision system reduces car accidents

About 42% of fatal car accidents happen at night, according to the European Commission for the Automobile Industry. This figure is extremely worrying bearing in mind that there is about 60% less traffic during at night time. This is largely due to the reduced visual acuity and field of vision at night as a consequence of the illumination from the headlights — these factors are currently being studied by a group of researchers from the Department of Computer Architecture and Technology at the University of Granada.

This group created an electronic system that significantly improves driving ability at night by using information extracted automatically from night visors. Researchers are working within a European project called DRIVSCO, whose participants include researchers from different countries who work on real-time vision and its application to the car industry. The study conducted at UGR developed a microchip which, when installed in a car, makes it easier to extract the information from cameras to elements involved in driving (bends, pedestrians, cars, etc.) which may be present on the road. In other words, this system will inform drivers by means of visual, acoustic or other signs about the obstacles appearing in their way, making intelligent cars even more sophisticated than is currently the case.

Improving visibility

The researcher who carried out this study is Eduardo Ros Vidal, who explained that the aim of this chip is to support the illumination of the car, which is insufficient for ideal vision. “Dipped headlights only illuminate about 56 meters when the breaking distance at 100 km/h is about 80 meters,” says Professor Ros Vidal. The system created by his group uses two infrared cameras placed on the car which record the scene even further than the illumination of conventional headlights. Therefore, the chip extracts information about factors such as movement or depth in real time to improve the detection of specific elements and situations of interest.

Current artificial vision systems use this basic information to detect objects, pedestrians, bends etc. For instance, the system generates information about the depth of the scene in real time codifying the distance of every object — warm colours for close objects (reddish and more dangerous) and cold colours for distant objects (bluish and safer). The system also processes real-time movements, indicating the direction in which the object moves in the scene and how everything changes due to the movement of the car.

Other participants in DRIVSCO include the University of Münster (Germany), which is currently studying where drivers look when driving by using eye-tracking systems. This project is the continuation of ECOVISION, which also focused on the development of Advanced Driving Assistant Systems (ADAS), which are currently applied to high range cars and which will undoubtedly be improved thanks to the progress of DRIVSCO.

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