Smart Windscreen Display Plots the Location of Other Cars in Extreme Weather Conditions

- Researchers at Glasgow Caledonian University have developed a smart heads-up-display that can be retrofitted to motor vehicles.
- The system can alert drivers to other cars on the road in poor weather conditions

Driving in thick fog can be very unnerving and very tiring for even the most experienced of drivers. A new heads-up-display that can be retrofitted to any vehicle could reduce the strain of driving in foggy or low visibility conditions by showing the position of other cars and obstructions on a superimposed display projected onto the windscreen ahead of the driver.

Some modern vehicles do have anti-collision systems integrated into their cockpit controls however these are generally infra-red based and as such work very well in low light conditions but less well in foggy conditions where there is a high degree of infra-red absorbing moisture. Some manufacturers such as BMW and Mercedes supplement these systems with passive sonar however that has the disadvantage of providing a comparatively slow data stream to integrate with the infra-red and as such even at modest speeds the detail can become "uncertain" and as such unreliable.

The display can alert drivers to other cars in dense fog and other extreme weather conditions, used wisely and with the usual care that should be attributed to any driving aid, this could help avoid a collision.

(Photograph reproduced courtesy of Glasgow Caledonian University)

At the moment the system is purely software based, developed by Professor Vassilis Charissis and his team, based in the Virtual Reality and Simulation Laboratory of Glasgow Caledonian University however the move from functional software simulation to a practical hardware system that can be fitted to a vehicle requires little effort and time once the regulatory issues

have been overcome as the complex issues of integrating the three functional technologies of Doppler Shift Forward Looking Radar, Infra-Red Scanning and Low Frequency Sonar into a single effective technology display is the real challenge which has now been overcome.

Over 150 trials have been undertaken on the M8, M80 and M74 with effective vehicle detection demonstrated up to 400 metres ahead, (1300 feet), of the trial vehicle in what amounted to a less than fifty metre, (162 feet), visibility fog. The system has been designed to not only detect potential "threat-obstructions" but also to provide feedback regarding safe lane changing as it can determine where the lanes are by "looking" for peripheral identifiers like reflections from cats eyes and heat signatures on the tarmac, data which can then be integrated into GPS information. (To provide a degree of calibration here, at 60mph a vehicle covers 88 feet per second so that even if you were travelling at this absurd speed in a real "pea-souper" you would have around ten seconds warning of an obstruction allowing the rapid of reaction time to safely slow down).

There are no specific dates for the systems commercialization as yet though there is considerable interest from a number of motor manufacturers with retrofit systems likely to be available within the next five years.

It is clear with integrated technologies like this that the sophistication of driver aids will help make motoring less stressful and much safer as it is only a short step to automatically slowing or even stopping a vehicle fitted with such a system if the "intelligence" detected a potential collision; a marginal extension to anti-collision systems already fitted to many high tech modern cars. The day of rear end shunts as a result of poor visibility or momentary lack of attention for whatever cause could be a thing of the past.

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December 2014