Robot car to cut jams & prangs

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Robotic car technology being developed at Oxford University that interprets its surroundings and makes decisions about where to go could eliminate the agony and cost of traffic jams.

Whilst human drivers might use Global Positioning System (GPS) to find their way such systems cannot provide anything like the coverage, precision, and reliability autonomous cars need to safely navigate. GPS also fails to tell a robotic car anything about what surrounds it; its proximity to obstacles, other cars, pedestrians, or their intentions.

The new technology, which Oxford researchers have now installed on a 'Wildcat' vehicle built by BAE Systems, is set to remove the dependence on GPS, improve navigation precision, lower emissions, interpret local traffic conditions, track risks, and above all offer a hands-free

experience to the driver. All this by interpreting a flood of data from sensors such as cameras, radars, and lasers mounted on the car itself.

"Only by understanding its environment can an autonomous vehicle genuinely drive itself, safely, without the need for human intervention," said Professor Paul Newman of Oxford University's Department of Engineering Science, who is leading the research. "Our long-term aim is to enable a new generation of robotic vehicles that can make the roads safer, less congested, cleaner, and personal transport more accessible. We do this by making smarter cars.

"We need cars that do the thinking and concentrating for you, cars that do not insist you do the driving all the time. If the going is slow why can't I watch the show I missed last night, skype with the kids, read a book or send that last email and elect the car to handle the drudgery of the trip for me?"

A recent parliamentary report suggested that the overall cost of road congestion in the UK to business is likely to rise to £23-24 billion a year within the next 15 years. Whilst increasing public transport capacity may help, experts working with the Department for Transport believe that, with people unwilling to give up the independence cars provide, autonomous vehicles that make road journeys safer and more efficient could be crucial to keeping Britain moving.

Unlike industrial robots in factory and port facilities, useful autonomous cars cannot rely on embedded infrastructure, such as reflective beacons and guide wires to navigate, that are impractical, inconvenient and expensive to install and require modifying our roads and cities.

The Oxford research, supported by the Engineering and Physical Sciences Research Council (EPSRC), and in collaboration with BAE Systems and Nissan, is among the first projects in the world to tackle the big challenges of creating an autonomous vehicle that can go anywhere and deal with all the situations it might encounter on the open road. The heart of it all is the smart and swift processing of laser and camera data gathered by the car on-board the car.

"The good news is we are not doomed to a future of traffic congestion and accidents," said Professor Newman. "In the future autonomous robotic vehicles, using systems similar to those we are developing, will get us safely and efficiently from A to B whilst taking the load off their human drivers."

Provided by Oxford University