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Driving simulator aids road safety research

Curtin-Monash Accident Research Centre (C-MARC) and independent road research body ARRB Group today unveiled one of the most advanced driving simulators in the Southern Hemisphere.

Officially launched by the Deputy Premier and Minister for Road Safety in Western Australia, the Honourable Liza Harvey MLA, the simulator is housed at Curtin University's Technology Park campus.

The CKAS Mechatronics simulator will enable C-MARC and ARRB to undertake highly sophisticated driver behaviour and road infrastructure research with private sector automotive researchers from all around Australia.

Professor Lynn Meuleners, Director of C-MARC, and Dr Paul Roberts, ARRB Group Principal Behavioural Scientist, said the simulator capsule with 360-degree 'full-wrap-around' visuals contained a fully functioning Kia car, with genuine transmission, clutch, brake, accelerator and power steering systems.

"The simulator recreates the forces, loads, sounds and feel of real-world driving and will be used for road safety research such as driver distraction and autonomous driving," Professor Meuleners said.

Researchers can control and manipulate variables including the behaviour of virtual traffic and pedestrians, weather conditions, and road design.

"Drivers are exposed to hazardous situations in a systematic way in a safe environment, free of crash risk and physical harm, which is difficult to study in a natural driving environment," Professor Meuleners said.

"The simulator's program standardises drivers' experiences, meaning they can be repeated and participants can drive under exactly the same conditions.

"This is important so we can collect accurate data for a range of research projects including testing novel road layouts, assessing driver distraction from roadside advertising, as well as studying at-risk groups such as young and older drivers."

Dr Paul Roberts, ARRB Group Principal Behavioural Scientist said the simulator was already gaining attention from road authorities, transport companies and other researchers looking to investigate subjects like innovative road designs, fatigue and distraction.

"While it's impossible to truly mimic the characteristics of real-world driving, this simulator comes very close thanks to its cutting-edge audio, visual and motion technology that creates a completely immersive experience for the driver," Dr Roberts said.

"The advantage over naturalistic research for example, is the ability to study multiple drivers under multiple conditions, in a highly sensitive and controlled environment. We're able to test things like driver distraction issues in vehicles with driverless technology, for example, without needing to put the driver or car at risk, or even build the driverless car for that matter."

ARRB Group and Curtin University have jointly provided funding for the simulator and the collaboration brings together researchers from multiple disciplines, including road safety, engineering, ophthalmology, psychology, physiology and mathematics.

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