The car seats which detect when drivers are falling asleep

Car seats which detect when drivers are falling asleep at the wheel are being developed by Nottingham Trent University

Driver fatigue is a contributory factor in one in five motorway accidents Photo: Alamy

By Rhiannon Williams

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The dangers of falling asleep while driving may soon become a thing of the past with the development of car seats which can detect when a driver is beginning to nod off.

Researchers at Nottingham Trent University are set to begin how to embed an electrocardiogram (ECG) sensor system into the fabric of car seats in an effort to save lives. Driver fatigue is a contributory factor in one in five motorway accidents, according to a study by the Department for Transport.

The sensor system can be used to detect heart signals which indicate a driver is beginning to lose alertness, and trigger a warning to pull over. Should the driver choose to ignore the alerts, active cruise control or lane departure technology could be deployed to gently guide the vehicle. The information could also be sent over a wireless network to a control centre to take further action.

Professor Tilak Dias and William Hurley of the University’s Advanced Textile Research Group will collaborate with semiconductor company Plessey on the study.

The experiment marks the first time Plessey's Electric Potenial Integrated Circuit (EPIC) sensors could be used to extract electrophysiology signals in an automotive environment without direct contact with the body.

Professor Dias said: “Plessey has already demonstrated that cardiac signals can be measured unobtrusively using capacitive sensors mounted within the driver’s seat; the requirement now is to improve the consistency and reliability of the data so that it can be used for the intended purpose.

"This requires a novel approach to the design of the electrodes, and Nottingham Trent University’s knitted conductive textile technology offers the potential to produce robust electrodes that can be easily incorporated into automotive seats.”

Should the study prove successful, the team is aiming to develop the seats initially for lorry drivers, before expanding into the luxury car market.

The study has received over £88,000 of funding from the Technology Strategy Board, as part of its investment in the development of internet-enabled sensors communicating with other machines and appliances through an information network, known generally as the Internet of Things.