Drivers who become distracted due to anger or irritability may soon have range of in-car counter-measures designed to restore their attention to the road.

This is the aim of researchers at PSA Peugeot Citroën who are working on the development of a system that would play relaxing music or change lighting within the car once these negative emotions have been detected.

According to Dr. Michaël Thémans, deputy director of the TraCE - Transportation Center at EPFL in Switzerland, other interventions could include changing the olfactive environment within the car, and/or adapting the seat's position to a more relaxing mode.

Working with EPFL, the project aimed to develop computer vision-based technologies that are able to detect anger and irritability in real time with a standard camera while accounting for constraints specific to cars, such as limited on-board computational power.

In order to read a driver's emotional state EPFL's Signal Processing 5 Laboratory (LTS5) adapted a facial detection device for use in a car, using an infrared camera placed behind the steering wheel.

Irritation is often expressed differently so to simplify their task, lead researchers Hua Gao and Anil Yüce from LTS5 chose only to track anger and disgust because they're said to manifest in a similar way to irritation.

Two phases of tests were carried out: first, the system learned to identify the two emotions using a series of photos of subjects expressing them. The same exercise was then used videos. The images were taken in an office and automotive setting.

'The temporal aspects in the evolution of the expression of anger state are explicitly accounted for as we analyse video sequences from [the] on-board camera on a real-time basis,' Dr. Michaël Thémans told The Engineer via email.

The system is said to have worked well and irritation could be accurately detected in the majority of cases. EPFL said that failed tests were attributed to variability between individuals.

Additional research aims to explore updating the system in real-time – to complement the static database – a self-taught human-machine interface, or a more advanced facial monitoring algorithm, Hua Gao said in a statement.

Dr Thémans added that EPFL recently developed recently a fatigue detection system for PSA and that they've recently started another project that aims to detect other emotions and states exhibited by drivers, including distraction.