

# Blind Extraction of Microsleep Events

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## **Abstract**

The aim of this study is to detect the occurrence of microsleep events in an overnight driving task. We propose a biosignal analysis method for the detection and extraction of microsleep events. This is achieved by employing blind source extraction method based on a cascaded nonlinear estimator to extract the relevant microsleep events. The cascaded nonlinear estimator jointly estimates the kurtosis and measure the nonlinearity and noise effects within the biosignal. This proposed method was applied to the electroencephalogram and electroculogram recorded of 12 young volunteers while performing monotonic overnight driving in a real car driving simulation laboratory. The extracted microsleep signals can then be used for driving simulation pilot studies for alertness monitoring, and to trigger the activation of alertness countermeasures.