

Cognitive Event-Related Potential Waveform Latency Determination: Based on Result of Matching Pursuit Algorithm and Hilbert-Huang Transform



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According to the statistics of car accident causes [11] given by Police of the Czech Republic, about 17.5 % of all car accidents are caused by lack of dedication to driving, including microsleep. A lot of car factories develop systems for fatigue prediction and microsleep detection. These systems are usually based on eye movement tracking or steering wheel movement analysis. But both these methods detect consequences of fatigue. From road safety point of view, it would be useful to be able to detect fatigue itself before it affects dedication to driving. We know there could be a correlation between cognitive eventrelated potential (ERP) waveform latency and the rate of attention ? the longest the latency is, the more tired the measured subject is. This paper deals with determination of latency of a cognitive ERP waveform from outputs of two algorithms we use for its detection and which we have the best experience with.

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