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Proceedings of the Annual Meeting of the Cognitive Science Society

Title

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Permalink

<https://escholarship.org/uc/item/8fp7x30j>

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 31(31)

ISSN

1069-7977

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Publication Date

2009

Peer reviewed

Discrimination of the conscious and not conscious perception of famous and unknown faces from EEG oscillatory activity: Application of Support Vector Machine classifiers.

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Abstract: If the state of conscious perception appreciably modulates the levels of synchronies in several frequency bands and cerebral areas, then each one of these levels has a certain capacity of discriminating the subjects perceptual consciousness. Combination of all measurements of these multiple levels of synchronies within a compound index, must make it possible to distinguish, in an optimal way, the state of subjects conscious or not conscious perception. Such an index was searched and identified in our study by using an experimental procedure putting alternatively the subject in a situation inducing a conscious and not conscious perception of famous and unknown faces. The synchronies varied significantly between the perceived and not perceived faces, particularly in the theta, alpha and gamma bands but they were specific to the subject and the face category. Existence of an unconscious perception of facial identity was showed in spite of the realization of a face detection task.