

Von Helmholtz's missing reference signals: Do they reflect an adapting action of the cerebellum on the cerebral cortex

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The perception of visual events is the consequence of an inferential process in which the signals conveyed by the eyes are compared with our expectations. This allows the brain to filter out the unexpected and therefore particularly relevant aspects from the stream of incoming information while discarding the expected ones lacking specific information. One important class of visual expectations are those which reflect the visual consequences of eye movements whose access to awareness is prevented by the inferential process. The goal of this project is to identify the brain structures and the neuronal operations that underlie the inferential principle, using the perception of self-induced retinal image slip as a suitable model. Using single-unit electrophysiology, tract-tracing and reversible inactivations in monkey, the hypothesis will be tested, that a first crude sketch of the expectation of eye-movement induced visual motion is generated in the frontal eye field and continuously optimized by way of an intimate interaction with specific parts of the brain.

Projektbeteiligte

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