

[Presenter]

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[Title]

Investigation of Bayesian sensory-motor integration in the cerebral cortex

[Abstract]

Animals need to estimate their environment to optimize behavior. For example, when pulling a desired object closer, the load should be estimated to apply sufficient force. In animals, the estimation of environmental variables was shown to depend on both sensory input and prior experience. The statistically optimal way to combine sensory evidence with prior expectation is described with Bayes' rule.

In my experiment, I aim to shed light on how probabilistic estimations of the load can be implemented by the cerebral cortex. I used mice that performed a lever pulling task while imaging neural activity in multiple layers of the primary somatosensory area. Based on the cortical anatomy, I hypothesize that the superficial pyramidal neurons encode sensory evidence while the activity of the deep pyramidal neurons encodes prior and posterior values.