STUDENT PROJECT offered at the Institute for Neurobiology



Student project in Visual Perception in collaboration with Martin V. Butz (Professor in Cognitive Modeling, Tübingen)

Quantification and modelling of memorization demand of simple block patterns through change detection

Background. Within the scope of visual short-term memory (VSTM), there is empirical evidence about temporal and quantitative limitations concerning the information that can be stored. To probe which stimulus item or feature was represented in VSTM researchers make use of the change detection task. In such a task subjects have to compare a presented and sometimes modified stimulus with the unchanged one already stored in VSTM. The amount of effort (e.g. response time, number of stimulus repetitions, or eye movements) subjects need to detect the possible change is used as a measure of memorization demand of the particular stimulus.

In this project several parameters regarding the amount of effort in a change detection paradigm should be measured and analyzed in order to quantify and model the demand of block patterns (already used in a study to investigate acquisition vs. memorization trade-offs) concerning memorization.

Project(s).

- Learn to create psychophysical desktop experiments by the use of MatLab together with the Psychophysics Toolbox Version 3 (PTB-3).
- Measure eye movements, task performance, and error rates in a change detection task where stimulus presentations and the durations of inter-stimulusintervals are varied to manipulate memorization.
- Analyze behavioural data empirically and graphically and perform statistical tests to extract meaningful effects.

Methods. Visual psychophysics, MalLab programming of the experiment and the scripts for analysis, Eye Tracking, and statistics.

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