

## **Research Group Prof. Dr. Gregor Schöner**

The following Master project proposals are from year **2023**. They can give you an impression which kind of projects are possible in the department of *Theory of Cognitive Systems*.

### **Master Project: Online updating in sensorimotor decision making: A neural dynamic account.**

Human reaching movement directed at objects in the world may be the most elementary form of goal-directed behavior. How movement targets are selected and targeted movements are initiated has been the preferred way to study the neural basis for sensorimotor decision making (Cisek, P (2007): Cortical Mechanisms of Action Selection: The Affordance Competition Hypothesis. *Philosophical Transactions of the Royal Society of London*. B362:1585–99.). In the mouse tracking paradigm, sensorimotor decision process unfolds while a movement is ongoing. This challenges classical theories of decision making. Building on earlier neural dynamic accounts for time- and state-continuous sensory motor decision making (Erlhagen, W, & Schöner, G (2002): Dynamic Field Theory of Movement Preparation. *Psychological Review* 109: 545–72) the goal of the project is to account for online updating and the dynamics of the decision process itself. The theoretical work will be organized around the experimental paradigm of mouse tracking in a visual search task developed in our lab, in which the inner state of the decision process affects the hand's movement trajectory (Lins, J, & Schöner (2019) Computer Mouse Tracking Reveals Motor Signatures in a Cognitive Task of Spatial Language Grounding. *Attention, Perception, and Psychophysics* 81:2424-2460).

**Supervision:** Prof. Dr. Gregor Schöner, Lukas Bildheim