

## Vision Science Colloquium – External Guests

Winter Semester 2024

Time: Tuesday, 16.15 – 17.45

Location: T0-145

Organization: Werner Schneider (Neurocognitive Psychology, & CITEC, Bielefeld University)

Date	Speaker	Title	Abstract
<b>12.11.24</b> T0-145 (cancelled due to personal inability to attend, catch-up date is discussed)	<b>Soeren Kyllingsbaek</b> (University of Copenhagen, Center for Visual Cognition, Psychology and Computer Science Department)	<b>The Multiple Cue Paradigm and the Model of Intention Selection</b>	While the classic Posner cuing paradigm has been used to study cuing of a single endogenous shift of attention, we present a new multiple cue paradigm to study the competition between multiple endogenous shifts of attention. The new paradigm enables us to manipulate the number of competing attention shifts and their relative importance. In three experiments, we demonstrate that the process of selecting one among other relevant attention shifts is governed by limited capacity and biased competition. We show that the probability of performing the most optimal attention shift is influenced by the total number of attention shifts competing for execution and that reward is a determining factor for the selection between attention shifts. We explain our results with a recent mathematical model of biased selection of response sets (the Model of Intention Selection, MIS). Our new paradigm offers a critical test of MIS and is an important new tool for investigating the mechanisms underlying the retrieval of response sets from long-term memory. The model (MIS) and the new multiple cue paradigm can provide a new perspective on long-term memory representations of response sets for instrumental action and on habitual and goal-directed processing in action control.
<b>17.12.24</b> T0-145	<b>Marius Peelen</b> (Radboud Universiteit, Nijmegen)	<b>Interactions between attention and prediction in naturalistic vision</b>	Humans are highly efficient in finding objects in their structured, daily-life environments. Behavioral studies demonstrated that this efficiency is supported by expectations derived from scene context. In this talk, I will present recent neuroimaging studies that have started to reveal the neural basis of contextual influences on visual search for objects. These studies point to a central role for the object-selective visual cortex (OSC) in mediating multiple types of contextual influences. Supporting the attentional guidance by scene context, activity patterns in OSC reflect global contextual expectations about target location and represent local non-target objects that are contextually associated with the target. Preparatory activity patterns in OSC also incorporate contextual expectations about target appearance (e.g., object size) during the preparation phase of visual search. In addition to supporting attentional guidance, object representations in OSC are directly facilitated by scene context, and this facilitation is causally linked to object identification performance. Finally, activity patterns in anterior OSC integrate representations of distractor objects that are positioned according to familiar configurations, thereby reducing scene complexity. Together, these studies show how attention and expectation interactively drive preparatory activity and jointly modulate the visual processing of potential targets, providing a neural basis for the efficiency of search in scenes.