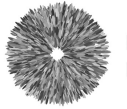


# AG PERCEPTION

Thesenvorstellung 2023

<https://www.psychologie.tu-darmstadt.de/perception/>

S1|15 141, 142



# VISUAL PERCEPTION

ine ehcsa tbe seocrd cpficr. "I beh rc  
s qenscrl-eps husiness miqbf ba." Sbc  
bar hcsk tcr tbe letter from Xiroarf D'Am  
if fc Hemilton. His e<sup>rows</sup> warf uq es h  
Ha's eomirq bcne at three c'olcok." Ncne  
cen sac, ba qcints out tbet fhana's a de  
cd tnicrb cf mirc, Frir Kcllay, arswcre

Crowded periphery

Uncrowded center

Crowded periphery



# WHO ARE WE?



Prof. Thomas Wallis, PhD  
(he/him)

Psychology



Yunyan Duan, PhD  
(she/her)

Psychology,  
Statistics,  
Linguistics



Rabea Turon, M.Sc.  
(she/her)

Cognitive Science,  
Computer Science



Swantje Mahncke, M.Sc.  
(she/her)

Cognitive Science,  
Mathematics

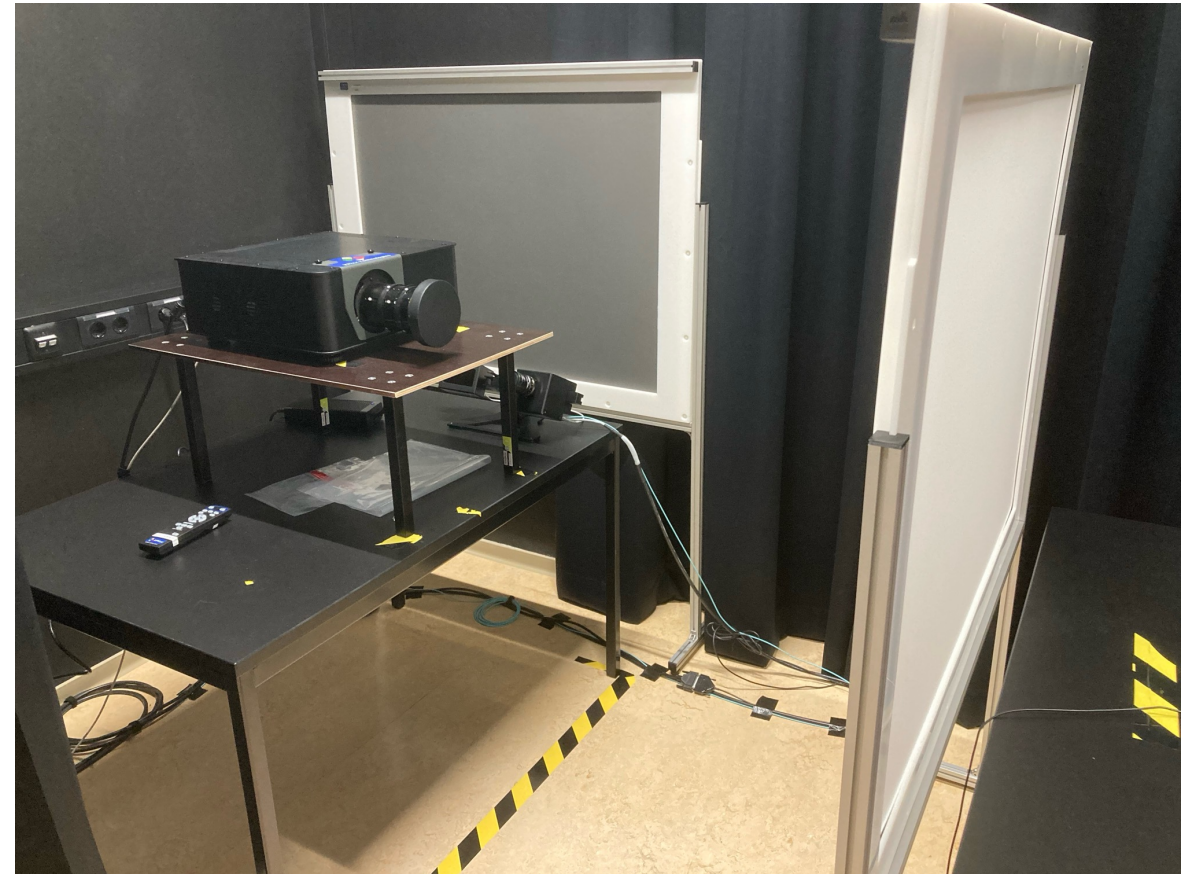


Lina Eicke-Kanani, M. Sc.  
(she/her)

Biology,  
Neuroscience

# METHODS

- Psychophysical experiments in humans
- Eyetracking
- Computational models



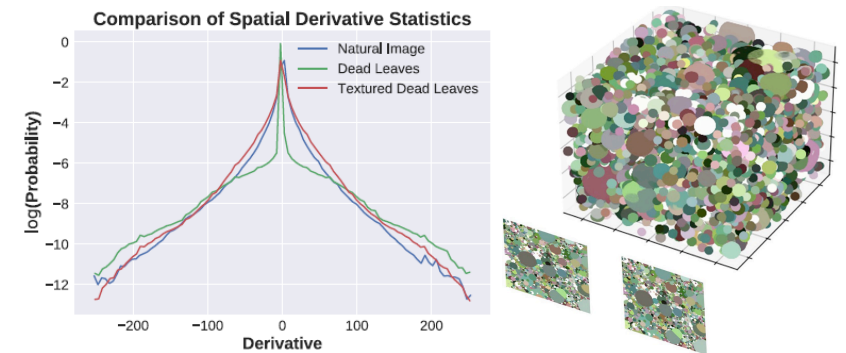
# EXAMPLE THESES TITLES

Bachelor	Master
Influence of Top-Down Scene Understanding on Sensitivity to Local Natural Image Structures	Supramodal regularities of human visual behavior
Orientation bar code structures in facial emotion recognition	A neural style transfer approach to studying scene perception
Human Similarity Judgements and their Representation in Psychological Space	Preference, expectation and tonality for short melodies



# PROJECTS: MAHNCKE

- How do scene categories perceptually overlap? (experiment)
- How well do simple generative models of scenes capture aspects of natural images? (simulation + theory)



Madhusudana, P. C., Lee, S.-J., & Sheikh, H. R. (2022). Revisiting Dead Leaves Model: Training With Synthetic Data. *IEEE Signal Processing Letters*, 29, 209–213.



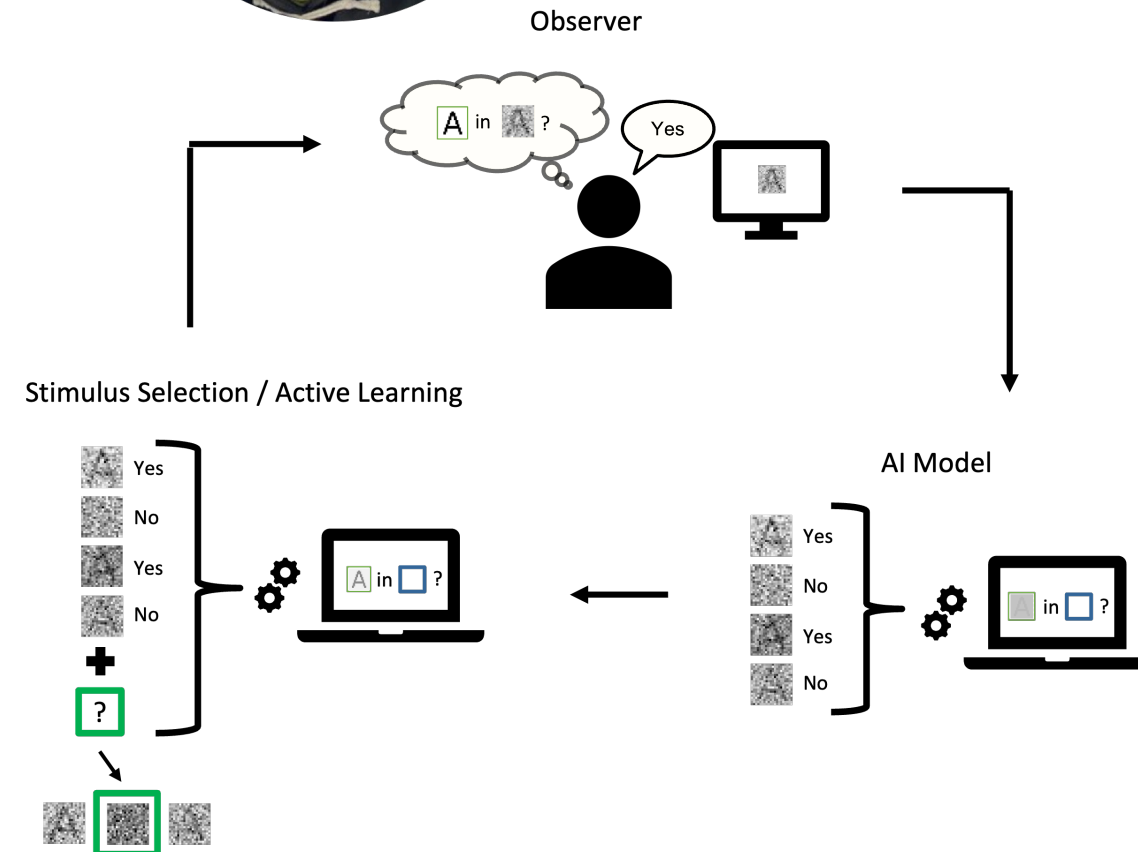
Groen, Iris I. A. / Ghebreab, Sennay / Prins, Hielke / Lamme, Victor A. F. / Scholte, H. Steven. From Image Statistics to Scene Gist: Evoked Neural Activity Reveals Transition from Low-Level Natural Image Structure to Scene Category. 2013-11. *The Journal of Neuroscience*, Vol. 33, No. 48



Kyle-Davidson, Cameron / Zhou, Elizabeth Yue / Walther, Dirk B. / Bors, Adrian G. / Evans, Karla K. Characterising and dissecting human perception of scene complexity. 2023-02. *Cognition*, Vol. 231

# PROJECTS: TURON

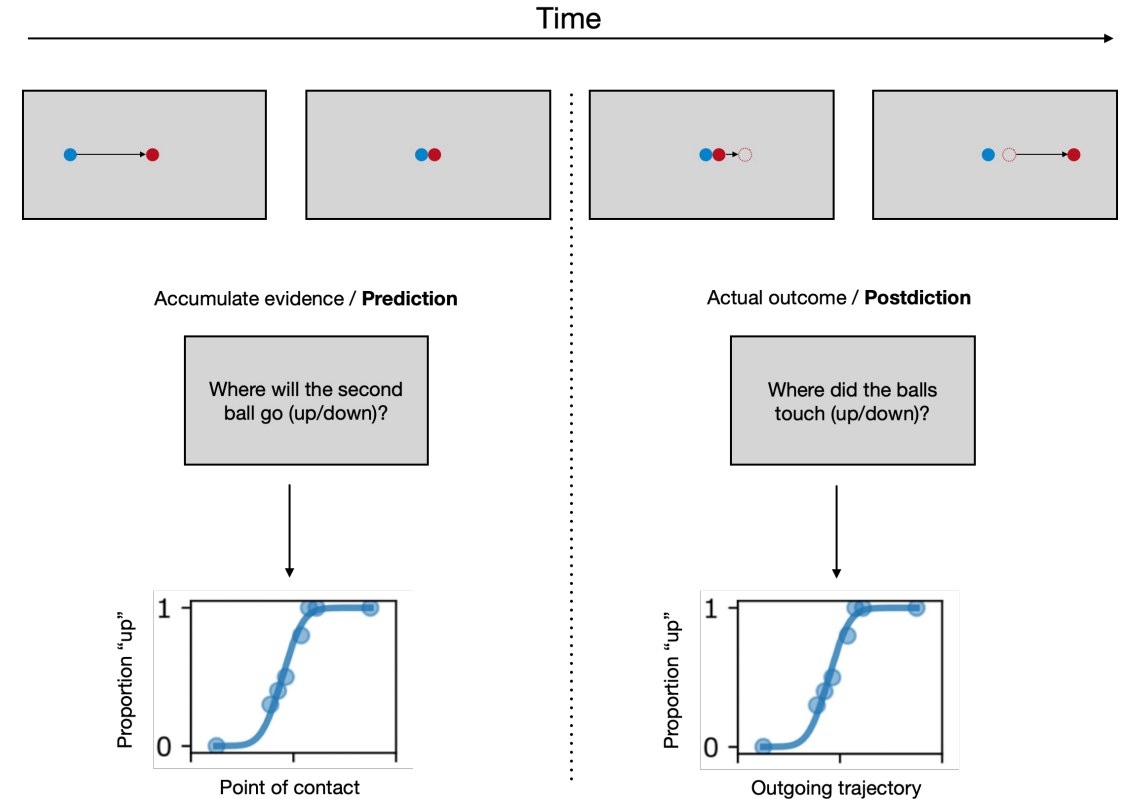
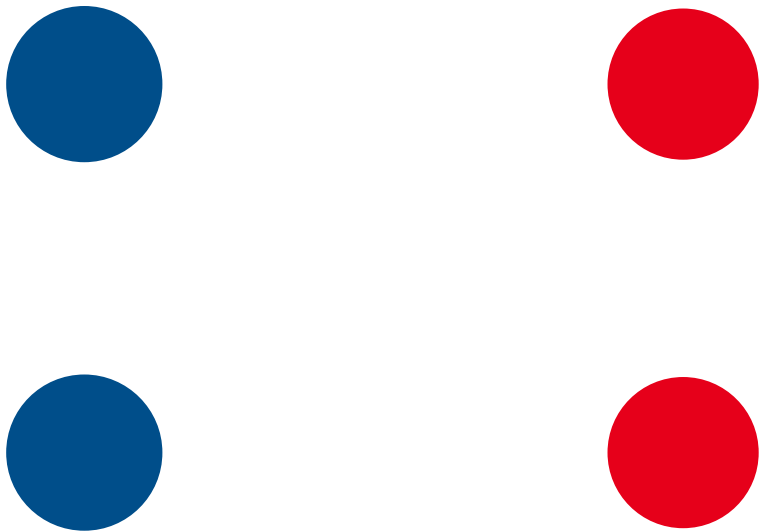
- Adaptive sampling of stimuli in high-dimensional spaces
- Under which conditions does uncertainty sampling work for adaptive experiments?
- How can sampling sequences be interpreted? How can this be visualized in higher-dimensional spaces?



# PROJECTS: EICKE-KANANI



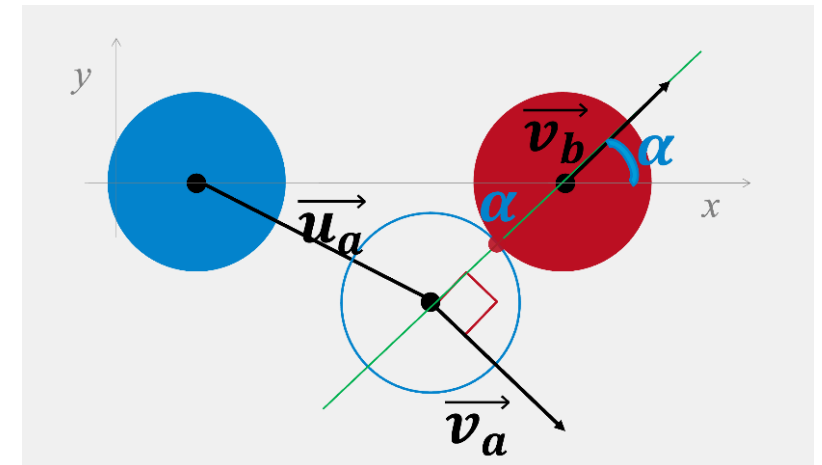
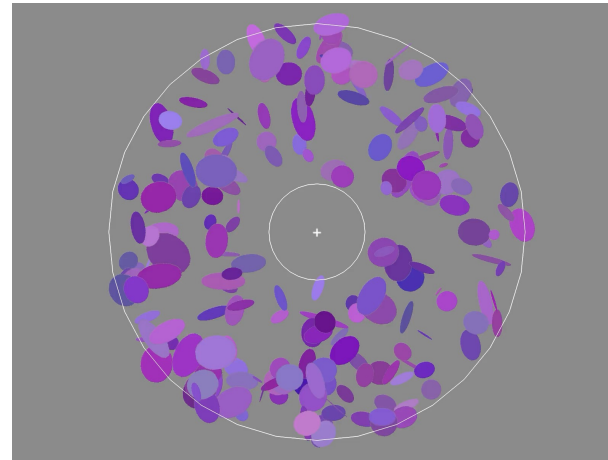
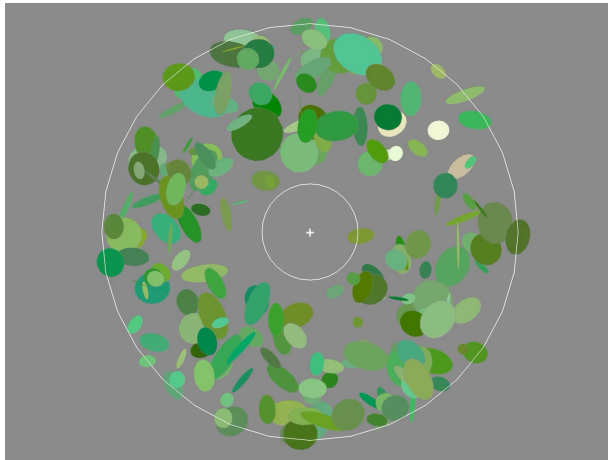
- How does perceptual uncertainty relate to causal impressions in “launching events”?





# PROJECTS: DUAN

- Factors that influence odd-one-out detection in cluttered visual search (color, motion, other cues; eye movements)
- Modelling perception of launching events from a cue-combination perspective



# THESES IN INDUSTRY

- [https://www.humanw.tu-darmstadt.de/studienbuero\\_humanw/infos\\_und\\_formulare\\_studiengaenge\\_humanw/artikel\\_details\\_humanw\\_6272.de.jsp](https://www.humanw.tu-darmstadt.de/studienbuero_humanw/infos_und_formulare_studiengaenge_humanw/artikel_details_humanw_6272.de.jsp)

## Ich möchte eine externe Abschlussarbeit anfertigen, was ist dabei zu beachten?

Hier finden Sie ein  **Merkblatt** zu dem Thema.

# EXAMPLE: CONTINENTAL

Continental Automotive Technologies GmbH, Standort Babenhausen



Künstliche Intelligenz für  
Adaptive  
Responsive und  
Levelkonforme  
Interaktion im Fahrzeug der Zukunft

[karli-projekt.de](http://karli-projekt.de)

**STADT:UP**

SOLUTIONS AND TECHNOLOGIES FOR AUTOMATED  
DRIVING IN TOWN: AN URBAN MOBILITY PROJECT

[stadtup-online.de](http://stadtup-online.de)

# YOUR IDEAS



TITEL / AUTOR

# CONTACT

[thomas.wallis@tu-darmstadt.de](mailto:thomas.wallis@tu-darmstadt.de)

