# Dr. Heiko Schütt

*Curriculum Vitae*

*NYU, Center for Neuroscience (CNS)*
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## Work Experience

2018–today **Postdoctoral Associate**, *New York University & Columbia University*, New York.
With Prof. Weiji Ma & Prof. Nikolaus Kriegeskorte

2014–2018 **Research Fellow**, *Eberhardt Karls Universität*, Tübingen.
Early vision and dynamical eye movement models.
Prof. Felix Wichmann & Prof. Ralf Engbert (Potsdam)

2013-2014 **Student Assistant**, *Eberhardt Karls Universität*, Tübingen.
Lab of Prof. Felix Wichmann, Visual Psychophysics

## Education

2014–2018 **PhD. Neural and Behavioural Sciences**, *Graduate Training Center for Neuroscience*, Tübingen, Germany, *summa cum laude*.
"Modelling Early Spatial Vision and its Influence on Eye Movements in Natural Scenes"
Supervisors: Prof. Felix Wichmann & Prof. Ralf Engbert

2012–2014 **MSc. Neural and Behavioural Sciences**, *Graduate Training Center for Neuroscience*, Tübingen, Germany, *Grade 1.1 (very good,scale: 1-6)*.
"Painless Bayesian Inference for Psychometric Functions"
Supervisor: Prof. Felix Wichmann

2010–2014 **BSc. Mathematics**, *Eberhardt Karls Universität*, Tübingen,
*Grade 1.2 (very good, scale: 1-6)*.

2009–2012 **BSc. Psychology**, *Justus Liebig Universität*, Gießen,
*Grade 0.9 (very good, scale: 0.7-6.0)*.

2000–2008 **Abitur**, *Edith-Stein-Schule*, Darmstadt, *Grade 1.0 (very good, scale: 1-6)*.

## Honours and Awards

2012-2014 **Dean's List**, *Graduate Training Center*, Tübingen.
Neural and behavioural sciences

2010-2014 **Scholarship**, *Studienstiftung des Deutschen Volkes*, Giessen & Tübingen.
German elite scholarship of the federal ministry (supports $< 1\%$ of students)

## Summer Schools

2018 **Computational Neuroscience: Vision**, Cold Spring Harbor Laboratory.
Organizers: Geoffrey Boynton, Marlene Cohen, Gregory Horwitz, Jonathan Pillow

2016 **European Summer School on Visual Neuroscience**, Rauischholzhausen.
Organizers: Jochen Braun, Wolfgang Einhäuser-Treyer, Karl Gegenfurtner

2015 **Computational Vision Summer School**, *Bernstein Center for Computational Neroscience*, Freudenstadt.
Organizers: Matthias Bethge, Michael Black, Roland Fleming, Felix Wichmann

2012 **CVR Summer School**, *Center for Vision Research*, York Univsersity, Toronto.

## Professional Activities

2019 **Reviewer** *NeurIPS, Journal of Vision, Plos One, Journal of Neurophysiology Journal of Neuroscience Methods, Attention, Perception & Psychophysics*

2018 **Reviewer** *Attention, Perception & Psychophysics, Journal of Vision, Journal of Experimental Psychology: HPP, Plos One*

2017 **Reviewer** *Attention, Perception & Psychophysics, Behavioural Research Methods, Journal of Vision, Plos Computational Biology*

2016 **Reviewer** *i-Perception, Journal of Vision*

2015 **Reviewer** *Journal of Neurophysiology*

## Languages

German **Mother Tongue**

English **Fluent**

## Skills

MATLAB wrote psignifit 4 toolbox in it

Python fluent

R fluent

Psychtoolbox fluent

Tensorflow fluent

Pytorch fluent

## Publications

### Theses

**Schütt, H. H.** (2018). *Modelling early spatial vision and its influence on eye movements in natural scenes*. PhD thesis, Graduate School for Neural and Behavioural Sciences, Eberhardt Karls Universiät Tübingen.

**Schütt, H. H.** (2014b). Painless bayesian inference for psychometric functions. Master's thesis, Graduate School for Neural and Behavioural Sciences, Eberhardt Karls Universiät Tübingen.

**Schütt, H. H.** (2014a). Maximumsabschätzungen für diskretisierungen elliptischer partieller differenzialgleichungen ("maximum bounds for discretizations of elliptic partial differential equations"). Bachelor's thesis (mathematics), Eberhardt Karls Universiät Tübingen.

**Schütt, H. H.** (2012). Influence of roughness and gloss on perceived light distance. Bachelor's thesis (psychology), Justus Liebig Universität Gießen.

### Peer Reviewed Journal Articles

**Schütt, H. H.** , Rothkegel, L. O. M. , Trukenbrod, H. A. , Engbert, R. , and Wichmann, F. A. (2019). Disentangling bottom-up versus top-down and low-level versus high-level influences on eye movements over time. *Journal of Vision*, 19(3):1–23.

Rothkegel, L. O. M. , **Schütt, H. H.** , Trukenbrod, H. A. , Wichmann, F. A. , and Engbert, R. (2019). Searchers adjust their eye-movement dynamics to target characteristics in natural scenes. *Scientific Reports*, 9(1):1635.

Geirhos, R. , Temme, C. R. M. , Rauber, J. , **Schütt, H. H.** , Bethge, M. , and Wichmann, F. A. (2018). Generalisation in humans and deep neural networks. In Bengio, S. , Wallach, H. , Larochelle, H. , Grauman, K. , Cesa-Bianchi, N. , and Garnett, R. , editors, *Advances in Neural Information Processing Systems 31*, pages 7538–7550. Curran Associates, Inc.

Wichmann, F. A. , Janssen, D. H. J. , Geirhos, R. , Aguilar, G. , **Schütt, H. H.** , Maertens, M. , and Bethge, M. (2017). Methods and measurements to compare men against machines. *Electronic Imaging*, 2017(14):36–45.

**Schütt, H. H.** and Wichmann, F. A. (2017). An image-computable psychophysical spatial vision model. *Journal of Vision*, 17(12):12:1–35.

**Schütt, H. H.** , Rothkegel, L. O. M. , Trukenbrod, H. A. , Reich, S. , Wichmann, F. A. , and Engbert, R. (2017). Likelihood-based parameter estimation and comparison of dynamical cognitive models. *Psychological Review*, 124(4):505–524.

Rothkegel, L. O. M. , Trukenbrod, H. A. , **Schütt, H. H.** , Wichmann, F. A. , and Engbert, R. (2017). Temporal evolution of the central fixation bias in scene viewing. *Journal of Vision*, 17(13):3.

**Schütt, H. H.** , Harmeling, S. , Macke, J. H. , and Wichmann, F. A. (2016b). Painfree and accurate Bayesian estimation of psychometric functions for (potentially) overdispersed data. *Vision Research*, 122:105–123.

**Schütt, H. H.** , Baier, F. , and Fleming, R. W. (2016a). Perception of light source distance from shading patterns. *Journal of Vision*, 16(3):9:1–20.

Rothkegel, L. O. , Trukenbrod, H. A. , **Schütt, H. H.** , Wichmann, F. A. , and Engbert, R. (2016). Influence of initial fixation position in scene viewing. *Vision Research*, 129:33–49.

## Conference Abstracts

**Schütt, H. H.** and Wichmann, F. A. (2019). A divisive model of midget and parasol ganglion cells explains the contrast sensitivity function. In *Vision Science Society (VSS), Anual meeting, St. Pete Beach, FL, USA (poster)*.

**Schütt, H. H.** and Ma, W. (2019). Dead Rectangles as a Stimulus for Perceptual Organisation Research. In *2019 Conference on Cognitive Computational Neuroscience*, Berlin, Germany. Cognitive Computational Neuroscience.

Flachot, A. C. , **Schütt, H. H.** , Fleming, R. W. , Wichmann, F. , and Gegenfurtner, K. R. (2019). Color Constancy in Deep Neural Networks. In *Vision Science Society (VSS), Anual meeting, St. Pete Beach, FL, USA (poster)*.

Wichmann, F. A. and **Schütt, H. H.** (2018). Modelling early influences on visual perception. In *European Conference on Visual Perception (ECVP), Trieste, Italy (talk,symposium)*.

**Schütt, H. H.** , Rothkegel, L. , Trukenbrod, H. A. , Engbert, R. , and Wichmann, F. A. (2018c). Predicting the fixation densitiy over time. In *14th Biannual Conference of the German Cognitive Science Society (KogWis), Darmstadt, Germany (talk)*.

**Schütt, H. H.** , Rothkegel, L. , Trukenbrod, H. A. , Engbert, R. , and Wichmann, F. A. (2018b). Predicting fixation densities over time from early visual processing. In *Vision Science Society (VSS), Anual meeting, St. Pete Beach, FL, USA (poster)*.

**Schütt, H. H.** , Rothkegel, L. , Trukenbrod, H. A. , Engbert, R. , and Wichmann, F. A. (2018a). Predicting fixation densities over time from early visual processing. In *European Conference on Visual Perception (ECVP), Trieste, Italy (poster)*.

**Schütt, H. H.** , Rothkegel, L. , Trukenbrod, H. A. , Reich, S. , Engbert, R. , and Wichmann, F. A. (2017c). Likelihood-based parameter estimation and comparison of dynamical eye movement models. In *European Conference on Eye Movements (ECEM), Wuppertal, Germany (talk)*.

**Schütt, H. H.** , Rothkegel, L. , Trukenbrod, H. A. , Engbert, R. , and Wichmann, F. A. (2017b). Using an image-computable early vision model to predict eye movements. In *European Conference on Visual Perception (ECVP), Berlin, Germany (poster)*.

**Schütt, H. H.** , Rothkegel, L. , Trukenbrod, H. A. , Engbert, R. , and Wichmann, F. A. (2017a). Testing an early vision model on natural image stimuli. In *Vision Science Society (VSS), Anual meeting, St. Pete Beach, FL, USA (poster)*.

Rothkegel, L. O. M.and Schütt, H. H. , Trukenbrod, H. A. , Wichmann, F. A. , and Engbert, R. (2017). We know what we can see - peripheral visibility of search targets shapes eye movement behavior in natural scenes. In *Vision Science Society (VSS), Anual meeting, St. Pete Beach, FL, USA (poster)*.

Geirhos, R. , Janssen, D. , **Schütt, H. H.** , Bethge, M. , and Wichmann, F. A. (2017). Of human observers and deep neural networks: A detailed psychophysical comparison. In *Vision Science Society (VSS), Anual meeting, St. Pete Beach, FL, USA (poster)*.

Wichmann, F. A. , Eichert, N. , and **Schütt, H. H.** (2016). An image-based multi-channel model for light adaptation. In *Vision Science Society (VSS), Anual meeting, St. Pete Beach, FL, USA (talk)*.

**Schütt, H. H.** and Wichmann, F. A. (2016b). An image-based model for early visual processing. In *ModVis, St. Pete Beach, FL, USA (talk)*.

**Schütt, H. H.** and Wichmann, F. A. (2016a). An image-based model for early visual processing. In *Vision Science Society (VSS), Anual meeting, St. Pete Beach, FL, USA (poster)*.

**Schütt, H. H.** , Baier, F. , and Fleming, R. W. (2016). Perception of light source distance from shading patterns. In *Tagung experimentell arbeitender Psychologen (TeaP), Heidelberg (poster)*.

**Schütt, H. H.** (2016). Likelihood based evaluations for dynamical eye movement models. In *Cambridge Vision Workshop, Cambridge, UK (talk)*.

Rothkegel, L. O. , Trukenbrod, H. , **Schütt, H. H.** , Wichmann, F. A. , and Engbert, R. (2016). Reducing the central fixation bias. In *Vision Science Society (VSS), Anual meeting, St. Pete Beach, FL, USA (poster)*.

Janssen, D. , **Schütt, H. H.** , and Wichmann, F. (2016). Some observations on the psychophysics of deep neural networks. In *Vision Science Society (VSS), Anual meeting, St. Pete Beach, FL, USA (poster)*.

**Schütt, H. H.** , Trukenbrod, H. A. , Rothkegel, L. , and Engbert, R. (2015c). Test of a dynamical model for natural scene exploration. In *2015 European Conference on Eye Movements, Vienna (poster)*.

**Schütt, H. H.** , Harmeling, S. , Macke, J. H. , and Wichmann, F. A. (2015b). Psignifit 4: Pain-free bayesian inference for psychometric functions. In *2015 VSS Annual Meeting, St. Pete Beach, Florida (poster)*.

**Schütt, H. H.** , Baier, F. , and Fleming, R. W. (2015a). Perception of light source distance from shading patterns. In *Tagung experimentell arbeitender Psychologen (TeaP), Heidelberg (poster)*.

**Schütt, H. H.** and Wichmann, F. A. (2014). Uncertainty effects in visual psychophysics. In *Tagung experimentell arbeitender Psychologen (TeaP), Giessen (poster)*.

**Schütt, H. H.** , Harmeling, S. , Macke, J. H. , and Wichmann, F. A. (2014c). Pain-free bayesian inference for psychometric functions. In *European Mathematical Psychology Group Meeting (EMPG), Tübingen (poster)*.

**Schütt, H. H.** , Harmeling, S. , Macke, J. H. , and Wichmann, F. A. (2014b). Pain-free bayesian inference for psychometric functions. In *Statistical Challenges in Neuroscience, University of Warwick, UK (poster)*.

**Schütt, H. H.** , Harmeling, S. , Macke, J. H. , and Wichmann, F. A. (2014a). Pain-free bayesian inference for psychometric functions. In *European Conference on Visual Perception (ECVP), Belgrad, SRB (poster)*.