


# CURRICULUM VITAE

Dr. KATHARINA DOBS

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## PERSONAL INFORMATION

Day of Birth: 26 April 1983 in Frankfurt am Main, Germany  
Childcare periods: 04/14 – 10/15, 12/16 – 04/17, 04/22 – 08/22  
Affiliation: Justus Liebig University Giessen (JLU), Dept. of Psychology  
Otto-Behaghel-Str. 10F, 35394 Giessen



## EDUCATION

2015 **Dr. rer. nat. in Behavioral and Neural Sciences** (magna cum laude)  
International Max Planck Research School / Eberhard Karls University Tübingen,  
Max Planck Institute (MPI) for Biological Cybernetics, Tübingen, Germany  
2008 **Diploma in Psychology** ('very good')  
Philipps-Universität Marburg, Marburg, Germany  
2007 **Diploma in Computer Science** ('very good')  
Philipps-Universität Marburg, Marburg, Germany

## ACADEMIC APPOINTMENTS

Since 10/2020 **Research Group Leader** of Visual Cognition and Computational Neuroscience Lab  
Dept. of Psychology, JLU, Giessen, Germany  
2017 – 2020 **Postdoctoral Fellow**  
Center for Brains, Minds & Machines, Massachusetts Institute of Technology  
(MIT), Cambridge, USA  
2015 – 2017 **Postdoctoral Fellow**  
Brain and Cognition Research Center (CerCo), CNRS, Toulouse, France  
2013 **Visiting Research Fellow**  
RIKEN Brain Science Institute, Tokyo, Japan  
2006 **Visiting Research Fellow**  
Dept. of Neurological Surgery, University of Virginia, Charlottesville, VA, USA

## FELLOWSHIPS & GRANTS

2024 – 2028 **ERC Starting Grant** (DEEPFUNC) PI (~1.500.000€)  
2022 – 2025 **DFG Collaborative Research Center** (SFB TRR 135) Co-PI (~500.000€)  
2017 – 2019 **Feodor-Lynen Research Fellowship** of the A. v. Humboldt Foundation (~130.000€)  
2015 – 2017 **Deutsche Forschungsgemeinschaft Postdoctoral Fellowship** (~93.000€)  
2013 **Japan Society for the Promotion of Science Fellowship** (~7.000€)  
2010 – 2014 **Max Planck Society PhD Fellowship** MPI for Biological Cybernetics (~67.000€)

## AWARDS & DISTINCTIONS

2023 **Outstanding Trainee Speaker Award** (co-author) at MEG North America workshop  
2020 **COSYNE Travel Award**  
2019 **Cognitive Computational Neuroscience (CCN) Trainee Travel Award**  
2015 **Best Dissertation Award** from the Max Planck Institute for Biological Cybernetics  
2015 **Travel award** from the German Academic Exchange Service  
2012 **Elsevier / VSS Student Travel Award**

## TEACHING EXPERIENCE AND CERTIFICATES

- 2021– 2024 Graduate lecture '**Using DNNs for fMRI analysis**' in class 'Perceptual Neuroimaging in Practice', JLU Giessen
- 2021 – 2023 Graduate lecture '**Computational Models of Face Perception**' in class 'Computational Visual Perception', FAU Erlangen
- 2021 – 2023 Undergraduate lecture '**Computational Models of the Visual System**' in class 'The Human Brain', MIT
- 2021 Completion of **Kaufman Teaching Certificate** Program, MIT Teaching + Learning Lab
- 2020 IAP workshop on '**Deep neural networks as a window into the human brain**', MIT
- 2019 Undergraduate lecture '**Deep convolutional neural networks as models for the human brain and mind**' in class 'The Human Brain', MIT
- 2018 Graduate workshop on '**Multivariate analyses of MEG data**', MIT
- 2018 '**Introduction to magnetoencephalography (MEG)**' for high school students, MIT

## SUPERVISION

- 2023 – today Leonard van Dyck | PhD student | JLU, Germany
- 2023 – today Christine Huschens | BSc thesis | JLU, Germany
- 2023 – today Sophia Gruber | MSc thesis | JLU, Germany
- 2023 – today Fatma Celebi | MSc thesis | JLU, Germany
- 2022 – today Elaheh Akbarifathkouhi | PhD student | JLU, Germany
- 2022 – today Hilal Nizamoglu | PhD student | JLU, Germany
- 2021 – today Sule Tasliyurt-Celebi | PhD student | JLU, Germany
- 2021 – 2022 Samuel Sander | MSc thesis | JLU, Germany
- 2021 – 2022 Helena Feldhege | BSc thesis | JLU, Germany
- 2021 – 2022 Luca Sohnrey | BSc thesis | JLU, Germany
- 2020 – today Pranjul Gupta | PhD student | JLU, Germany
- 2019 – 2020 Julio Martinez | Research Assistant | MIT, USA
- 2018 – 2020 Joanne Yuan | Undergraduate student | MIT, USA
- 2018 – 2019 Ian A Palmer | Undergraduate student | MIT, USA

## SELECTED ORAL PRESENTATIONS AND INVITED TALKS

- Jun 2024 **Invited keynote Speaker at 'Neuro-AI – Harnessing AI to understand computation in mind and brain' summer school**, Amsterdam, Netherlands
- Dec 2023 **Keynote Speaker at 'The New VISTAs in Vision Research' Conference**, York University, Toronto, Canada
- July 2023 **Keynote Speaker at Jacobs / CIFAR workshop on 'Machine learning & Theory Development'**, online (<https://www.ml-theory.com/>)
- May 2023 **Invited Speaker at symposium on 'The development of categorical object representations: bridging visual neuroscience and deep learning'**, Annual Meeting of the Visual Science Society, St. Pete Beach, Florida, USA.
- Dec 2022 **Invited Speaker at Shared Visual Representations in Human & Machine Intelligence (SVRHM), NeurIPS 2022 Workshop**, New Orleans, USA (<https://www.svrhm.com/>)
- Nov 2021 **Invited Speaker at The Science(s) of the Face Webinar Series (FACETS)**, (<https://youtu.be/MYFpPV-2ApU>)
- Sep 2021 **Keynote Speaker at International Interdisciplinary Computational Cognitive Science Summer School (IICSSS)**, Tuebingen, Germany (<https://youtu.be/PASptPxoYcw>)
- Sep 2020 **Keynote Lecture at Pattern Recognition in Neuroimaging (PRNI) summer school**, Vienna, Austria
- June 2020 **Speaker at Cognitive Science Lunch Talks**, MIT, Cambridge, USA (<https://cbmm.mit.edu/video/computational-explanation-domain-specificity-human-visual-system>)

- Sep 2019 **Selected talk at Conference on Cognitive Computational Neuroscience**, Berlin, Germany (talk selection rate: ~4%) (<https://youtu.be/vkDO2-1V5F0>)
- Jun 2019 **Invited talk at workshop on 'Limitations of Deep Learning'** organized by Center for Brains, Minds and Machines (MIT) and Hebrew University, Sestri Levante, Italy.
- Sep 2018 **Selected talk at Conference on Cognitive Computational Neuroscience**, Philadelphia, USA (talk selection rate: ~4%) ([https://youtu.be/8hE9\\_Cg2NFk](https://youtu.be/8hE9_Cg2NFk))

## MEDIA OUTREACH

- Dec 2023 **Der Augenspiegel** | Article 'Modellierung der biologischen Gesichtswahrnehmung mit Künstlicher Intelligenz' co-authored by Leonard van Dyck and Katharina Dobs (<http://www.augenspiegel.com/zeitschrift.php/auge/cover/ausgabe-dezember-2023/>)
- Jan 2023 **Futura** | Featured in article 'A meeting of minds – and machines' by Liam Drew ([https://www.bifonds.de/fileadmin/content/bifonds/Downloads/Futura\\_2023/Futura\\_I\\_23\\_oP.pdf](https://www.bifonds.de/fileadmin/content/bifonds/Downloads/Futura_2023/Futura_I_23_oP.pdf))
- Apr 2022 **MIT News** | Article 'An optimized solution for face recognition' by Jennifer Michalowski (<https://news.mit.edu/2022/optimized-solution-face-recognition-0406>)
- Aug 2021 **MIT Technology Review** | Article 'This is what happens when you see the face of someone you love' by Tate Ryan-Mosley (<https://www.technologyreview.com/2021/08/25/1031451/brain-scientific-response-love>)
- Oct 2020 **Quanta Magazine** | featured in article 'Deep neural networks help to explain living brains' by Anil Ananthaswamy (<https://www.quantamagazine.org/deep-neural-networks-help-to-explain-living-brains-20201028/>)
- Mar 2019 **McGovern Institute for Brain Research Press** | featured in article 'How the brain decodes familiar faces' by Sabbi Lall (<https://mcgovern.mit.edu/2019/03/19/whats-in-a-face/>)
- Mar 2016 **Deutschlandfunk Nova** | contribution to Podcast 'Resting Bitch Face' (<https://www.deutschlandfunknova.de/beitrag/verhaltensforschung-resting-bitch-face>)

## ACADEMIC ENGAGEMENT AND SERVICE

- 2023 – today **Co-Lead PI of Key Area 'Categorisation' in research cluster 'The Adaptive Mind'**, JLU Giessen, Germany
- 2023 – today **Co-organizer of 'Categorization Workshop'**, JLU Giessen, Germany
- 2023 – today **Member of Task Force Research Information System (FIS)**, JLU Giessen, Germany
- 2022 – today **Co-PI of SFB Support Project S: 'Deep learning: Unlocking the potential'**, JLU Giessen, Germany
- 2022 – today **Member of PhD committee**, JLU Giessen, Germany
- 2021 – today **Member of the local ethics committee**, JLU Giessen, Germany
- 2014 – today **Member / Mentor at Mentoring Hessen** – Frauen in Wissenschaft und Wirtschaft
- 2021 **Organizer & Co-Chair of symposium** 'Developments in deep neural network models of perception: From low- to high-level vision' at TeaP, Ulm, Germany
- 2012 – 2014 **Max Planck PhD representative** of the Dept. Human Perception, Cognition and Action, Tübingen, Germany
- 2011 – 2012 **Co-Organizer of the NeNa conference** (Conference of Junior Neuroscientists)

Peer Reviewer: Atten. Percept. Psychophys., Br. J. Dev. Psychol., Cereb. Cortex, Cognition, Cogn. Sci., Cog. Syst. Res., Conf. CogSci., Conf. CCN., Commun. Biol., Curr. Biol., eLife, Hum. Brain Mapp., J. Exp. Psychol., J. Neurosci., J. Nonverbal Behav., J. Vis., Nat. Commun., Nat. Hum. Behav., NeuroImage, Neuron, Patterns, Perception, PLOS Comput. Biol., PNAS, Psychol. Sci., Sci. Adv., Q. J. Exp. Psychol., Vis. Res., Vis. Cogn.

## INDUSTRIAL APPOINTMENTS

- 2009 – 2010 IT Consultant / Software Engineer, PRODYNA AG, Frankfurt, Germany
- 2008 – 2009 Software Engineer, Freelancer, London, UK

**PUBLICATIONS\***

- Peer-reviewed journal articles
- Dobs, K.**, Yuan, J., Martinez, J., & Kanwisher, N. (2023). Behavioral signatures of face perception emerge in deep neural networks optimized for face recognition. *Proceedings of the National Academy of Sciences: USA*, 120(32), e2220642120. ([Preprint](#) on bioRxiv).
- Kanwisher, N., Khosla, M., & **Dobs, K.** (2023). Using artificial neural networks to ask 'why' questions of minds and brains. *Trends in Neurosciences*, 46(3), 240-254.
- Kanwisher, N., Gupta, P., & **Dobs, K.** (2023). CNNs reveal the Computational Implausibility of the Expertise Hypothesis. *iScience*, 26(2), 105976.
- Dobs, K.**, Martinez, J., Kell, A., & Kanwisher, N. (2022). Brain-like functional specialization emerges spontaneously in deep neural networks. *Science Advances*, 8(11), eabl8913.
- Dobs, K.**, Isik, L., Pantazis, D., & Kanwisher, N. (2019). How face perception unfolds over time. *Nature Communications*, 10, 1258.
- Dobs, K.**, Bülthoff, I., & Schultz, J. (2018). Use and usefulness of dynamic face stimuli for face perception studies – a review of behavioral findings and methodology. *Frontiers in Psychology*, 9, 1355.
- Dobs, K.**, Schultz, J., Bülthoff, I., & Gardner, J.L. (2018). Task-dependent enhancement of facial expression and identity representations in human cortex. *NeuroImage*, 172, 689-702.
- Dobs, K.**, Ma, W. J., & Reddy, L. (2017). Near-optimal integration of facial form and motion. *Scientific Reports*, 7(1):11002, 1-9.
- Dobs, K.**, Bülthoff, I., & Schultz, J. (2016). Identity information content depends on the type of facial movement. *Scientific Reports*, 6(34301), 1-9.
- Dobs, K.**, Bülthoff, I., Breidt, M., Vuong, Q., Curio, C., & Schultz, J. (2014). Quantifying human sensitivity to spatio-temporal information in dynamic faces. *Vision Research*, 100, 78-87.
- Peer-reviewed conference articles
- Kar, K., Kanwisher, N., & **Dobs, K.** (2023). Deep neural networks optimized for both face detection and face discrimination most accurately predict face-selective neurons in macaque inferior temporal cortex. *Conference on Cognitive Computational Neuroscience (CCN)*. Oxford, UK.
- Yilmaz, H., Muellner, M., Tenenbaum, J. B., **Dobs, K.**, & Yildirim, I. (2023). Efficient inverse graphics with a differentiable generative model explains robustness of perception to unusual viewing angles. *Conference on Cognitive Computational Neuroscience (CCN)*. Oxford, UK.
- Dobs, K.**, Kell, A., Palmer, I., Cohen, M., & Kanwisher, N. (2019). Why Are Face and Object Processing Segregated in the Human Brain? Testing Computational Hypotheses with Deep Convolutional Neural Networks. *Conference on Cognitive Computational Neuroscience (CCN)*, Berlin, Germany.
- Dobs, K.**, Isik, L., Pantazis, D., & Kanwisher, N. (2018). Familiarity affects early perceptual stages of face processing. *Conference on Cognitive Computational Neuroscience (CCN)*, Philadelphia, PA, USA.
- Open peer commentaries
- Rothkopf, C., Bremmer, F., Fiehler, K., **Dobs, K.**, & Triesch, J. (2023). Models of vision need some action. *Behavioral and Brain Sciences*. 46:e405.
- Conference abstracts
- Nizamoglu, H. & **Dobs, K.** (2024). Idiosyncratic Facial Motions: Uncovering Identity Information in Facial Movements through a Landmark-Based Analysis. 24th Annual Meeting of the Vision Sciences Society (VSS), St. Pete Beach, Florida, USA (accepted).

- Yilmaz, H., Muellner, M., Tenenbaum, J. B., **Dobs, K.**, & Yildirim, I. (2024). Efficient Inverse Graphics with Differentiable Generative Models Explains Trial-level Face Discriminations and Robustness of Face Perception to Unusual Viewing Angles. 24th Annual Meeting of the Vision Sciences Society (VSS), St. Pete Beach, Florida, USA. (accepted).
- Kar, K., Kanwisher, N., & **Dobs, K.** (2023). Deep neural networks optimized for both face detection and face discrimination most accurately predict face-selective neurons in macaque inferior temporal cortex. Society for Neuroscience (SfN). Washington, D.C., USA.
- Giri, A., Smith, G., Maloyan, P., **Dobs, K.**, Adler, A., & Pantazis, D. (2023). Temporal Dynamics of Age, Gender, and Identity Representations Invariant to Head Views for Familiar Faces. MEG North America Workshop, Bethesda, MD, USA.
- Sander, S. & **Dobs, K.** (2023). Inversion Effects in Humans and Deep Neural Networks. 48. Jahrestagung Psychologie & Gehirn (PuG). Tuebingen, Germany.
- Tasliyurt, S., de Haas, B., & **Dobs, K.** (2023). Scene Previews Facilitate Face Detection Behavior. 23rd Annual Meeting of the Vision Sciences Society (VSS), St. Pete Beach, Florida, USA.
- Gupta, P., Kanwisher, N. & **Dobs, K.** (2022). CNNs reveal the Computational Implausibility of the Expertise Hypothesis. European Conference on Visual Perception (ECVP).
- Tasliyurt-Celebi, S., de Haas, B., & **Dobs, K.** (2022). What makes humans detect a face?. European Conference on Visual Perception (ECVP).
- Egger, B., Sutherland, S., Medin, S., **Dobs, K.**, & Tenenbaum, J. (2021). Identity Expression Ambiguity. Bernstein Conference (online).
- Gupta, P. & **Dobs, K.** (2021). A computational explanation for the unreasonable human ability to detect faces in things. European Conference on Visual Perception (ECVP).
- Dobs, K.**, Yuan, J., Martinez, J., & Kanwisher, N. (2021). Using task-optimized neural networks to understand how experience might shape human face perception. Virtual meeting of the Vision Sciences Society (V-VSS).
- Dobs, K.**, Yuan, J., Martinez, J., & Kanwisher, N. (2021). Using task-optimized neural networks to understand how experience might shape human face perception. Tagung experimentell arbeitender Psychologen (TeaP).
- Dobs, K.**, Kell, A., Martinez, J., Cohen, M., & Kanwisher, N. (2020). Using task-optimized neural networks to understand why brains have specialized processing for faces. Virtual meeting of the Vision Sciences Society (V-VSS).
- Dobs, K.**, Kell, A., Martinez, J., Cohen, M., & Kanwisher, N. (2020). Using task-optimized neural networks to understand why brains have specialized processing for faces. Conference on Computational and Systems Neuroscience (Cosyne). Denver, Colorado, USA.
- Dobs, K.**, Palmer, P. I., Yuan, J., Mohsenzadeh, Y., Oliva, A., & Kanwisher, N. (2019). Effects of face familiarity in humans and deep neural networks. 48th European Conference on Visual Perception (ECVP). Leuven, Belgium.
- Dobs, K.**, Beeler, D., Berry, I., Reddy, L. (2019). The neural substrates of identity perception from face movements. 48th European Conference on Visual Perception (ECVP). Leuven, Belgium.

**Dobs, K.**, Isik, L., Pantazis, D., & Kanwisher, N. (2018). MEG decoding reveals early representations of face identity, age and gender that are enhanced by familiarity. 48th Meeting of the Society for Neuroscience (SfN), San Diego, California, USA.

**Dobs, K.**, Isik, L., Pantazis, D., & Kanwisher, N. (2018). Rapid decoding of face identity, familiarity, gender and age. 18th Annual Meeting of the Vision Sciences Society (VSS), St. Pete Beach, Florida, USA, Journal of Vision, 18(10), 1081.

**Dobs, K.**, Bülthoff, I., & Reddy, L. (2016). Dynamic reweighting of facial form and motion information during face recognition. European Conference on Visual Perception (ECVP), Barcelona, Spain, Perception, 45(ECVP Abstract Supplement), 87-88.

**Dobs, K.**, Bülthoff, I., & Reddy, L. (2016). Optimal integration of facial form and motion during face recognition. 16th Annual Meeting of the Vision Sciences Society (VSS), St. Pete Beach, Florida, USA, Journal of Vision, 16(12), 925.

**Dobs, K.**, Schultz, J., Bülthoff, I., & Gardner, J.L. (2015). Independent control of cortical representations for expression and identity of dynamic faces. 15th Annual Meeting of the Vision Sciences Society (VSS), St. Pete Beach, Florida, USA, Journal of Vision, 15(12), 684.

**Dobs, K.**, Schultz, J., Bülthoff, I., & Gardner, J.L. (2013). Attending to expression or identity of dynamic faces engages different cortical areas. 43rd Meeting of the Society for Neuroscience (SfN), San Diego, California, USA.

**Dobs, K.**, Bülthoff, I., Breidt, M., Vuong, Q., Curio, C., & Schultz, J. (2013). Quantifying human sensitivity to spatio-temporal information in dynamic faces. European Conference on Visual Perception (ECVP), Bremen, Germany, Perception, 42(ECVP Abstract Supplement), 197.

**Dobs, K.**, Bülthoff, I., Curio, C., & Schultz, J. (2012). Investigating factors influencing the perception of identity from facial motion. 12th Annual Meeting of the Vision Sciences Society (VSS). Journal of Vision, 12(9), 35.

**Dobs, K.**, Bülthoff, I., Breidt, M., Vuong, Q., Curio, C., & Schultz, J. (2011). Investigating idiosyncratic facial dynamics with motion retargeting. European Conference on Visual Perception (ECVP), Toulouse, France, Perception, 42(ECVP Abstract Supplement), 197.

**Dobs, K.**, Jost, K., & Rösler, F. (2008). Electrophysiological Correlates of Learning in a Transitive Inference Paradigm. 50. Tagung experimentell arbeitender Psychologen (TeaP 2008).

Doctoral thesis **Dobs, K.** (2015). Behavioral and Neural Mechanisms Underlying Dynamic Face Perception. Berlin: Logos Verlag.

Diploma theses **Dobs, K.** (2007). Electrophysiological Correlates of Learning in a Transitive Inference Paradigm. Department of Psychology, Philipps-Universität Marburg.

**Dobs, K.** (2006). VI-SOM - A Spike Coded Self Organizing Map Modelling the Primary Visual Cortex. Department of Computer Science, Philipps-Universität Marburg.

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