

Alana Darcher

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Machine Learning in Science, Eberhard Karls University Tübingen
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EDUCATION

- 2020 - present Ph.D. **Eberhard Karls University Tübingen**
Faculty of Computer Science
Advisors: Prof. Dr. Dr. Florian Mormann, Prof. Dr. Jakob Macke
- 2017 - 2020 M.Sc. **Ludwig-Maximilians-University, Munich, Germany**
Graduate School of Systemic Neurosciences,
Thesis: *Computational models of neural dynamics in human visual memory*
- 2012 - 2016 B.Sc. **Emory University, Atlanta, Georgia, USA**
Neuroscience & Behavioral Biology (major), Philosophy (minor)

RESEARCH EXPERIENCE

† denotes a previous affiliation

Research Positions

- Nov. 2018-
March 2019 Research Assistant, Max-Planck-Institute for Neurobiology, Munich, Germany
PI: Dr. Nadine Gogolla, [Circuits for Emotion Research Group Leader](#) †
- Oct. 2017-
Feb. 2019 Research Assistant, Max-Planck-Institute for Psychiatry, Munich, Germany
PI: Dr. Leonhard Schilbach, [Social Neuroscience Research Group](#) †
- May 2016-
Aug. 2017 Research Specialist, Emory University School of Medicine, Atlanta, USA
PI: Dr. Jennifer Mascaro, [Dept. of Family and Preventive Medicine](#)

Internships and Projects

- April 2019-
Jan 2020 Master's Thesis, Technical Universität Munich, Germany
Project: Computational models of neural dynamics in human visual memory
PI: Dr. Jakob Macke, [Computational Neuroengineering](#) †
- Oct. 2018-
Nov. 2018 Research Internship, Max-Planck-Institute for Neurobiology, Munich, Germany
PI: Dr. Nadine Gogolla, [Circuits for Emotion Research Group Leader](#) †
- Feb. 2018-
Jan. 2019 Project Assistant, Center for Information and Language Processing, Munich, Germany
PI: Dr. Hinrich Schütze, [Chair of Computational Linguistics](#)

TRAINING COURSES

- August 2024 **Massachusetts Institute of Technology Summer Program**
Marine Biological Laboratory Advanced Research Training Course
Brains, Minds and Machines
- April 2021 **G-Node Advanced Neural Data Analysis Course**
German Neuroinformatics Node
Computational Neuroscience

FELLOWSHIPS, HONORS, AND AWARDS

2025	Society for Neuroscience Trainee Professional Development Award
2024	MIT Brains, Mind, & Machines Summer Course (travel and program costs)
2018-2019	Bernstein Network of Computational Neuroscience SMARTSTART 1 Fellowship
2015-2016	W.C. McWhorter Family Grant
2012-2016	Emory College Grant
2014-2016	Phi Sigma Tau Philosophy Honor Society Member, Emory University
2014	Collegiate Water Polo Association Scholar-Athlete Award
2012	All-Oregon Academic Team Member*
2012	Coca-Cola Community College Academic Award and Scholarship*
2012	All-USA Academic Team Member*

* concurrent with high school enrollment

PREPRINTS AND MANUSCRIPTS IN PREPARATION

Darcher, A., Rapp, R., Müller, T.T., Gerken, F., Lappalainen, J.K., Dehnen, G., Kehl, M.S., Liebe, S., Leal-Taixé, L., Mormann, F., Macke, J.H. (2026) Epiphyte: a relational database framework for naturalistic neuroscience experiments. *In review*. [\[Link\]](#)

Karkowski, K., Kehl, M.S., Qin, Y., **Darcher, A.**, Karkowski, P., Borger, V., Surges, R., Hebart, M.N., Reber, T.P., Dehaene, S. and Lakretz, Y. (2025) Semantic Tuning of Single Neurons in the Human Medial Temporal Lobe. bioRxiv. [\[Link\]](#)

PUBLICATIONS AND CODE PACKAGES

* denotes equal contribution

Gerken, F.*, **Darcher, A.***, Gonçalves, P.J., Rapp, R., Ismail, E., Niedek, J., Kehl, M.S., Reber, T.P., Liebe, S., Macke, J.H., Mormann, F., Leal-Taixé, L. (2025) Decoding movie content from neuronal population activity in the human medial temporal lobe. *eLife* .14:RP106758. [\[Link\]](#)

Bischoff, S., **Darcher, A.**, Deistler, M., Gao, R., Gerken, F., Gloeckler, M., Haxel, L., Kapoor, J.K., Lappalainen, J.H., Macke, J., Moss, G., Pals, M., Pei, F., Rapp, R., Sağtekin, A.E., Schröder, C., Schulz, A., Stefanidi, Z., Toyota, S., Ulmer, L., Vetter, J. (2024) A practical guide to statistical distances for evaluating generative models in science. *Transactions on Machine Learning Research*. [\[Link\]](#)

Note: authors contributed equally, names listed alphabetically.

Pesämaa, I., Müller, S., Robinson, S., **Darcher, A.**, Paquet, D., Zetterberg H., Lichtenthaler, S., Haass C. (2023) A microglial activity state biomarker panel differentiates FTD-Granulin and Alzheimer's disease patients from controls. *Molecular Neurodegeneration*. 18 (70). DOI: 10.1186/s13024-023-00657-w [\[Link\]](#)

Dehnen, G., Kehl, M., **Darcher, A.**, Müller, T., Macke, J.H., Borger, V., Surges, R., Mormann, F. (2021) Duplicate detection of spike events: A relevant problem in human single-unit recordings. *Brain Sciences*, 11(6). DOI: 10.3390/brainsci11060761 [\[Link\]](#) [\[GitHub\]](#)

Darcher, A. and Müller, T.T. (2020) Epiphyte. [\[GitHub\]](#) [\[Python Package Index \(PyPI\)\]](#)

Mascaro, J.S., Wehrmeyer, K., Mahathre, V., **Darcher, A.** (2020) A Longitudinal, Randomized and Controlled Study of App-delivered Mindfulness in the Workplace. *Journal of Wellness*. 2(1), 4. DOI: 10.18297/jwellness/vol2/iss1/4 [\[Link\]](#)

Evans, A. P., Mascaro, J. S., Kohn, J. N., Dobrusin, A., **Darcher, A.**, Starr, S. D., Craighead, L., Negi, L. T. (2019). Compassion Meditation Training for Emotional Numbing Symptoms Among Veterans with

Post-Traumatic Stress Disorder. *The Journal of Alternative and Complementary Medicine*, 25(4), 441–443. DOI: 10.1089/acm.2018.0425 [\[PubMed\]](#)

Mascaro, J. S., Rentscher, K. E., Hackett, P. D., Lori, A., **Darcher, A.**, Rilling, J. K., & Mehl, M. R. (2018). Preliminary evidence that androgen signaling is correlated with men's everyday language. *American Journal of Human Biology*, 30(4). DOI: 10.1002/ajhb.23136 [\[PubMed\]](#)

Mascaro, J. S., Kelley, S., **Darcher, A.**, Negi, L. T., Worthman, C., Miller, A., & Raison, C. (2016). Meditation buffers medical student compassion from the deleterious effects of depression. *The Journal of Positive Psychology*, 13(2), 133–142. DOI: 10.1080/17439760.2016.1233348 [\[Link\]](#)

Mascaro, J. S., **Darcher, A.**, Negi, L. T., & Raison, C. L. (2015). The neural mediators of kindness-based meditation: a theoretical model. *Frontiers in Psychology*, 6. DOI: 10.3389/fpsyg.2015.00109 [\[PubMed\]](#)

INVITED TALKS AND ORGANIZED WORKSHOPS

March 2025 “Decoding movie content from neuronal population activity in the human medial temporal lobe” [Symposium 20](#), German Neuroscience Society (NWG) Meeting, Goettingen, Germany

March 2025 Symposium Chair, “Investigating memory using human single-neuron recordings” [Symposium 20](#), German Neuroscience Society (NWG) Meeting, Goettingen, Germany

Aug. 2023 Panel Member, “Machine Learning in Neuroscience” iBehave Network Summer School, Odenthal, Germany

Aug. 2023 “Decoding movie content from human single neurons” iBehave Network Summer School, Odenthal, Germany

CONFERENCE PRESENTATIONS

* denotes equal contribution.

Darcher, A.*, Gerken, F.*, Goncalves, P. J., Rapp, R., Elezi, I., Niediek, J., Kehl, M. S., Reber, T. P., Liebe, S., Macke, J. H., Mormann, F., Leal-Taixé, L. (2025, Nov) Decoding movie content from neuronal population activity in the human medial temporal lobe. Society for Neuroscience Meeting, San Diego.

Darcher, A.*, Gerken, F.*, Goncalves, P. J., Rapp, R., Elezi, I., Niediek, J., Kehl, M. S., Reber, T. P., Liebe, S., Macke, J. H., Mormann, F., Leal-Taixé, L. (2025, Nov) Decoding movie content from neuronal population activity in the human medial temporal lobe. 7th Human Single-Neuron Meeting, Los Angeles.

Darcher, A., Dehnen, G., Borger, V., Surges, R., Mormann, F. (2024, Sept) Identifying patterns across brains from 10 years of human single-neuron recordings. Bernstein Conference on Computational Neuroscience, Frankfurt. doi: [10.12751/nncn.bc2024.040](#)

Rapp, R., Darcher, A., Gerken, F., Liebe, S., Niediek, J., Gonçalves, P.J., Leal-Taixé, L., Mormann, F., Macke, J.H. (2023, Sept) Decoding semantic concepts in a dynamic visual stimulus from local field potentials in the human medial temporal lobe. Bernstein Conference on Computational Neuroscience, Berlin. doi: [10.12751/nncn.bc2023.283](#)

Gerken, F.*, Darcher, A.*, Gonçalves, P.J., Rapp, Rachel., Elezi, I., Niediek, J., Liebe, S., Mormann, F., Macke, J.H., Leal-Taixé, L. (2023, Sept) Decoding semantic concepts from neuronal population activity in the human medial temporal lobe in response to dynamic visual stimulation. Bernstein Conference on Computational Neuroscience, Berlin. doi: [10.12751/nncn.bc2023.156](#)

Darcher A., Gerken, F., Rapp, R., Gonçalves, P.J., Elezi, I., Niediek, J., Liebe, S., Leal-Taixé, L., Mormann, F., Macke, JH. (2023, Sept) DeepHumanVision: Deep neural networks for understanding how populations of neurons in the human brain encode visual information. Statusseminar Computational Life Sciences, Marburg.

Darcher A., Gao R., Borger V., Surges R., Macke JH, Liebe S., Mormann F. (2022, Nov) Regional differences in single neuron timescales between static and dynamic stimuli in the human medial temporal lobe. Society for Neuroscience Meeting, San Diego. [\[Link\]](#)

Darcher A., Gao R., Borger V., Surges R., Macke JH, Liebe S., Mormann F. (2022, Nov) Regional differences in single neuron timescales between static and dynamic stimuli in the human medial temporal lobe. 6th Human Single-Neuron Meeting, Los Angeles. [\[Link\]](#)

Gerken F, Darcher A, Gonçalves PJ, Rapp R, Elezi I, Niediek J, Liebe S, Macke JH, Mormann F, Leal-Taixé L (2022, Sept) Decoding semantic concepts from neuronal population activity in the human medial temporal lobe in response to dynamic visual stimulation. Bernstein Conference on Computational Neuroscience, Berlin. doi: [10.12751/nncn.bc2022.110](https://doi.org/10.12751/nncn.bc2022.110)

Darcher, A., Müller, T.T., Mormann, F., Macke, J.H. (2020, Sept.) Epiphyte: a Python toolkit for high-dimensional neural data recorded during naturalistic, continuous stimuli. Bernstein Conference on Computational Neuroscience, Berlin. [\[Link\]](#)

Wehrmeyer, K., Mahathre, V., Darcher, A., Mascaro, J.S. (2017, Nov.) Examining the biopsychosocial predictors of mindfulness meditation practice in a workplace environment, American Public Health Association Annual Meeting & Expo, Atlanta, GA. [\[Link\]](#)

Mascaro, J.S., Haack, C., Darcher, A., Wehrmeyer, K., Mahathre, V. (2017, May) Mindfulness Meditation for Healthcare Professionals, American College of Preventive Medicine Annual Meeting, Washington, DC.

Mascaro, J.S., Kelley, S., Darcher, A., Negi, L.T., Worthman, C., Miller, A., Raison, C. (2016, Feb.) Cognitively-Based Compassion Training (CBCT) for Medical Students: A Pilot Study, Center for Mind, Brain, and Culture Annual Conference, Atlanta, GA. [\[Link\]](#)

GRADUATE-LEVEL TEACHING

Spring 2024-2026	Guest Lecturer at University of Bonn <i>Computational Neuroscience</i> , MSc Neurosciences module
April 2021-2026	Lead Teaching Assistant at University of Bonn <i>Cognitive Neuroscience</i> , MSc Neurosciences module
Winter 2021-2024	Lead Teaching Assistant at University of Bonn <i>Practical Course in Extracellular Human Electrophysiology</i> , MSc Neurosciences module
Winter 2020-2021	Tutor at University of Bonn <i>Practical Course in Extracellular Human Electrophysiology</i> , MSc Neurosciences module
Spring 2019	Tutor at Ludwig-Maximilians-University Munich <i>Elective Course in Sensory Physiology</i> , MSc Neurosciences module

REVIEWING AND OTHER SERVICES

Journals Neuroscience & Biobehavioral Reviews

Other Bernstein Network Computational Neuroscience SMARTSTART Representative (2018-2019)

PROFESSIONAL MEMBERSHIPS

Bernstein Network for Computational Neuroscience, Germany [\[Link\]](#)
German Neuroscience Society (Neurowissenschaftliche Gesellschaft), Germany [\[Link\]](#)
Max-Planck-Institute of Neurobiology Alumni Association, Munich, Germany [\[Link\]](#)

LANGUAGES

English, native; German, B1 (Telc: 273 / 300)

COMMUNITY ENGAGEMENT AND OUTREACH

2023-2024	MLCoLearn - Neuro X Machine Learning Meet-Up [Site] [GitHub] Co-organizer, with Dr. Mohammad Bashiri
March 2024	German Neuroscience Olympiad , Bonn Competition Presenter
Summer/Fall 2022	PyData Global Impact Mentoring Program Mentor
July 2021	NeuroCamp : Munich Neuroscience Summer School Career Counselor
March 2021	Interdisciplinary College 2021 Technical Assistant, Sort-it by Intuity: Knowledge Representation in Action course Technical Assistant, Scientific Communication course