

# Michael Deistler

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## Curriculum Vitae

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### Education

- since 2020 **PhD candidate at the International Max-Planck Research School for Intelligent Systems**, *University of Tübingen*, Group of Prof Jakob Macke.
- 2017 – 2020 **Elite Master of Science in Neuroengineering**, *Technical University of Munich*, with High Distinction, with Honors, German Grade – 1.1, American GPA – 3.9.
- 2017 – 2020 **Research Excellence Certificate**, *Technical University of Munich*, Awarded for 30 additional ECTS during the M.Sc. in Neuroengineering.
- 2013 – 2017 **Bachelor of Science in Electrical Engineering and Information Technology**, *Technical University of Munich*, German Grade – 1.2, American GPA – 3.8, Passed with High Distinction.
- 2017 **Erasmus Semester**, *KTH Royal Institute of Technology*, Stockholm, German Grade – 1.3, American GPA – 3.7.
- 2013 **Abitur / Highschool Degree**, *Gymnasium Landau a.d. Isar*, German Grade – 1.1, American GPA – 3.9.

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### Experience

- since 2020 **PhD research**, supervised by Prof Jakob Macke, Machine Learning in Science. Bayesian inference; Probabilistic machine learning; Computational neuroscience
- 2019 **Master's thesis**, *Technical University of Munich*, supervised by Prof Jakob Macke. Identifying compensation mechanisms in neuroscience models using simulation-based inference
- 2018 **Research Internship (Nine weeks)**, *Max-Planck-Institute for Brain Research, Computation in Neural Circuits*, Frankfurt, supervised by Prof Julijana Gjorgjieva.
- 2018 **Research Internship (Six weeks)**, *University of Edinburgh, Institute for Adaptive and Neural Computation*, Edinburgh, supervised by Dr Matthias H. Hennig.
- 2017-2018 **Student Researcher (10h/week)**, *Brainlab AG, Research and Development*, Munich.
- 2016 **Research Internship (Six months)**, *BMW, Research Center for Autonomous Driving*, Munich.
- 2016 **Bachelor's thesis**, *Technical University of Munich*, supervised by Prof Eckehard Steinbach. Temporal Interpolation of Grayscale Frames using Event Data from the DAVIS240
- 2015 **Research Internship (Eleven weeks)**, *German Aerospace Center, Research Center for Communication and Navigation*, Munich.

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## Publications

### Peer-reviewed articles

- 2020 **sbi – a toolbox for simulation-based inference**, Alvaro Tejero-Cantero\*, Jan F. Boelts\*, **Michael Deistler\***, Jan-Matthis Lueckmann\*, Conor Durkan\*, Pedro J. Gonçalves, David S. Greenberg, Jakob H. Macke, *Journal of Open Source Software*.
- 2020 **Training deep neural density estimators to identify mechanistic models of neural dynamics**, Pedro J. Gonçalves\*, Jan-Matthis Lueckmann\*, **Michael Deistler\***, Marcel Nonnenmacher, Kaan Öcal, Giacomo Bassetto, Chaitanya Chintaluri, William F. Podlaski, Tim P. Vogels, David S. Greenberg, Jakob H. Macke, *Elife*.
- 2019 **Tactile Hallucinations on Artificial Skin Induced by Homeostasis in a Deep Boltzmann Machine**, **Michael Deistler\***, Yağmur Yener\*, Florian Bergner, Pablo Lanillos, Gordon Cheng, Published as selected talk at the IEEE Conference on Cyborg and Bionic Systems.

### Preprints

- 2021 **Variational methods for simulation-based inference**, Manuel Glöckler, **Michael Deistler**, Jakob H. Macke, Submitted to ICLR.
- 2021 **Disparate energy consumption despite similar network activity**, **Michael Deistler**, Jakob H. Macke\*, Pedro J. Gonçalves\*, Submitted to Elife.
- 2021 **Group-equivariant neural posterior estimation**, Maximilian Dax, Stephen R. Green, Jonathan Gair, **Michael Deistler**, Bernhard Schölkopf, Jakob H. Macke, Submitted to ICLR.
- 2018 **Local learning rules to attenuate forgetting in neural networks**, **Michael Deistler\***, Martino Sorbaro\*, Michael Rule, Matthias H. Hennig, arxiv.

### Peer-reviewed abstracts

- 2021 **Disparate energy consumption despite similar network activity**, **Michael Deistler**, Jakob H. Macke\*, Pedro J. Gonçalves\*, Computational and Systems Neuroscience, CoSyNe.
- 2019 **Statistical inference for analyzing sloppiness in neuroscience models**, **Michael Deistler**, Pedro J. Gonçalves, Jan-Matthis Lueckmann, Kaan Öcal, David S. Greenberg, Jakob H. Macke, Computational and Systems Neuroscience, CoSyNe.

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## Teaching

- 2020-2021 **Lead Teaching Assistant**, *Seminar: Machine learning methods for scientific discovery*, Tübingen University.
- 2019 **Teaching Assistant**, *Mathematics for Neuroengineers*, Technical University of Munich, Prof Jakob Macke.
- 2015-2019 **Teaching Assistant**, *Stochastic signals*, Technical University of Munich, Prof Wolfgang Utschick.
- 2015 **Teaching Assistant**, *Signal representation*, Technical University of Munich, Prof Gerhard Rigoll.

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2014 **Teaching Assistant**, *Digital Design*, Technical University of Munich, Prof Andreas Herkersdorf.

## Mentorship

2021 **Florian Schönleitner**, *M.Sc. thesis*, Technical University of Munich.

2021 **Mila Gorecki**, *Lab rotation*, Tübingen University.

2021 **Jonas Reck**, *M.Sc. thesis*, Tübingen University.

2021 **Manuel Glöckler**, *M.Sc. thesis*, Tübingen University.

## Community service

2021 **ELLIS Doctoral Symposium**, *Co-organiser*, <https://ellisds.eu/>.

Since 2020 **KI macht Schule**, *Tübingen group member*, <https://ki-macht-schule.de/>.

## Awards

- 2019 Travel-grant for the Bernstein Conference on Computational Neuroscience
- since 2017 Member of the Elite-Network of Bavaria
- 2017 Was offered the Fastlane scholarship of BMW (declined)
- 2013 'Lichtinger Preis' for an outstanding highschool degree in Natural Sciences

## Programming Languages

PYTHON **Proficient**, *Deep learning projects mostly using PyTorch (but also Tensorflow and Theano); core developer of the sbi toolbox (see publications).*

MATLAB **Proficient**, *Multiple classes and projects, including bachelor thesis.*

C++ **Intermediate**, *Self studies; six months working experience at BMW.*

C **Basic**, *University course.*

## Languages

German Mothertongue

English C2 (proficient, TOEFL score 115)

French A2 (elementary)

Swedish A1 (elementary)

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