Michael Deistler

Curriculum Vitae

Education

since February 2020 — **PhD candidate at the International Max-Planck Research School for Interlligent Systems**, *Univerisity of Tübingen*, Group of Jakob Macke, Machine Learning in Science.

October 2017 – March 2020 — **Elite Master of Science in Neuroengineering**, *Technical University of Munich*, with High Distinction, with Honors, German Grade – 1.1, American GPA – 3.9.

October 2017 – March 2020 — **Research Excellence Certificate**, *Technical University of Munich*, Awarded for 30 additional ECTS during the M. Sc. in Neuroengineering.

October 2013 – July 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.

January 2017 – June 2017 — **Erasmus Semester**, *KTH Royal Institute of Technology*, Stockholm, German Grade – 1.3, American GPA – 3.7.

June 2013 — **Abitur / Highschool Degree**, *Gymnasium Landau a. d. Isar*, German Grade – 1.1, American GPA – 3.9.

Experience

2019 — **Research Assistant**, *Technical University of Munich, Computational Neuroengineering*, Munich, Supervisor: Jakob Macke.

- Identifying directions of sloppiness and stiffness in the pyloric rhythm

2018 — **Nine Week Research Project**, *Max-Planck-Institute for Brain Research, Group for Computation in Neural Circuits*, Frankfurt, Supervisors: Prof Dr Julijana Gjorgjieva, Dr Marina Wosniack.

- A spiking neural network for modeling stable activity propagation in Drosophila larvae

2018 — **Six Week Research Project**, *University of Edinburgh, Faculty of Computational Neuroscience*, Edinburgh, Supervisors: Dr Matthias H. Hennig, Martino Sorbaro.

- Alleviating catastrophic forgetting in neural networks, see section *Publication*

2014-2018 — **Teaching Assistant**, *Bachelor level classes in 'Stochastic signals', 'Signal representation', and 'Digital Design', Master level class in 'Mathematics for Neuroengineers'*, Munich.

2017-2018 — **Working Student**, *Brainlab AG, Research and Development*, Munich.

- Electrical circuit design for medical applications

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2016 **Six month Internship**, *BMW, Research Center for Autonomous Driving*, Munich.
- Development and implementation of an algorithm for movement compensation and environment capturing in OpenCL

2015 **Eleven Week Internship**, *German Aerospace Center, Research Center for Communication and Navigation*, Munich.
- Work on data visualization and signal transmission

2013-2014 **Participation in the AdvEIsor Program**, *Technical University of Munich*.
- Soft-skill program offered by the TU Munich. Additionally, students gained hands-on experience by building a rotor display in a group of ten people.

Publications

2021 **Disparate energy consumption despite similar network activity**, *Michael Deistler, Pedro Gonçalves, Jakob H. Macke*, Computational and Systems Neuroscience, CoSyNe.

2020 **sbi – a toolbox for simulation-based inference**, *Alvaro Tejero-Cantero, Jan F. Boelts, Michael Deistler, Jan-Matthis Lueckmann, Conor Durkan, Pedro Gonçalves, David S. Greenberg, Jakob H. Macke*, Journal of Open Source Software, JOSS.

2020 **Training deep neural density estimators to identify mechanistic models of neural dynamics**, *Pedro 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, https://arxiv.org/abs/1906.10592.

2018 **Local learning rules to attenuate forgetting in neural networks**, *Michael Deistler, Martino Sorbaro, Michael Rule, Matthias Hennig*, https://arxiv.org/abs/1807.05097.

Master Thesis

Title *Identifying compensation mechanisms in neuroscience models using simulation-based inference*

Supervisors Prof Dr Jakob Macke & Dr Pedro Gonçalves & Jan-Matthis Lueckmann

Description We use simulation-based inference to study perturbations in neural systems and to reveal compensation mechanisms giving rise to robust circuit function.

Bachelor Thesis

Title *Temporal Interpolation of Grayscale Frames using Event Data from the DAVIS240*

Supervisors Prof Dr Eckehard Steinbach & Dr Christoph Bachhuber

Description Dynamic vision sensors are a neuromorphic camera technology recording event data on an almost continuous time-scale. We explored the usage of this data in order to create super slow-motion videos.

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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 using PyTorch, Tensorflow, and Theano; research project in Edinburgh, diverse university projects including master thesis.*

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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