

Education

since 10/2020	Doctoral candidate, University Tübingen , International Max Planck Research School for Intelligent Systems (IMPRS-IS), Group Machine Learning in Science, Prof. Jakob Macke, IMPRS-IS Committee: Prof. Jakob Macke, Prof. Matthias Bethge, Prof. Georg Martius
2017 – 2020	Elite Master of Science Neuroengineering, TU Munich , High Distinction, German Grade – 1.2, American GPA – 3.8
2013 – 2017	Bachelor of Science Physics, University Göttingen , Distinction, German Grade – 1.5, American GPA – 3.5
2016	Erasmus Semester, University La Laguna , German Grade – 1.5, American GPA – 3.5
2012	Abitur (university admission qualification) , Gymnasium am Kattenberge, German Grade – 1.3, American GPA – 3.7

Research

since 10/2020	Doctoral researcher, Machine Learning in Science, Prof. Jakob Macke Computational Neuroscience; Deep Learning; Systems Neuroscience; Probabilistic Machine Learning
since 10/2020	Remote Research Collaborator, HHMI Janelia Research Campus , Group of Dr. Srinivas Turaga
10/2019 – 10/2020	Research Engineer, HHMI Janelia Research Campus , Group of Dr. Srinivas Turaga
04/2019 – 10/2019	Master's Thesis, HHMI Janelia Research Campus , co-supervised by Dr. Srinivas Turaga and Prof. Jakob Macke
11/2018 – 12/2019	Research Assistant, TU Munich , Group of Prof. Jakob Macke
09/2018 – 11/2018	Research Intern, TU Munich , Group of Prof. Jakob Macke
02/2018 – 12/2018	Research Intern, Celonis SE, Munich , Data Science and Machine Learning
04/2017 – 07/2017	Bachelor's Thesis, University Göttingen , co-supervised by Dr. Christian Tetzlaff and Prof. Florentin Wörgötter
08/2013	Research Intern, Federal Institute for Materials Research and Testing, Berlin , Group of Prof. Marc Kreutzbrück

Publications

Peer-reviewed articles

2022 (in preparation for peer-review)	Lappalainen, J. K. , Tschopp, F. D., Prakhya S., McGill M., Nern A., Shinomiya K., Takemura S., Gruntman E., Macke J. H., Turaga S. C., Single neuron visual selectivity emerges from task optimization of a connectome constrained deep network model.
2019	Lappalainen, J. K. , Herpich, J., Tetzlaff, C. (2019). A theoretical framework to derive simple, firing-rate-dependent mathematical models of synaptic plasticity. <i>Frontiers in Computational Neuroscience</i> , 13, 26. https://github.com/lappalainenj/cbsp

Peer-reviewed abstracts: Conference talks

2021 **Lappalainen, J. K.**, Tschopp, F. D., Prakhya S., McGill M., Nern A., Shinomiya K., Takemura S., Gruntman E., Macke J. H., Turaga S. C., Connectome constrained simulations with task optimization lead to accurate predictions of tuning properties in the fruit fly visual system. Champalimaud Research Symposium 2021, Dialogues on Neural and Machine Intelligence, Lisbon.
<https://www.youtube.com/watch?v=vjsNuxz0JyY>

2021 **Lappalainen, J. K.**, Tschopp, F. D., Prakhya S., McGill M., Nern A., Shinomiya K., Takemura S., Gruntman E., Macke J. H., Turaga S. C., Connectome and task constrained neural networks. Satellite Workshop at Bernstein Conference 2021, Machine Learning meets Neuroscience: from Spikes to Stimulation, Berlin.

Peer-reviewed abstracts: Poster presentations

2022 **Lappalainen, J. K.**, Tschopp, F. D., Prakhya S., McGill M., Nern A., Shinomiya K., Takemura S., Gruntman E., Macke J. H., Turaga S. C. Cell-type specific visual selectivity emerges through connectivity and task constraints. Connectomics Conference 2022, Berlin.

2020 **Lappalainen, J. K.**, Prakhya S., McGill M., Tschopp, F. D., Turaga S. C. Inferring function from structure with connectome and task constrained neural networks. Cosyne 2020, Denver.

Teaching activities

Teaching assistant

2022 **Probabilistic machine learning**, University Tübingen, Prof. Jakob Macke
2021 – 2022 **Seminar: Machine learning methods for scientific discovery**, University Tübingen, Prof. Jakob Macke
2019 **Statistics and probability theory**, Technical University Munich, Prof. Jakob Macke
2019 **Large-scale modeling and large-scale data analysis**, Technical University Munich, Prof. Jakob Macke
2016 – 2017 **Classical mechanics**, University Göttingen, Prof. Cynthia A. Volkert
2015 **Classical electrodynamics**, University Göttingen, Prof. Tim Salditt

Supervision

2022 **Thesis supervisor** for Tharanika Thevururasa, B.Sc. Thesis, University Tübingen
2021 **Team lead** for Matthijs Pals and Tharanika Thevururasa. Developing an internal hands-on workshop for data- and ML-experiment lifecycle tools for >20 people, University Tübingen
2021 **Team lead** for Matthijs Pals and Tharanika Thevururasa. Implementing IT infrastructure for internal use of data- and ML-experiment lifecycle tools, University Tübingen

Community service & outreach

since 2022 **KI Macht Schule**, Tübingen group member, <https://ki-macht-schule.de/>
2022 **Internal workshop on mental health in academia**, Group of Prof. Jakob Macke
2020 **Internal workshop on scientific coding practices**, Groups of Dr. Srinivas Turaga and Prof. Jakob Macke

Computer skills

Python **Proficient** from various projects in ML, DL for computer vision, computational neuroscience strongly using Pytorch, numpy, just-in-time compilation.
Matlab **Intermediate** from multiple classes and semester projects.

C++	Intermediate first programming language learned, two classes and semester projects.
SQL	Intermediate from querying relational databases as intern at Celonis SE.
other	Bash, Git, Latex, Adobe CC, MS Office

Grant writing

2021	Co-applicant. Optical flow calculations with biologically realistic neural networks. Vector Stiftung Mint Innovationen (shortlisted), Janne K. Lappalainen , Prof. Jakob Macke
2020	Research and writing contributor. Dissociating neuronal representations along the ventral visual processing stream in the human temporal lobe. In DFG SFB "Synaptic microcircuits in health and disease" (accepted), Prof. Jakob Macke (Co-PI)

Awards

2021	Federal Ministry of Education and Research Grant via Tübingen AI Center
2019	J-1 short-term scholarship, HHMI Janelia Research Campus
2017	Elite-Network of Bavaria Membership
2016	Erasmus+ EU Grant
2012	DPG Membership for an outstanding Abitur (university admission qualification)

Languages

German	native
English	C2 (TOEFL iBT 118/120)
Spanish	B1
French	A1