

Thomas Kipf

Senior Research Scientist, Google Research, Amsterdam

web: tkipf.github.io

Professional Experience

- **Google Research** Amsterdam, The Netherlands
Senior Research Scientist (Brain Team) from May 2022
- **Google Research** Amsterdam, The Netherlands
Research Scientist (Brain Team) Jan 2020 - Apr 2022
- **DeepMind Technologies Ltd.** London, UK
Research Intern Jun 2018 - Oct 2018
- **Apple Inc.** Seattle, WA
Research Intern Jul 2017 - Sep 2017
- **Max Planck Institute for Brain Research** Frankfurt, Germany
Research Intern Feb 2015 - Mar 2016

Education

- **University of Amsterdam** Amsterdam, The Netherlands
PhD (highest distinction “cum laude”) Computer Science Apr 2016 - Apr 2020
Advisors: Max Welling (University of Amsterdam), Ivan Titov (University of Edinburgh)
- **University of Erlangen-Nuremberg** Erlangen, Germany
M.Sc. (honors) Physics Apr 2014 - Mar 2016
Graduated with distinction, GPA 3.97/4.0 (German grading system: 1.03)
- **University of Erlangen-Nuremberg** Erlangen, Germany
B.Sc. Physics Apr 2011 - Mar 2014
Graduated with distinction, GPA 3.93/4.0 (German grading system: 1.07)

Selected Publications

- M. S. M. Sajjadi, A. Mahendran, T. Kipf, E. Pot, D. Duckworth, M. Lucic, K. Greff, **RUST: Latent Neural Scene Representations from Unposed Imagery**, CVPR (2023), *Highlight*.
- G. F. Elsayed*, A. Mahendran*, S. van Steenkiste*, K. Greff, M. C. Mozer, T. Kipf*, **SAVi++: Towards End-to-End Object-Centric Learning from Real-World Videos**, NeurIPS (2022).
*equal contribution.
- M. S. M. Sajjadi, D. Duckworth*, A. Mahendran*, S. van Steenkiste*, F. Pavetić, M. Lučić, L. J. Guibas, K. Greff, T. Kipf*, **Object Scene Representation Transformer**, NeurIPS (2022).
*equal contribution.
- T. Kipf*, G. Elsayed*, A. Mahendran*, A. Stone*, S. Sabour, G. Heigold, R. Jonschkowski, A. Dosovitskiy, K. Greff, **Conditional Object-Centric Learning from Video**, ICLR (2022).
*equal contribution.

- K. Greff, F. Belletti, L. Beyer, C. Doersch, Y. Du, D. Duckworth, D. J. Fleet, D. Gnanapragasam, F. Golemo, C. Herrmann, T. Kipf, A. Kundu, D. Lagun, I. Laradji, et al., **Kubric: A scalable dataset generator**, CVPR (2022).
- F. Locatello*, D. Weissenborn, T. Unterthiner, A. Mahendran, G. Heigold, J. Uszkoreit, A. Dosovitskiy, T. Kipf*, **Object-centric Learning with Slot Attention**, NeurIPS (2020), *Spotlight*. *equal contribution.
- T. N. Kipf, **Deep Learning with Graph-Structured Representations**, PhD Thesis (2020).
- E. van der Pol, T. Kipf, F. A. Oliehoek, and M. Welling, **Plannable Approximations to MDP Homomorphisms: Equivariance under Actions**, AAMAS (2020).
- T. Kipf, E. van der Pol, and M. Welling, **Contrastive Learning of Structured World Models**, ICLR (2020), *Oral*.
- T. Kipf, Y. Li, H. Dai, V. Zambaldi, A. Sanchez-Gonzalez, E. Grefenstette, P. Kohli, and P. Battaglia, **CompILE: Compositional Imitation Learning and Execution**, ICML (2019), *Long Oral*.
- A. Kipf, T. Kipf, B. Radke, V. Leis, P. Boncz, and A. Kemper, **Learned Cardinalities: Estimating Correlated Joins with Deep Learning**, CIDR (2019).
- T. Kipf*, E. Fetaya*, K. C. Wang, M. Welling, and R. Zemel, **Neural Relational Inference for Interacting Systems**, ICML (2018). *equal contribution.
- N. De Cao and T. Kipf, **MolGAN: An implicit generative model for small molecular graphs**, ICML Workshop on Theoretical Foundations and Applications of Deep Generative Models (2018).
- T. R. Davidson*, L. Falorsi*, N. De Cao*, T. Kipf, and J. M. Tomczak, **Hyperspherical Variational Auto-Encoders**, UAI (2018), *Plenary Talk*. *equal contribution.
- M. Schlichtkrull*, T. N. Kipf*, P. Bloem, R. van den Berg, I. Titov, and M. Welling, **Modeling Relational Data with Graph Convolutional Networks**, ESWC (2018), *Best Student Research Paper*. *equal contribution.
- T. N. Kipf and M. Welling, **Semi-Supervised Classification with Graph Convolutional Networks**, ICLR (2017).

Full list: <http://scholar.google.com/citations?user=83HL5FwAAAAJ>

Awards and Scholarships

- ELLIS PhD Award 2021
- Elected as ELLIS Scholar 2021
- NeurIPS 2021 Outstanding Reviewer Award 2021
- ICLR 2021 Outstanding Area Chair Award 2021
- Highest PhD thesis distinction “cum laude” at University of Amsterdam 2020
- ICML 2018 Outstanding Reviewer Award 2018
- Best Student Research Paper Award (ESWC 2018) 2018
- Full scholarship by the German Academic Scholarship Foundation (Studienstiftung) . 2013 - 2016

Invited Talks

- Bellairs Workshop on Abstraction in Reinforcement Learning, Barbados Mar 22, 2023
- Machine Learning Seminar, University of Bristol Feb 20, 2023
- Invited GNN Lecture at Indian Winter School on Deep Learning (Virtual) Jan 29, 2023
- Invited Lecture on Graph Neural Networks, VU Amsterdam Nov 21, 2022
- Mind and Machine Seminar, University of Bristol Oct 27, 2022
- ECCV Workshop on Visual Object-oriented Learning meets Interaction (VOLI) . . . Oct 24, 2022
- Max Planck Institute for Intelligent Systems, Tuebingen Sep 29, 2022
- Transformers at Work, Amsterdam Sep 16, 2022
- ELLIS Video Understanding Symposium, Amsterdam Sep 8, 2022
- Invited Lecture on World Models at RL Summer School, Amsterdam Jul 14, 2022
- Invited GNN Lecture at Eastern European ML (EEML) Summer School Jul 12, 2022
- Invited Lecture on Graph Representation Learning, UCL, London Mar 7, 2022
- Research Week with Google India (Virtual) Feb 8, 2022
- UCL DARK Invited Speaker Series, London Dec 16, 2021
- London Machine Learning Meetup Sep 7, 2021
- LOGML Summer School, London Jul 12, 2021
- Keynote at ELLIS Program Kick-off: Semantic, Symbolic and Interpretable ML . . . Jun 7, 2021
- Stanford University (SNAP) Aug 4, 2020
- ICML 2020 Graph Representation Learning (GRL+) Workshop Jul 17, 2020
- ICML 2020 Object-oriented Learning (OOL) Workshop Jul 17, 2020
- Small Organic Molecules Workshop, University of Oxford Mar 24, 2020
- UCLA IPAM Deep Geometric Learning of Big Data Workshop May 22, 2019
- New York University (NYU), Center for Data Science May 3, 2019
- Facebook AI Research (FAIR), New York May 2, 2019
- Gotham City Physics X Machine Learning Workshop, New York Apr 30, 2019
- Delft University of Technology (TU Delft) Apr 24, 2019
- Huawei Robust Reinforcement Learning Workshop, London Apr 2, 2019
- Google AI, Zurich Mar 28, 2019
- Qualcomm AI Research, Amsterdam Mar 19, 2019
- Theoretical Foundations of Machine Learning Conference (TFML 2019) Feb 14, 2019
- Relational Representation Learning Workshop, Panel Discussion (NeurIPS 2018) . . . Dec 8, 2018
- Machine Learning for Drug Discovery Workshop (NeurIPS 2018 EXPO) Dec 2, 2018
- University of Cambridge (Engineering Dept.) Jun 21, 2018
- Babylon Health London Jun 20, 2018
- MINES ParisTech (Centre for Computational Biology) Jun 14, 2018
- University of Cambridge (Computer Science Dept.) May 25, 2018
- University of Oxford (Statistics Dept.) Oct 31, 2017
- London Machine Learning Meetup Oct 30, 2017

- Stanford University (Computer Science Dept.) Oct 3, 2017
- INRIA Nancy, France Mar 22, 2017
- INRIA Lille, France Dec 15, 2016

Miscellaneous

- **Teaching (TA):**
 - Machine Learning I, 2016 & 2018 (Master AI, University of Amsterdam)
 - Introduction to Machine Learning, 2017 (Bachelor AI, University of Amsterdam)
- **Student supervision:**
 - **M.Sc. thesis supervision:** Daniel Daza (2019, UvA), Davide Belli (2019, UvA), Nicola De Cao (2018, UvA), Mart van Baalen (2016, UvA)
 - **PhD interns:** Francesco Locatello (2020, Google), Sindy Löwe (2020, Google), Pradyumna Reddy (2022, Google), Mihir Prabhudesai (2022, Google), Ondrej Biza (2022, Google)
- **Community service:**
 - **Reviewer:** ECCV 2016, ICLR 2018, ICML 2018, NeurIPS 2018, ICML 2019, ISWC 2019, NeurIPS 2019, ICLR 2020, ICML 2020, NeurIPS 2020, NeurIPS 2021, ICLR 2022, NeurIPS 2022
 - **Area Chair:** ICLR 2021, LoG 2022, ICLR 2023, NeurIPS 2023
 - **Journals:** IEEE Transactions on Neural Networks and Learning Systems (TNNLS), IEEE Transactions on Signal Processing (TSP), IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), Journal of Machine Learning Research (JMLR), Transactions on Machine Learning Research (TMLR)
 - **Advisory Board:** Learning on Graphs (LoG) Conference (since 2022)
 - **PhD thesis committee:** Devanshu Arya (University of Amsterdam, 2022), Andrea Dittadi (DTU, 2022), Jean-Baptiste Cordonnier (EPFL, 2023)
 - **Mentorship:** Women in Machine Learning (WiML) Mentor Program 2022
- **Workshop co-organization:**
 - Workshop on Neuro Causal and Symbolic AI (NeurIPS 2022)
 - Workshop on the Elements of Reasoning: Objects, Structure, and Causality (OSC) (ICLR 2022)
 - ELLIS Workshop on Geometric and Relational Deep Learning (Amsterdam 2020)
 - Workshop on Graph Representation Learning (NeurIPS 2019)
 - Workshop on Deep Learning on Graphs: Methods and Applications (KDD 2019)
 - Workshop on Learning and Reasoning with Graph-Structured Data (ICML 2019)
 - Workshop on Representation Learning on Graphs and Manifolds (ICLR 2019)
 - ELLIS@ICML Workshop (ICML 2018)
- **Blog posts:**
 - Building Models that Learn to Discover Structure and Relations (Jul 2018)
 - Graph Convolutional Networks (Sep 2016)
- **Open source contributions:** See <https://github.com/tkipf>.