Thomas Kipf

Research Scientist, Google Research, Brain Team, Amsterdam

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Professional Experience

- **Google Research** — Amsterdam, The Netherlands
  Research Scientist (Brain Team) — *since Jan 2020*
- **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 (with 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

- 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).
- C. Cangea*, P. Veličković*, N. Jovanović, T. Kipf, and P. Liò, **Towards Sparse Hierarchical Graph Classifiers**, NeurIPS Relational Representation Learning Workshop (2018). *equal contribution.

- 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).
- R. Selvan, T. Kipf, M. Welling, J. H. Pedersen, J. Petersen, and M. de Bruijne, **Extraction of Airways using Graph Neural Networks**, MIDL Short Paper Track (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.
- R. van den Berg, T. N. Kipf, and M. Welling, **Graph Convolutional Matrix Completion**, KDD Deep Learning Day (2018), *Spotlight Talk*.
- 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).
- T. N. Kipf and M. Welling, **Variational Graph Auto-Encoders**, NeurIPS Bayesian Deep Learning Workshop (2016).

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

Awards and Scholarships

- PhD thesis distinction "cum laude" (3rd award in 10 years at Informatics Institute, UvA) . 2020
- Best student research paper award (ESWC 2018) 2018
- ICLR 2017 & ICML 2018 travel award . . . . . 2017 / 2018
- CIFAR travel scholarship for Deep Learning Summer School 2016
- Full scholarship by the German National Academic Foundation (Studienstiftung) . . 2013 - 2016

Invited Talks

- 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.) . . . . . June 21, 2018
- Babylon Health London . . . . . June 20, 2018
- MINES ParisTech (Centre for Computational Biology) . . . . . June 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)
- **M.Sc. thesis supervision:**
  - Daniel Daza (2019), Davide Belli (2019), Nicola De Cao (2018), Mart van Baalen (2016)
- **Reviewer activity:**
  - **Conferences**: ECCV 2016, ICLR 2018, ICML 2018, NeurIPS 2018, NeurIPS R2L 2018, ICLR RLGM 2019, ICML 2019, KDD DLG 2019, ISWC 2019, NeurIPS 2019, ICLR 2020, ICML 2020
  - **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)
- **Workshop co-organization:**
  - 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`.