

# Christopher Morris

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**Nationality:** German/British

## Areas of Specialization

Machine Learning with Graphs (Graph Kernels, Graph Neural Networks), Machine Learning for Combinatorial Optimization, Graph Algorithms

## Current Position

**2015–present** *PhD Student/Research Associate*, TU Dortmund University, within the Collaborative Research Center SFB 876 (Expected graduation: End of 2019)  
**1–3/2018** *Research stay at Stanford University*, staying with Jure Leskovec

## Education

**1997–2007** University Entrance Qualification, Erzbischöfliches St.-Angela-Gymnasium, Wipperfürth  
**2008–2012** B. Sc. in Computer Science, TU Dortmund University  
**2012–2015** M. Sc. in Computer Science, TU Dortmund University, Final Grade: 1.0 (best possible grade)

## Publications

### Conference Papers

**2020** Matthias Fey, Jan E. Lenssen, Christopher Morris, Jonathan Masci, Nils M. Kriege, *Deep Graph Matching Consensus*, International Conference on Learning Representations (ICLR) 2020

Lutz Oettershagen, Nils Kriege, Christopher Morris, Petra Mutzel, *Temporal Graph Kernels for Classifying Dissemination Processes*, SIAM International Conference on Data Mining (SDM) 2020

- 2019** Christopher Morris, Martin Ritzert, Matthias Fey, William L. Hamilton, Jan Eric Lenssen, Gaurav Rattan, Martin Grohe,  
*Weisfeiler and Leman Go Neural: Higher-order Graph Neural Networks*,  
AAAI Conference on Artificial Intelligence (AAAI) 2019
- 2018** Rex Ying, Jiaxuan You, Christopher Morris, Xiang Ren, William L. Hamilton, Jure Leskovec,  
*Hierarchical Graph Representation Learning with Differentiable Pooling*,  
Neural Information Processing Systems (NeurIPS) 2018, spotlight presentation, and  
KDD Deep Learning Day 2018
- Nils M. Kriege, Christopher Morris, Anja Rey, Christian Sohler,  
*A Property Testing Framework for the Theoretical Expressivity of Graph Kernels*,  
International Joint Conference on Artificial Intelligence (IJCAI) 2018
- 2017** Christopher Morris, Kristian Kersting, Petra Mutzel,  
*Glocalized Weisfeiler-Lehman Graph Kernels: Global-Local Feature Maps of Graphs*,  
IEEE International Conference on Data Mining (ICDM) 2017, *Full paper*
- Christopher Morris, Nils M. Kriege,  
*Recent Advances in Kernel-Based Graph Classification*,  
European Conference on Machine Learning & Principles and Practice of Knowledge  
Discovery in Databases (ECML PKDD) 2017
- 2016** Christopher Morris, Nils M. Kriege, Kristian Kersting, Petra Mutzel,  
*Faster Kernels for Graphs with Continuous Attributes via Hashing*,  
IEEE International Conference on Data Mining (ICDM) 2016

### Journal Articles

- 2019** Nils M. Kriege, Fredrik D. Johansson, Christopher Morris,  
*A Survey on Graph Kernels*,  
*Accepted for publication in Applied Network Science*  
(<https://arxiv.org/abs/1903.11835>)
- Nils M. Kriege, Marion Neumann, Christopher Morris, Kristian Kersting, Petra Mutzel,  
*A Unifying View of Explicit and Implicit Feature Maps for Structured Data: Systematic  
Studies of Graph Kernels*,  
*Accepted for publication in Data Mining and Knowledge Discovery*  
(<https://arxiv.org/abs/1703.00676>)
- 2017** Fritz Bökler, Mathias Ehrgott, Christopher Morris, Petra Mutzel,  
*Output-sensitive Complexity of Multiobjective Combinatorial Optimization*,

## Preprints

- 2019** Christopher Morris, Petra Mutzel,  
*Towards a practical  $k$ -dimensional Weisfeiler-Leman algorithm,*  
(<https://arxiv.org/abs/1904.01543>)

## Invited Talks

- 10.2019** Talk at IBM Research, Zürich, *Graph Classification: Kernel and Neural Approaches*  
**5.2019** Talk at NEC Research, Heidelberg, *Graph Classification: Kernel and Neural Approaches*  
**3.2018** Talk at Stanford, SNAP, *Learning Higher-order Graph Embeddings: Theory and Practice*  
**7.2017** Talk at RWTH Aachen, Chair of Logic and the Theory of Discrete Systems, *Graph Classification: Kernels and Beyond*

## Teaching

Supervised eight bachelor and master thesis, one intern

- SS 2019** Proseminar *Graph Algorithms*
- WS 2017/18** Seminar *Algorithm Engineering*
- SS 2017** Seminar *Algorithm Engineering*
- WS 2016/17** Student project group *Algorithm Engineering for Graph Data Mining*  
Seminar *Algorithms Unplugged*
- SS 2016** Seminar *Algorithm Engineering*  
Seminar *Graph Mining*
- WS 2015/16** Seminar *Algorithm Engineering*
- As a student** Programming tutorials for engineering students,  
Teaching assistant for a course on theoretical computer science

## Service to the Profession

Reviewer for ISAAC 2018, ESA 2018, WALCOM 2017, IJCAI 2019, NeurIPS 2019, ALENEX 2019, AAAI 2020, ICML 2020

Occasional reviews for ACM Transactions on Knowledge Discovery from Data, IEEE Transactions on Cybernetics, IEEE Transactions on Mobile Computing, IEEE Transactions on Pattern Analysis and Machine Intelligence

Program committee member for *Representation Learning on Graphs and Manifolds* (ICLR 2019 Workshop)

Program committee member for *Learning and Reasoning with Graph-Structured Data* (ICML 2019 Workshop)

Program committee member for *Graph Representation Learning* (NeurIPS 2019 Workshop)

Member of the appeal commission for the professorship *Data Mining* (2017)

## Computational Skills

Python, C++,  $\text{\LaTeX}$ , Scikit-learn, NumPy, PyTorch, PyTorch Geometric

## Referees

Prof. Petra Mutzel  
Computational Analytics,  
Department of Computer Science,  
University of Bonn  
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Prof. Kristian Kersting  
Machine Learning Group,  
Department of Computer Science,  
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