

# 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

**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*,  
Journal of Multicriteria Decision Analysis, 2017

### Preprints

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

## Invited Talks

- 5.2019** Talk at NEC Research, Heidelberg, *Graph Classification: Kernel and Neural Approaches*  
**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, ACM TKDD  
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++, L<sup>A</sup>T<sub>E</sub>X, Scikit-learn, NumPy, PyTorch, PyTorch Geometric

## Referees

Prof. Petra Mutzel  
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Prof. Kristian Kersting  
Machine Learning Group,  
Department of Computer Science,  
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