

# Philipp Geiger

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email: *upon request*, phone: *upon request*; [GitHub](#), [Google Scholar](#)

## Summary

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Education, research      **Doctorate in computer science, MSc (eq.) in mathematics**; published at **ICML, UAI; machine learning, causal inference, time series, multi-agent/economic decisions**

Applications, teamwork      In **Python, TensorFlow, MySQL**: data-driven **congestion forecasting, cloud models; cooperating in cross-disciplinary teams, presenting results to diverse stakeholders**

## Experience

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04/2017 – present      **Postdoc researcher**  
**Max Planck Institute for Intelligent Systems**, Tübingen, Germany

- Leading [research project](#) on machine learning for efficient multi-agent facility usage
- Implementing congestion/demand forecasting web app, using high-volume sensor data
- Applying time series analysis (Kalman filtering, exponential smoothing, RNNs), in Python, TensorFlow, MySQL; game theory (Bayesian games, best-response dynamics)
- Teamed up with economist, physicists, software engineers; supervised a MSc student
- Achieved agreement with work councils and privacy officers; presented project

07/2015 – 10/2015      **Research intern**  
**Microsoft Research Ltd.**, Cambridge, United Kingdom

- Worked on AI simulation project with researchers and engineers under Katja Hofmann

## Education

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06/2013 – 03/2017      **Doctorate in computer science (equivalent to PhD)**  
**Max Planck Institute for Intelligent Systems**, Tübingen, and **University of Stuttgart**, Germany

- Thesis title: "Causal models for decision making via integrative inference"
- Grade: magna cum laude/"very good"
- Supervisors: Bernhard Schölkopf, Dominik Janzing and Marc Toussaint
- Worked at intersection of causal models and quasi-experiments, counterfactuals, reinforcement learning, statistics, economic time series analysis, decision making
- Used Gaussian process regression for cloud computer debugging; Python, R, Matlab

10/2006 – 12/2012      **Diplom in mathematics (equivalent to MSc)**  
**Heidelberg University** and **Humboldt University of Berlin**, Germany

- Thesis title: "Mutual Information and Gödel Incompleteness"
- Grade: 1.4 (best score 1.0 of 5.0)"very good"
- Specialization: mathematical logic, theoretical computer science; minor: philosophy

## Skills

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**Programming**

- Machine learning implementation (Gaussian process regression, ridge regression, neural networks, Kalman filtering, exponential smoothing, k-means clustering) with Python (working knowledge), TensorFlow, R, Matlab, MySQL (basic) in Linux
- Object-oriented programming with Python (working knowledge), C++ (basic)

**Communicating**

- Presenting and explaining data, insights and results using PowerPoint, LaTeX, HTML
- Coordinating with diverse stakeholders and understanding them: customers, manufacturers, researchers, software engineers, work councils and privacy officers
- Languages: German (native), English (fluent), French (beginner)

## Selected publications

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- Peer-reviewed**
- Geiger, P., Zhang, K., Gong, M., Janzing, D., & Schölkopf, B. (2015). Causal inference by identification of vector autoregressive processes with hidden components. In *Proceedings of the 32nd International Conference on Machine Learning (ICML)*. [↗](#)
  - Gong, M., Zhang, K., Schoelkopf, B., Tao, D., & Geiger, P. (2015). Discovering temporal causal relations from subsampled data. In *Proceedings of the 32nd International Conference on Machine Learning (ICML)*. [↗](#)
  - Geiger, P., Janzing, D., & Schölkopf, B. (2014). Estimating causal effects by bounding confounding. In *Proceedings of the 30th Conference on Uncertainty in Artificial Intelligence (UAI)*. [↗](#)
- Preprints**
- Geiger, P., Winkelmann, J., Proissl, C., Besserve, M., & Schölkopf, B. (2018). Coordination via predictive assistants from a game-theoretic view. *ArXiv Preprint ArXiv:1803.06247*. [↗](#)
  - Geiger, P., Carata, L., & Schoelkopf, B. (2016). Causal inference for cloud computing. *ArXiv Preprint ArXiv:1603.01581*. [↗](#)
- Theses**
- Geiger, P. (2017). Causal models for decision making via integrative inference. PhD thesis. [↗](#)
  - Geiger, P. (2012). Mutual information and Gödel incompleteness. Diploma thesis. [↗](#)

## Supervision, teaching and reviewing

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- 10/2016 – 03/2017     **Supervisor**
- Student: Claudius Proissl (University of Stuttgart); research project during MSc
- 10/2013 – 02/2014     **Teaching assistant**  
University of Tübingen, Germany
- Lecture "Intelligent Systems I": a first course in machine learning
- 10/2011 – 04/2012     **Teaching assistant**  
Heidelberg University, Germany
- Lecture "Computability and Computational Complexity Theory I"
- 10/2014 – present     **Reviewer**
- Conferences: NIPS ('14, '17), ICML ('16, '17), UAI ('16, '17, '18)
  - Journals: ACM TIST, IEEE PAMI, IEEE TKDE, IJDSA

## Memberships and awards

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- 09/2015 – 06/2017     Associate Doctoral Fellow of Max Planck ETH Center for Learning Systems
- 07/2005     Award for outstanding results in physics by German Physical Society (DPG)

## References

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- Prof. Bernhard Schölkopf     Max Planck Institute for Intelligent Systems, Tübingen, Germany
- Relationship: PhD thesis co-supervisor
  - Email: [Sekretariat-Schoelkopf@tuebingen.mpg.de](mailto:Sekretariat-Schoelkopf@tuebingen.mpg.de)
- Dr. Katja Hofmann     Microsoft Research Ltd., Cambridge, United Kingdom
- Relationship: research internship supervisor
  - Email: [katja.hofmann@microsoft.com](mailto:katja.hofmann@microsoft.com)
- Dr. Wolfgang Merkle     Heidelberg University, Germany
- Relationship: diplom thesis supervisor
  - Email: [merkle@math.uni-heidelberg.de](mailto:merkle@math.uni-heidelberg.de)