Philipp Geiger

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Summary

Qualifications	Doctorate in **computer science**, diplom (~ MSc) in **mathematics**, experienced in **communicating** within diverse teams and **leading** a real-world inference research project
Research interests	**Computational inference** (**causal inference, time series analysis, machine learning**, logic) and **game theory** for **economic/social decision making** (e.g., demand forecasting)

Experience

04/2017 – present
Postdoc researcher
Max Planck Institute for Intelligent Systems, Tübingen, Germany
- Leading own research project Cafeteria Coordination: a real-world sensor/inference/communication system for efficient usage of facilities, implemented using machine learning (in Python), analyzed via game theory
- Coordinating with work councils, data privacy officers, technology providers, programmers and other researchers

07/2015 – 10/2015
Research intern
Microsoft Research Ltd., Cambridge, United Kingdom
- Worked on AI research project in the Machine Intelligence and Perception group

Education

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
- Supervisors: Bernhard Schölkopf, Dominik Janzing and Marc Toussaint
- Applied machine learning and time series analysis to economic and cloud computing data (using Python, Matlab and R)

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)
- Specialization: mathematical logic and theoretical computer science
- Minor subject: philosophy

Publications

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 2015)*.
- 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 2015)*.
- 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 2014)*.

Preprints

- Geiger, P., Carata, L., & Schoelkopf, B. (2016). Causal inference for cloud computing. *ArXiv Preprint ArXiv:1603.01581*.
- Geiger, P., Hofmann, K., & Schölkopf, B. (2016). Experimental and causal view on information integration in autonomous agents. *ArXiv Preprint ArXiv:1606.04250*.

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

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 2014, ICML 2016, UAI 2016, NIPS 2016, ICML 2017, NIPS 2017
- Journals: ACM Transactions on Intelligent Systems and Technology, IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Knowledge and Data Engineering, International Journal of Data Science and Analytics

Skills

Program-ming

- Machine learning with Python (working knowledge), R and Matlab (basic knowledge)
- Object-oriented programming with Python, C++ and Java (basic knowledge)
- Web development with HTML, CSS (working knowledge), JavaScript, MySQL and web framework Django/Python (basic knowledge)

Languages German (native), English (fluent), French (beginner)

Memberships and awards

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

Prof. Bernhard Schölkopf
Department of Empirical Inference, Max Planck Institute for Intelligent Systems, Tübingen, Germany

- Relationship: PhD thesis co-supervisor
- E-Mail: Sekretariat-Schoelkopf@tuebingen.mpg.de

Dr. Katja Hofmann
Microsoft Research Ltd., Cambridge, United Kingdom

- Relationship: Research internship supervisor
- E-Mail: katja.hofmann@microsoft.com

Dr. Wolfgang Merkle
Institute for Computer Science, Heidelberg University, Germany

- Relationship: Diplom thesis supervisor
- E-Mail: merkle@math.uni-heidelberg.de