

Paul Friedrich

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🌐 pfriedric.github.io

Education

- 2020 – current **Ph.D. in Computer Science** at University of Zurich
Advised by Prof. Sven Seuken and Prof. Giorgia Ramponi
- 2017 – 2020 **M.Sc. in Mathematics** at ETH Zurich
Thesis: *A Machine Learning Perspective on the Kyle Model*
Supervised by Prof. Josef Teichmann, graded 6/6
- 2017 **Exchange semester** at the Hong Kong University of Science and Technology
- 2014 – 2018 **B.Sc. in Mathematics** at ETH Zurich
Thesis: *Risk Measures and their Applications: an Exposition*
Supervised by Prof. Mete Soner, graded 6/6

Working Experience

- 01/2020 – 09/2020 **Consultant**
Ernst & Young (Zurich)
Quant & Analytics, Financial Services Risk Management
Regulatory & financial audits of, and advisory projects for, globally active Swiss financial institutions. Audited statistical and scenario-based risk models, critically verified documentation, designed and implemented independent challenger models in Python and R.
- 09/2018 – 03/2019 **Intern**
Ernst & Young (Zurich)
Quant & Analytics, Financial Services Risk Management

Research Papers

Paul Friedrich, Yulun Zhang, Michael J. Curry, Ludwig Dierks, Stephen McAleer, Jiaoyang Li, Tuomas Sandholm, and Sven Seuken, “Scalable mechanism design for multi-agent path finding,” *preprint at arXiv:2010.06398*, 2024.

Paul Friedrich, Ludwig Dierks, and Sven Seuken, “Machine learning-enhanced market design for drone traffic management,” *working paper*, 2024.

Sven Seuken, **Paul Friedrich**, and Ludwig Dierks, “Market design for drone traffic management,” *AAAI Conference on Artificial Intelligence, won Blue Sky Best Paper Award (third place)*, 2022.

Paul Friedrich and Josef Teichmann, “Deep investing in kyle’s single period model,” *preprint at arXiv:2006.13889*, 2020.

Professional Experience

Supervisory Roles

- 2021 – 2022 **Master’s project** at University of Zurich. *Supervised a team of MSc students at UZH who developed a simulator for drone traffic management as part of my line of research. Students: Joel Barmettler, Thomas Mannhart, Johann Schwabe.*

Professional Experience (continued)

Volunteering Roles

- 2017 – 2018 **Organising committee** of the yearly Math & Physics job fair *MindPhair* at ETH Zurich.
- 2015 – 2016 **Board member for university's policy** in the Association of Mathematics and Physics students at ETH Zurich. *Handled all communication between the association and the Department of Mathematics at ETH, represented student interests in all department committees, incl. hiring committees. Organised events, coordinated with other student associations.*

Teaching Roles

- 2021 & 2022 **Head Teaching Assistant** at University of Zurich. Coordinated TAs, weekly exercise sheets and final exam for the CompSci BSc/MSc lecture *Algorithmic Game Theory and Mechanism Design*
- 2020 & 2023 **Teaching Assistant** at University of Zurich for the CompSci BSc/MSc lecture *Algorithmic Game Theory and Mechanism Design*
- 2016 – 2018 **Teaching Assistant** at ETH Zurich for the Mathematics BSc lectures *Topology, Complex Analysis, Real Analysis I*

Competitions

- 2023 **1st Computational Social Choice Competition** at IJCAI '2023.
Won 2nd place (with B. Pasztor and E. Soumalias). Macao S.A.R.

Conferences and Summer Schools

- 2022 23rd ACM Conference on Economics and Computation (**EC'22**).
Boulder, USA.
- 36th AAAI Conference on Artificial Intelligence (**AAAI-22**).
Vancouver, Canada.
- 2021 **Summer School:** Data Science, Optimization and Operations Research.
Organised by Prof. Michel Bierlaire, EPFL Lausanne. Zinal, Switzerland.
- 22nd ACM Conference on Economics and Computation (**EC'21**).
Budapest, Hungary.

Skills

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| Coding | Python (daily use) , R, MATLAB, C++. |
| Tools & Frameworks | Numpy/Scipy, JAX, Keras, PyTorch, Gurobi, CPLEX, SQL. |
| Languages | German (mothertongue), English (proficient), French (fluent), Spanish (intermediate). Basic Russian, Ukrainian, Mandarin Chinese. |
| Interests | Sports (triathlon, sailing, surfing), Volunteering, Cooking, Traveling & Cultural exchange, Violin, Language learning. |