Paul Friedrich

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🌐 pfriedric.github.io

Education

2020 – now	**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

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.*
2018 – 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 MSc lecture
Algorithmic Game Theory and Mechanism Design.

2020 & 2023   **Teaching Assistant** at University of Zurich for the CompSci MSc lecture
Algorithmic Game Theory and Mechanism Design.

2016 – 2018   **Teaching Assistant** at ETH Zurich for the Mathematics BSc&MSc lectures
Topology, Complex Analysis, Real Analysis I.

Competitions

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

Conferences and Summer Schools

2022   **EC '22:** 23rd ACM Conference on Economics and Computation.
Boulder, USA.

AAAI-22: 36th AAAI Conference on Artificial Intelligence.
Vancouver, Canada.

2021   **Summer School:** Data Science, Optimization and Operations Research.
Organised by Prof. Michel Bierlaire, EPFL Lausanne. Zinal, Switzerland.

EC '21: 22nd ACM Conference on Economics and Computation.
Budapest, Hungary.

Skills

Coding	**Python**, 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.