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

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.