Paul Setinek

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Education

- **Johannes Kepler University (JKU)** — Linz, Austria
  PhD in Machine Learning, advised by Johannes Brandstetter — *Oct 2024 – present*
  - **Research**: Data-driven neural surrogates for large-scale physical simulations, with a focus on multi-fidelity data generation and training for compute-optimal scaling.
- **University of Washington** — Seattle, USA
  Visiting PhD Student, hosted by Steven Brunton — *Aug 2026 – present*
- **Imperial College London** — London, United Kingdom
  MSc in Applied Computational Science and Engineering, Distinction — *Oct 2022 – Oct 2023*
  - **Thesis**: Neural Radiance Fields for vision-based subsea maintenance, in collaboration with Aker BP ASA. [Code]
  - **Relevant Coursework**: Deep Learning, Data Science & Machine Learning, Computational Mathematics, Modelling and Numerical Methods, Inversion and Optimisation, Patterns in Parallel Programming, Advanced Programming
- **Vienna University of Technology (TU Wien)** — Vienna, Austria
  BSc in Mechanical Engineering – Management, GPA 1.9 (1–5, 1 best) — *Oct 2017 – Jun 2022*
  - **Thesis**: Equity Returns and Sample Size: Impact on Optimal Portfolios
  - **Relevant Coursework**: Mathematics, Mechanics, Control Engineering, Fluid Mechanics, Statistics, Management, Finance and Optimisation

Publications

Setinek, P., Paischer, F., Thuerey, N., Brandstetter, J., & Koehler, F. *Compute-Optimal Data Scaling for Neural Surrogates via Multi-Fidelity Training.* NeurIPS 2026. [arXiv] [Project page] [Code] [Data] — 2026

Paischer, F., Galletti, G., Hornsby, W., **Setinek, P.**, Zanisi, L., Carey, N., Pamela, S., & Brandstetter, J. *GyroSwin: 5D Surrogates for Gyrokinetic Plasma Turbulence Simulations.* NeurIPS 2025. [arXiv] [Blog] — 2025

Setinek, P., Galletti, G., & Brandstetter, J. *Towards Multi-Fidelity Scaling Laws of Neural Surrogates in CFD.* NeurIPS 2025 AI4Science Workshop. [arXiv] — 2025

Setinek, P., Galletti, G., Gross, T., Schnürer, D., Brandstetter, J., & Zellinger, W. *SIMSHIFT: A Benchmark for Adapting Neural Surrogates to Distribution Shifts.* Preprint. [arXiv] — 2025

Research & Professional Experience

- **Johannes Kepler University** — Linz, Austria
  University Assistant (Teaching) — *Oct 2024 – present*
  - Design and teach tutorials for *Advanced Machine Learning Techniques*: estimation theory, diffusion models, neural ODEs, flow matching and neural fields.
  - Design and teach tutorials for *Geometric Machine Learning Techniques*: invariance and equivariance, groups and symmetries in physical systems, learning on graphs and sets, Fourier transforms and wavelets, and group convolutions.
  - Co-supervise Bachelor's and Master's theses on machine learning for simulation.
- **Carl Zeiss Microscopy GmbH – ZEISS Solutions Lab** — Munich, Germany
  Intern, Microscopy Automation and Computer Vision — *Mar 2024 – Sep 2024*
  - Built a computer-vision pipeline for automated quality control of welds using light microscopy, with distributed image acquisition, analysis and visualisation across multiple machines.
  - Designed the database schema and implemented the SQL backend for storing and retrieving measurement data.
- **Vienna University of Technology** — Vienna, Austria
  Teaching Assistant — *Feb 2021 – Nov 2022*
  - Designed and taught tutorials for *Continuous Simulation Techniques*: modelling of dynamical systems with ODEs and numerical ODE solvers.
  - Supervised student groups on individual projects.

Skills

- **Programming**: Python (advanced: PyTorch, NumPy, SciPy), C++, MATLAB, SQL
- **Tools**: SLURM, Weights & Biases, Hugging Face, OpenFOAM, Git, Linux
- **Languages**: German (native), English (fluent), French (intermediate)