Fabian Zimmer

LinkedIn, GitHub, Publications

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Profile Summary

Data-driven researcher and educator with expertise in advanced computational modeling and statistical analysis, combining technical proficiency in machine learning and data visualization with proven teaching and leadership experience. Skilled in extracting actionable insights from complex datasets through analytical and visualization methods — passionate about leveraging emerging technologies to transform educational content delivery and enhance learning outcomes. Authored multiple peer-reviewed publications.

Experience

- **University of Amsterdam** — Amsterdam, Netherlands
  PhD in Cosmology and Astrophysics (4 years) — *Sep. 2021 - Sep. 2025*
  - **Computational Modeling & Data Engineering**: Developed and optimized large-scale data simulations and predictive models; engineered statistical analysis pipelines; designed scalable and adaptive algorithms. Achieved 98% reduction of algorithm runtimes between main projects (∼1h to ∼1min.) via machine learning tools.
  - **Leadership & Project Management**: Led and organized weekly research team meetings for 5-10 members. Designed workshops that improved team's organizational and productivity skills. Managed multiple concurrent research projects with clear milestones and deliverables. Developed onboarding protocols and mentorship frameworks for accelerated newcomer integration.
  - **Supervision & Mentoring**: Designed multiple 1-year M. Sc. projects based on own simulation codes and publications. Provided daily supervision to M. Sc. students, resulting in high-grade dissertations and successful PhD applications. Mentored fellow PhD colleagues on technical challenges and career development.
  - **Teaching & Learning**: Assistant teacher for several physics M. Sc. courses. Designed course structures and content (learning materials, assessments) that improved student engagement and course ratings. Co-developed AI integration strategy for graduate-level curriculum, redesigning a Machine Learning course to address emerging AI tools in academic and research environments.
  - **Science communication**: Expert in breaking down and conveying complex subjects to diverse audiences. Co-authored science outreach articles in NTvN (Dutch physics magazine) and Quantum Universe (popular science website). Finalist in 3-Minute PhD thesis competition 2022, creating concise and engaging video presentation of complex research.

Skills

- **Data Science & Programming**: Python (NumPy, SciPy, Pandas, Matplotlib), Machine Learning (JAX, Scikit-learn, PyTorch, TensorFlow), Statistical Analysis, Data Visualization, Predictive Modeling, Wolfram Mathematica
- **Software Development & Infrastructure**: Cython, C++, parallel computing, Git(Hub), Linux/Unix (bash shell), Remote Cluster Computing, SSH, Docker
- **Education Technology**: Learning Analytics, Curriculum Design, Educational Assessment, Instructional Design
- **Communication**: Technical Writing, Data Storytelling, Presentation Skills
- **Languages**: Fluent: (English, German, Swiss German); Intermediate: (Dutch)

Education

- **University of Amsterdam** — Amsterdam, Netherlands
  Master of Science in Physics and Astronomy — *Sep. 2019 — Aug. 2021*
- **University of Basel** — Basel, Switzerland
  Bachelor of Science in Physics — *Aug. 2015 — Jan. 2019*