# Felix Zimmer

**Independent Researcher**

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## PROFILE

Passionate about developing innovative deep learning techniques. Building on a strong foundation in psychological methods, I am transitioning to pure machine learning research around sparse neural networks. I thrive in collaborative, interdisciplinary environments and seek opportunities to contribute to cutting-edge advancements in ML.

## WORK EXPERIENCE

**Co-Investigator** 01/2025 – 06/2026 (5%)
*King's College London*

NIHR206858 grant on sample size planning in prediction modeling; advising on software development leveraging my `mlpwr` package.

**Postdoctoral Researcher** 09/2023 – 12/2023 (50%)
*University of Zurich*

Finalized PhD-derived publications; aided departmental projects.

**Independent Researcher** 04/2023 – PRESENT

Transitioning to core machine learning research. Developed EntryPrune – a neural network feature selection method using novel entry-based pruning that outperforms SOTA approaches. Initiated collaboration to publish a preprint and open-source package.

**Visiting PhD Student** 08/2022 – 02/2023
*King's College London*

Collaborated with Daniel Stahl's group on sample size methods for prediction models, initiating methodologies development (ongoing).

**PhD Student** 04/2020 – 03/2023
*University of Zurich*

Developed novel sample size methods for psychological research: analytical solutions (Item Response Theory) and simulation-based approaches for complex study designs, yielding three top-tier publications.

## EDUCATION

04/2020 – 04/2023 **Doctor of Philosophy** – Psychology
*University of Zurich, Switzerland*
Thesis: "New Methods for Power Analysis and Sample Size Planning"

04/2018 – PRESENT **Bachelor of Science** – Mathematics
*FernUniversität in Hagen, Germany*

10/2014 – 02/2020 **Master of Science** – Psychology
*JGU Mainz, Germany*
Thesis: "Applications of machine learning in psychology – a review"

## AWARDS

2022 Mobility grant for research stay with Prof. Daniel Stahl, King's College London (CHF 14.243, SNSF)

2021 Best poster award, 'MaDoKo' – Master and Doctoral Students Congress, University of Zurich

2020 Master thesis award for outstanding performance, Johannes Gutenberg University Mainz

## SOFTWARE

entryprune Neural network feature selection using entry-based pruning [Python, GitHub]

mlpwr Cost-efficient sample size planning for complex study designs [R, CRAN]

irtpwr Power analysis toolbox for Item Response Theory models [R, CRAN]

## TEACHING

2022 Seminar on deep learning applications in psychology, University of Zurich [open materials]

## SELECTED PUBLICATIONS

**Zimmer, F.**, Okanovic, P., & Hoefler, T. (2025). EntryPrune: Neural Network Feature Selection using First Impressions. *arXiv preprint*. [DOI]

**Zimmer, F.**, & Debelak, R. (2023). Simulation-based design optimization for statistical power: Utilizing machine learning. *Psychological Methods*. [DOI]

**Zimmer, F.**, Draxler, C., & Debelak, R. (2023). Power Analysis for the Wald, LR, Score, and Gradient Tests in a Marginal Maximum Likelihood Framework: Applications in IRT. *Psychometrika*. [DOI]

## ACTIVITIES AND INTERESTS

In my spare time I enjoy gravel cycling, bouldering, and eating lots of Korean ramen.