Curriculum Vitae - Arber Zela

(last update: May 2025)

Machine Learning Lab, University of Freiburg

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Education

- **PhD, Albert-Ludwigs Universitaet** — **Freiburg, Germany**
  Dr. rer. nat in Computer Science — *03/2019 – now*

  – Machine Learning Lab (University of Freiburg) and ELLIS Institute (University of Oxford)
  – Thesis: "Towards Robust, Efficient and Reproducible Neural Architecture Search"
  – Supervisors: Prof. Dr. Frank Hutter, Prof. Dr. Yee Whye Teh (ELLIS Host)
  – 15 published papers in top-tier venues during PhD (5 NeurIPS,
    6 ICLR, 1 ICCV, 1 IJCNN, 1 TPAMI, 1 IJCV), including 2 ICLR Orals and 2 Workshop Orals.

- **Master, Albert-Ludwigs Universitaet** — **Freiburg, Germany**
  Master's Programme in Computer Science — *04/2015 – 02/2019*

- **Bachelor, Polytechnic University of Tirana** — **Tirana, Albania**
  Bachelor's Programme in Electronic Engineering — *10/2011 – 10/2014*

Experience

- **Samsung AI Center** — **Cambridge, United Kingdom**
  Research Intern — *06/2022 – 12/2022*

  – Conducted research on latent space augmentations
    for self-supervised learning.

- **Department of Statistical Machine Learning** — **Oxford, United Kingdom**
  Exchange PhD student (Supervisor: Prof. Dr. Yee Whye Teh) — *11/2021 – 02/2022*

  – Designed algorithm that effectively search for more robust and
    better calibrated ensembles, especially during dataset shift.

- **Machine Learning Lab, Albert-Ludwigs Universitaet** — **Freiburg, Germany**
  Research Assistant — *09/2017 – 01/2019*

  – Successfully applied Multi-fidelity Bayesian Optimization to
    neural network hyperparameter tuning.

- **Bioinformatics Lab, Albert-Ludwigs Universitaet** — **Freiburg, Germany**
  Research Assistant — *03/2016 – 09/2016*

  – Improved algorithms for detecting expression patterns
    in genomes Galaxy Project.

Academic Service

- **Program Committee member**
    - *Conferences*: NeurIPS '20-'25; ICML '19-'23, '25; ICLR '20-'25; ECAI '20; ECCV '20; AAAI '20; AutoML-conf '24, AISTATS '25
    - *Journals*: Neurocomputing '19-'20; TPAMI '20, JMLR '23
    - *Workshops*: AutoML Workshop @ ICML '18-'20; Meta-Learn Workshop @ NeurIPS '19; NAS Workshop @ ICLR '20
- **Workshop and Challenge Organization**
    - Co-organizer of the Neural Architecture Search Workshop @ ICLR 2020 and 2021
    - Co-organizer of the ELLIS AutoML seminars together with Amazon AWS
    - Co-organizer of the Zero-Cost NAS Competition @ AutoML-Conf 2022

Selected Publications

1. **Arber Zela**, Thomas Elsken, Tonmoy Saikia, Yassine Marrakchi, Thomas Brox, Frank Hutter. Understanding and Robustifying Differentiable Architecture Search. In *International Conference on Learning Representations (ICLR), 2020.* **(Oral; Top 7% papers)**

2. Sheheryar Zaidi*, **Arber Zela***, Thomas Elsken, Chris Holmes, Frank Hutter, Yee Whye Teh. Neural Ensemble Search for Uncertainty Estimation and Dataset Shift. In *Advances in Neural Information Processing Systems (NeurIPS), 2021*

3. **Arber Zela***, Julien Siems*, Lucas Zimmer*, Jovita Lukasik, Margret Keuper, Frank Hutter. Surrogate NAS Benchmarks: Going Beyond the Limited Search Spaces of Tabular NAS Benchmarks. In *International Conference on Learning Representations (ICLR), 2022*

4. Rhea Sanjay Sukthanker*, **Arber Zela***, Benedikt Staffler, Samuel Dooley, Josif Grabocka, Frank Hutter. Multi-objective Differentiable Neural Architecture Search. In *International Conference on Learning Representations (ICLR), 2025*

5. Riccardo Grazzi*, Julien Siems*, **Arber Zela**, Jörg K. H. Franke, Frank Hutter, Massimiliano Pontil. Unlocking State-Tracking in Linear RNNs Through Negative Eigenvalues. In *International Conference on Learning Representations (ICLR), 2025.* **(Oral; Top 5.7% papers)**

Selected Talks

- *Multi-objective Differentiable Neural Architecture Search*. AutoML Seminars, Apr 2024.
- *Robust and Reproducible Neural Architecture Search*. Purdue University, IN, USA, Dec 2021.
- *Neural Ensemble Search for Uncertainty Estimation and Dataset Shift*. University of Oxford, Oxford, United Kingdom, Sep 2020.
- *Recent advances in Neural Architecture Search*. UBC, ICICS Computer Science, 2366 Main Mall, Vancouver, BC, Dec 2019. Video

Teaching

WS 2024/25	*Pruning and Efficiency in LLMs*, Uni Freiburg	Seminar
SS 2019-2024	*Deep Learning*, Uni Freiburg	Lab Course
WS 2023/24	*Deep Learning for Tabular Data*, Uni Freiburg	Seminar
SS 2019-2020	*Automated Machine Learning*, Uni Freiburg	Course
WS 2019/20	*Bayesian Optimization*, Uni Freiburg	Seminar
WS 2019/20	*Foundations of Deep Learning*, Uni Freiburg	Course

Supervision

2025	**Lyubomir Ivanov & Andrej Schwanke**, *Multi-objective Optimization via Large Language Models*	MSc Project
2024	**Aabhash Dhakal**, *ParetoPFN: In-Context Learning for Multi-objective Optimization on Tabular Data*	MSc Thesis
2023	**Guri Zebergja**, *Dirichlet Self-tuning Networks for Neural Architecture Search*	MSc Project
2022	**Arjun Krishnakumar**, *NAS-Bench-Suite-Zero: Accelerating Research on Zero Cost Proxies*	MSc Thesis
2020	**Ashwin Raaghav**, *Multi-head Differentiable Neural Ensemble Search*	MSc Thesis
2020	**Jin Woo Ahn**, *Neural Architecture Search for Video Classification*	MSc Thesis
2020	**Maciej Janowski & Ravin Kohli**, *Multi-multi-fidelity Optimization for Neural Architecture Search*	MSc Project
2020	**Julien Siems**, *NAS-Bench-301 and the Case for Surrogate Benchmarks for Neural Architecture Search*	MSc Thesis
2020	**Kai Haase & Philipp Mueller**, *Kidney Stone Segmentation using a 3D U-Net*	MSc Project
2019	**Thomas Nierhoff & Christopher Krolla**, *Meta-Learning for Image and Video Classification*	MSc Project
2019	**Jin Woo Ahn & Poojitha Ramachandra**, *Meta-Learning for Sound Classification*	MSc Project
2019	**Julien Siems**, *Towards Benchmarking and Dissecting One-shot Neural Architecture Search*	MSc Project
2019	**Lars Sipos**, *Learning the Trick: Generalized Planning with Deep Learning*	MSc Thesis

Software Libraries

- NASLib (creator and main contributor): `https://github.com/automl/NASLib`
- whittle (contributor): `https://github.com/whittle-org/whittle`

Languages

- English: C1
- German: B1
- Italian: A2
- Albanian: Native

Awards

- Best Poster Presentation Award, ACDL Summer School 2020, Siena, Italy.
- 1st place in Physics National Olympiad 2011, Albania.