Jan Sobotka

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EDUCATION

Swiss Federal Institute of Technology in Lausanne (EPFL)
Sep. 2024 – ongoing

M.S. in Computer Science
Lausanne, CH

- Weighted grade average: **5.89** (scale of 1.0 to 6.0, 6.0 is the best)
- Anticipated graduation date: 07/26

Czech Technical University, Faculty of Information Technology
July 2021 – July 2024

B.S. in Informatics, Specialization in Artificial Intelligence
Prague, CZ

- Weighted grade average: **1.05** (scale of 1.0 to 4.0, 1.0 is the best)
- Ranked among the **top 5%** of students in the majority of courses.

INDUSTRY EXPERIENCE

AI/ML Engineer Junior
June 2021 – June 2023

Generali Česká pojišťovna
Prague, CZ

- Prepared a machine learning pipeline that improved the accuracy of product recommendations by ∼**35%**.
- Built computing infrastructure for the company's internal data science community with over 90 members.
- Applied deep learning to product and text recommendation, client departure prediction, email classification, and unsupervised customer segmentation.

IT Generalist
Feb. 2020 – June 2021

Startup Disrupt
Prague, CZ

- Led the development of a web application for ticket sales.
- Deployed several websites and cloud services on AWS.
- Prepared IT setup for over 30 offline/online events.

RESEARCH EXPERIENCE

Research Assistant at the Autonomous Systems Group
July 2025 – Sep. 2025

University of Texas at Austin, Oden Institute for Computational Engineering and Sciences
Austin, US

- Interpretability and game-theoretic analysis of large language models in strategic games.
- Supervised by Prof. Ufuk Topcu.

Research Assistant at the MLBio Lab
Aug. 2024 – ongoing

Swiss Federal Institute of Technology in Lausanne (EPFL)
Lausanne, CH

- Improving multimodal foundation models on computer vision tasks through unsupervised in-context learning.
- Developing algorithms for robust out-of-distribution weak-to-strong generalization.
- Supervised by Prof. Maria Brbić.

Research Intern at the Computational Systems Neuroscience Group
Sep. 2023 – Aug. 2024

Faculty of Mathematics and Physics, Charles University
Prague, CZ

- Worked on deep learning-based decoding of neural activity for use in brain-machine interfaces.
- Bachelor thesis titled *Decoding visual stimuli from cortical activity using neural networks* [PDF 🔗].
- Supervised by Mgr. Ján Antolík, Ph.D.

Research Assistant at the Data Science Lab
Apr. 2023 – Feb. 2024

Faculty of Information Technology, Czech Technical University
Prague, CZ

- Investigated the inner workings and applicability of optimization methods known as *Learning-to-Optimize* (meta-learning) and *fractional gradient descent* in the context of deep learning.

Computational Neuroscience Research Intern
July 2023 – Sep. 2023

Biozentrum, University of Basel
Basel, CH

- Worked on the research project *Bistable Dendrites Matter: Auto-Associative Memory in Networks of Neurons* under the supervision of Dr. Everton Agnes.
- Designed computational models of spiking neural networks and analyzed the role of bistable dendrites in memory.

PUBLICATIONS

Jan Sobotka, Petr Šimánek, Pavel Kordík (2024).   Submitted
Enhancing Fractional Gradient Descent with Learned Optimizers.
Optimization Letters.

Jan Sobotka, Petr Šimánek, Daniel Vašata (2024).   DOI 🔗 | arXiv 🔗
Investigation into the Training Dynamics of Learned Optimizers.
*The 16th International Conference on Agents and Artificial Intelligence (**ICAART 2024**).*

Jan Sobotka, Petr Šimánek (2024).   DOI 🔗
Investigation into the Training Dynamics of Learned Optimizers (Student Abstract).
*The 38th Annual AAAI Conference on Artificial Intelligence (**AAAI-24**).*

SELECTED PROJECTS

Auxiliary Training Objectives in Reinforcement Learning   Sep. 2024 – ongoing
- Semester research project at the intersection of ML interpretability and reinforcement learning (RL).
- Investigating the impact of auxiliary training objectives on representations learned by recurrent neural networks serving as backbones for RL agents.

Deep Reinforcement Learning for Optimal Experimental Design in Biology   Jan. 2023 – June 2023
- Open research project focused on the efficient estimation of biological system parameters [OpenBioML 🔗].
- Implemented the TD3 RL algorithm and designed a pipeline for experiments on an HPC cluster.

Generative Models of Regulatory DNA Sequences Based on Diffusion Models   July 2022 – Dec. 2022
- Open research project investigating the application of diffusion models to genomics data [OpenBioML 🔗].
- Prepared data preprocessing and unit testing for the pipeline.
- Initiated experimental research focused on exploring the synergy between diffusion models and hypernetworks.

EXTRACURRICULAR ACTIVITIES

Participant of the ROBOT ICT Summer Academy   Aug. 2021 – Aug. 2021
- Acquired hands-on experience with Robotic Process Automation (RPA) development using UiPath.

Organizer of the Traion Community of Student Entrepreneurs   June 2020 – Feb. 2021
- Organized offline meetings, educational seminars, and workshops targeted at startups and entrepreneurship.

Volunteer for an Entrepreneurship Education Program for Students   Dec. 2019 – Aug. 2020
- Organized events and wrote a technology/entrepreneurship blog for the Soutěž and Podnikej organization.

Pitcher at the Czech Republic National Baseball Team U-15   Jan. 2017 – July 2017
- Secured third place at the U-15 European Baseball Championship 2017.

HONORS AND AWARDS

The Bakala Foundation Scholarship: Awarded to 12 out of 165 applicants | The Bakala Foundation 🔗 | 2024
Merit-Based Scholarship for Academic Achievements: Czech Technical University | 2021, 2022, 2023
National Benchmark Exam in Mathematics: Scored higher than 97% of the 875 test takers | SCIO 🔗 | 2021
Algorithms & Programming Competition FIKS: 4th out of 107 contestants | Czech Technical University | 2020
TOP25 Czech High School Students of the Year 2020: Selection based on extracurricular activities | 2020

SKILLS

Programming languages: Python, C, C++, Julia, JavaScript, Go
Other selected technologies: PyTorch, Scikit-learn, NumPy, Pandas, Matplotlib, Azure, AWS, Git, Docker, Bash
Languages: Czech (native speaker), English (C1, TOEFL iBT 107), German (A2)