

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: 08/26

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.
- Managed IT setup and support for over 30 offline and online events.

RESEARCH EXPERIENCE

Research Assistant at the Autonomous Systems Group

July 2025 – ongoing

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

Austin, US

- Analyzing large language models in strategy games using mechanistic interpretability and game theory.
- Supervised by Prof. Ufuk Topcu.

Research Assistant at the MLBio Lab

Aug. 2024 – July 2025

Swiss Federal Institute of Technology in Lausanne (EPFL)

Lausanne, CH

- Designed a framework to improve model robustness against distribution shifts by dynamically weighting an ensemble of weak supervisors, outperforming baselines by over 40% [2].
- Evaluated in-context learning capabilities of multimodal foundation models on computer vision tasks.
- 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

- Developed a state-of-the-art method for decoding high-fidelity images from neural population activity [1].
- 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

- Analyzed training dynamics of optimization methods known as *Learning-to-Optimize* (meta-learning) and *fractional gradient descent* [4, 5, 6].

Computational Neuroscience Research Intern

July 2023 – Sep. 2023

Biozentrum, University of Basel

Basel, CH



- Designed computational models of spiking neural networks and analyzed the role of bistable dendrites in memory (research project: *Bistable Dendrites Matter: Auto-Associative Memory in Networks of Neurons*).

PUBLICATIONS

* DENOTES EQUAL CONTRIBUTION

- [1] MEIcoder: Decoding Visual Stimuli from Neural Activity by Leveraging Most Exciting Inputs. Accepted
Jan Sobotka, Luca Baroni, Ján Antolík.
Neural Information Processing Systems (NeurIPS 2025).
- [2] Weak-to-Strong Generalization under Distribution Shifts. Accepted
Myeongho Jeon*, **Jan Sobotka***, Suhwan Choi*, Maria Brbic.
Neural Information Processing Systems (NeurIPS 2025).
- [3] Reverse-Engineering Memory in DreamerV3: From Sparse Representations to Functional Circuits. Accepted
Jan Sobotka, Auke Ijspeert, Guillaume Bellegarda.
Neural Information Processing Systems (NeurIPS 2025, Spotlight at MechInterp Workshop).
- [4] Enhancing Fractional Gradient Descent with Learned Optimizers. Submitted
Jan Sobotka, Petr Šimánek, Pavel Kordík.
Optimization Letters 2024.
- [5] Investigation into the Training Dynamics of Learned Optimizers. DOI  | arXiv 
Jan Sobotka, Petr Šimánek, Daniel Vašata.
International Conference on Agents and Artificial Intelligence (ICAART 2024).
- [6] Investigation into the Training Dynamics of Learned Optimizers (Student Abstract). DOI 
Jan Sobotka, Petr Šimánek.
AAAI Conference on Artificial Intelligence (AAAI-24).



SELECTED PROJECTS

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|---|-----------------------|
| Deep Reinforcement Learning for Optimal Experimental Design in Biology | Jan. 2023 – June 2023 |
| <ul style="list-style-type: none">• Open research project focused on efficient estimation of biological system parameters [OpenBioML ]. | |
| Generative Models of Regulatory DNA Sequences Based on Diffusion Models | July 2022 – Dec. 2022 |
| <ul style="list-style-type: none">• Open research project investigating the application of diffusion models to genomics data [OpenBioML ]. | |

EXTRACURRICULAR ACTIVITIES

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|---|-----------------------|
| Organizer of the Traion Community of Student Entrepreneurs | June 2020 – Feb. 2021 |
| <ul style="list-style-type: none">• Organized offline meetings, educational seminars, and workshops for student entrepreneurs. | |
| Volunteer for an Entrepreneurship Education Program for Students | Dec. 2019 – Aug. 2020 |
| <ul style="list-style-type: none">• 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 |
| <ul style="list-style-type: none">• 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 105), German (A2)