

Jan Sobotka

✉ jsobotka1188@gmail.com | 🏠 johnny1188.github.io | 🌐 Johnny1188

EDUCATION

- Swiss Federal Institute of Technology in Lausanne (EPFL)** Sep. 2024 – ongoing
M.S. in Computer Science Lausanne, CH
- 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.




WORK 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 approaches to various projects, including product and text recommendation, client departure prediction, email classification, and unsupervised customer segmentation.
- IT Generalist** Feb. 2020 – June 2021
Startup Disrupt Prague, CZ
- Deployed several websites and cloud services on AWS.
 - Led the development of a web application for ticket sales.
 - Prepared IT setup for over 30 offline/online events.
- Junior DevOps Intern** July 2020 – Sep. 2020
Cloudinfrastack Prague, CZ
- Built server-side applications in Golang.
 - Deployed custom automation services.




RESEARCH EXPERIENCE

- Research Scholar at the MLBio Lab** Aug. 2024 – ongoing
Swiss Federal Institute of Technology in Lausanne (EPFL) Lausanne, CH
- Analyzing and developing algorithms for robust weak-to-strong generalization of vision models.
 - Using reinforcement learning for discovery of gene markers and fine-grained classes in single-cell data.
 - 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* under the supervision of Mgr. Ján Antolík, Ph.D. and his Ph.D. student Luca Baroni.
- 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  | Preprint 
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

- 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.
- Reinforcement Learning with Deep Q-Learning (Highway Driver Environment)**  Jan. 2021 – Feb. 2021
 - Implemented deep Q-learning for autonomous driving in a self-made game environment.

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