Brian Pulfer

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Education

UNIGE - University of Geneva — Geneva, Switzerland
Ph.D. in Machine Learning Security — *Nov. 2021 – Nov. 2025*

USI - University of Southern Switzerland — Lugano, Switzerland
MSc in Artificial Intelligence (GPA 9.1/10) — *Aug. 2019 – Jun 2021*

SUPSI - University of Applied Sciences of Southern Switzerland — Manno, Switzerland
BSc in Computer Science (GPA 5.0/6) — *Aug. 2016 – Jun 2019*

Experience

Ph.D. Student in Machine Learning — November 2021 – November 2025
University of Geneva — *Geneva, Switzerland*

- Researching SSL vision models and relative robustness to adversarial attacks.
- Researched authentication methods for Copy Detection Patterns.
- Teaching Assistant for Algorithms and Data Structures courses.

Machine Learning Intern — July 2020 – August 2020
University of Southern Switzerland — *Lugano, Switzerland*

- Developed a tool for automatic collection and cleaning of a dataset through web crawling and heuristics.
- Applied state-of-the-art techniques for image classification, segmentation, and object detection.

Competitions & Hackathons

- Classified 3rd in the *NeurIPS Weather4cast Challenge 2022* by leveraging transformers for videos.
- USI Hackathon 2019, START Hack 2021, HackZürich 2022. Winner of HackZürich 2023.

Selected Publications

- *Robustness Tokens: Towards Adversarial Robustness of Transformers*
  18th European Conference on Computer Vision ECCV 2024
- *Mind the Gap! A Study on the Transferability of Virtual vs Physical-world Testing of Autonomous Driving Systems.*
  IEEE Transactions on Software Engineering
- *Model vs system level testing of autonomous driving systems: a replication and extension study.*
  Empirical Software Engineering.
- *Weather4cast at NeurIPS 2022: Super-Resolution Rain Movie Prediction under Spatio-temporal Shifts.*
  Proceedings of the NeurIPS 2022 Competitions Track (Vol. 220, pp. 292–313). PMLR.

Leadership & Awards

Hackathon Organizer — Nov. 2020 - Nov 2021

- Organizer of the first edition of the *Formula USI* Hackathon at the University of Southern Switzerland.

SODESKA Scholarship — April 2021

- Scholarship awarded on merit to students of the University of Southern Switzerland.

Technical Skills

Programming Languages: Python, C/C++, CUDA, JavaScript, Java
Frameworks: Pytorch, Pytorch-Lightning, Jax, Flax, Tinygrad
Developer Tools: Git, CI/CD, Linux, ssh, SLURM, pip, Anaconda, Docker, VSCode, pre-commit
Libraries: accelerate, albumentations, datasets, einops, scikit-learn, opencv-python, hydra, numpy, matplotlib, pandas, pre-commit, seaborn, timm, transformers, torchvision, wandb