

Adrián Sager La Ganga

Software Engineering



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• Machine Learning

• Applied Mathematics

EDUCATION

Master of Science, Computational Science & Engineering, EPFL, GPA: 5.57/6.00

Sep. 2020 — Feb. 2023

Bachelor of Science, Computer Engineering, Polytechnic University of Turin, Final grade: 110/110

Oct. 2017 — Jul. 2020

AWARDS & INTERESTS

- 2022**
 - Fellowship from the Swiss *National Centres of Competence in Research* to fund thesis on sustainability
 - IEEE Member after participating in *IEEEExtreme* programming competition
 - Participated in *LauzHack* 24h hackathon on a sustainable federated learning project
- 2021**
 - Selected as member of the EPFL Spacecraft team in the system software team
 - Participated in EPFL's Quantum Computing hackathon
- 2019**
 - European Innovation Academy*, Startup Summer Camp (~200 participants):
 - **Awards**: U.S. Provisional Patent from Nixon Peabody; *Top Team*; HAG Venture Accelerator award; 10-day Project and People Management Summer School
 - Selected as CTO in a team of 5 ideating and presenting a prototype for safer space travel, including an investor pitch
 - Member of Eta Kappa Nu (electrical engineering and computer science honor society)
- 2018**
 - Awarded *Like@Home* hackathon Reply prize: Innovate in 24h in a team of 5 using Google's Voice Kit
- 2017**
 - Scholarship *ToPolito* (**top 17** best performing international engineering students)
 - Young Talents Project (**top 5%** best performing engineering students)

WORK EXPERIENCE

IBM Master Thesis

IBM Research Zürich

Sep. 2022 — Jan. 2023

Zürich, Switzerland

- Apply NLP models to predict sustainable chemical reactions
- Proposed novel AI-based metrics employing uncertainty quantification (UQ) techniques
- Make toolkit with visualization and explainable AI utilities to interpret the predictions

System Engineer (Full-time Intern)

Beyond Gravity

Mar. 2022 — Sep. 2022

Zürich, Switzerland

- ExoMars rover simulation software for ESA contract (C++):
 - Analyzed accuracy of simulation with real testing of the rover's wheels
 - Improved accuracy of simulation with SOTA techniques
 - Implemented novel detection and filling of missing data in high-resolution Martian terrain
 - Achieved $> \times 3.0$ speedup with SIMD matrix operations and better code structure
 - Created pseudo-3D engine
 - Developed realistic visualization in a game engine (C#)

Data Scientist (Full-time Intern)

Dynatrace

Mar. 2020 — May. 2020

Austria

- Presented pipeline to introduce the 7-person team's research in production
- Created Python-to-Java guidelines to optimize Machine Learning algorithms, benchmarking 3 tensor libraries: NumPy, EJML, ND4J
- Designed best-practices for efficient Java code in the EJML tensor library

ACADEMIC PROJECTS

Analyze Performance Improvements of Asynchronous Cloud Microservices,

Advanced Multiprocessor Architecture course (EPFL)

github.com/cs471-MAA/grpc

Oct. 2021 — Jan. 2022

Computer Vision to stabilize video of a fly's neural activity , Ramdya Lab (EPFL)	Sep. 2021 — Jan. 2022
<ul style="list-style-type: none"> Proposed novel stochastic EMD unsupervised metric based on desired properties, proven convergence and conceptual accuracy Proposed 670% faster and 86% more accurate transform than baseline Trained UNet and Hypernetwork SOTA from literature with dynamic memory allocation on big dataset Achieved and analyzed $\times 1.4$ asymptotic speedup on non-linear transform baseline using GPU 	
github.com/Sager611/stabilize2p	
Develop Minimal Deep Learning Framework with Backprop , Deep Learning course (EPFL)	Apr. 2021 — Jun. 2021
Distributed Learning: Study of the most Efficient Topologies , Optimization for ML course (EPFL)	Apr. 2021 — Jun. 2021
github.com/eelismie/OptForML-Project	
Deep Learning to predict star properties , Laboratory of Astrophysics (EPFL)	Mar. 2021 — Jul. 2021
<ul style="list-style-type: none"> Trained a Denoising Autoencoder for interpolation of stellar spectra with secondary MLP tail for regression Augmented and cross-validated small 888-sample training set 20% better performance than literature by employing a Locally Connected Network with uncertainty estimation Formulated a well-documented and structured framework and entry script for research usage at the Lab Accepted contract to continue documenting framework in July 2021 	
Machine Learning to predict protein pair interactions , Machine Learning course (EPFL)	Nov. 2020 — Dec. 2020
<ul style="list-style-type: none"> Compared Siamese CNN to XGboost and MLP using Bayesian Optimization 	
github.com/maximocrv/ml_protein_interactions	
FPGA, CNN inference , Computer Architecture course (Polytechnic University of Turin)	Mar. 2019 — Jul. 2019
<ul style="list-style-type: none"> Programmed 6 CNN layers for inference in an FPGA: 2D Convolution, Max/Mean Pooling, and Sigmoid/ReLU/Tanh activations Engineered block design leveraging DMA for CPU-FPGA transmission 	
gitlab.com/adriansagerlaganga/pynq-cnn-caffe	

SKILLS

Python	<ul style="list-style-type: none"> Tensorflow/Keras PyTorch JupyterLab Scikit-learn SciPy Pandas OpenCV (cv2) Sphinx JAX (basic)
Programming	<ul style="list-style-type: none"> C/C++ CMake Assembly for debugging (GDB) CUDA OpenMP Java C# JavaScript HTML/CSS React & Redux (basic) Docker SQL MatLab OpenGL systemd
Teamwork	<ul style="list-style-type: none"> Agile Scrum JIRA Git
Multiprocessing (Academic)	<ul style="list-style-type: none"> Distributed Memory Datacenters GPU architecture ML Accelerators Cache Coherence Memory Consistency
Algorithms (Academic)	<ul style="list-style-type: none"> Linear Programming Greedy Streaming algos. Randomized algos. Spectral Graph Theory
Information Security (Academic)	<ul style="list-style-type: none"> Binary exploits Web App Vulnerabilities TLS Applied Cryptography Database Security Machine Learning and Privacy Blockchain and Decentralization

LANGUAGES

- English (fluent)
- Spanish (native)
- Italian (fluent)
- French (intermediate)