Nina Mogan **Mainusch**

Student · M.Sc. Data Science

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Education

École Polytechnique Fédérale de Lausanne — *Lausanne, Switzerland*

M.Sc. in Data Science, GPA: $5.2/6$ — *Sept. 2020 - Aug. 2022*

- Semester project in decentralized machine learning
- Selected classes: Applied data analysis, ANN, Data visualization, Deep learning, Information security, Machine learning, Optimization for ML

University of Osnabrück — *Osnabrück, Germany*

B.Sc. in Cognitive Science, grade 1.1 with distinction — *Oct. 2016 - April 2020*

- Study of thought, learning, and mental organization, drawing on aspects of artificial intelligence, machine learning, computer science, mathematics, computational neuroscience, neuropsychology, and philosophy of mind.
- Semester abroad in Portugal at the Universidade Nova de Lisboa, Faculdade de Ciências e Tecnologia from Aug. 2018 - Feb. 2019.
- Thesis: "On Benford's law - Computing a Bayes factor with the Savage-Dickey method to quantify conformance of numerical data to Benford's law", grade 1.0

Experience

PricewaterhouseCoopers International — *Düsseldorf, Germany*

Internship in (Forensic) Technology Solutions & Data Mining — *July 2021 - Sep. 2021*

- I supported PwC's advisory business line in a project in the area of sanctions and money laundering auditing for a large German financial services provider. I set up the development of a data processing pipeline for automatic character recognition in ID cards and passports using `python`.

Self-employed — *Online*

Mentor for Statistic related subjects — *Apr. 2020 - Apr.2021*

- I tutored students from different universities in introductory and advanced university courses. 95% of my students passed, 80% with a grade in the top 50% of their class.

University of Osnabrück — *Osnabrück, Germany*

Teaching assistant for several lectures — *Oct. 2017 - Mar. 2020*

- Lecture names: "Machine Learning", "Statistics and Data Analysis", "Neuroinformatics", "Computer Science 1: Algorithms", and "Introduction to Artificial Intelligence and Logic Programming".
- I helped students to understand the content of the lectures, held tutorials in front of up to 100 students, and designed exam questions.

Projects

Decentralized ML: Experiments on Topology and Privacy — *Lausanne, Switzerland*

CS-439 - Optimization for Machine Learning — *June 2021*

- Two colleagues and I contributed an empirical evaluation of the impact of topology and differential privacy on model convergence in a decentralized learning system, implemented in `python`. Our experiments show that sparse graphs perform well while more densely connected graphs learn slower as the number of nodes increases. https://github.com/Devrim-Celik/OptimML

Classification employing weight sharing and auxiliary losses with artificial neural networks — *Lausanne, Switzerland*

EE-559 Deep Learning — *December 2020*

- In a team of three students we tested different ANN architectures using `pytorch` with the task to compare two digits from the `MNIST` dataset. We show the impact of adding an auxiliary loss and weight sharing via implementing networks with a siamese structure, encountering that these siamese networks perform best. https://github.com/xavoliva/dl-projects/tree/main/Proj1

Skills & Achievements

Programming	Fluent: Python - R - LaTeX - Intermediate: Java - SQL - Excel - First Experience: HTML - CSS - Javascript - Spark
Languages	German - English - French (C1) - Spanish (B2) - Portuguese (B1) - Italian (A1) - Ancient Greek - Latin
Scholarships	Studienstiftung des Deutschen Volkes e.V. - DAAD German Academic Exchange Service - e-fellows.net
Awards	High School Excellence Award
Voluntary Work	Sailing Instructor (DHH e.V., since 2014) - Party member (Volt Europa, since 2019)
Interests	Bayesian Data Analysis - Computer Vision - Decentralized ML - Graph ML - Web development - News - History - Politics
Sports	Sailing - Climbing - Skiing - Yoga - Ballet - Chess