Maurice Frank
Machine learning researcher

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INTERESTS

I like to hunt creative solutions to challenging problems with the use of machine learning. I want my work to have a real positive impact on the world and I favour team-work with enthusiastic colleagues. My current academic interest lies in deep generative modelling and Bayesian methods, VAEs and Flows. I am especially intrigued by work on and applications to music and sound as well as an understanding of human perception. I have strong theoretical backgrounds on machine learning and a background in physics and mathematics.

EDUCATION

M.Sc. Artificial Intelligence
GPA 8.8/10 (est)
- Universiteit van Amsterdam — **2018 – 2020**

Research degree with most contemporary topics in AI/ML

- Theory and practical implementation of the concepts of machine and deep learning: CNNs, RNNs/LSTMs, VAEs/Flows, GANs, MCMC/sampling, Gaussian process/Bayesian modelling, ICA,
- Specialization in topics: Theoretical machine learning, Computer Vision, Reinforcement Learning, NLP, Information theory

Thesis: Investigating Bayesian methods for un- and semi-supervised music source separation. Do generative models know what they don't know? *Supervisor:* Maximilian Ilse (AMLab), Prof. Efstratios Gavves

B.Sc. Applied Computer Science
GPA 3.48/4
- University Heidelberg — **2014 – 2017**

General degree on all topics of Computer Science

- Specialization on image processing and pattern recognition: Deep Learning, 3D Computer vision, medical image analysis, fairness in AI
- Courses on Practical CS, Algorithms, DBMS, Theoretical informatics, Numerical methods and software engineering
- Minor in the basic concepts of Physics

Thesis: Using a FCN-ResNet based detector the thesis provides a reverse image search tool here in particular to retrieve art historic images containing an object given by a reference image. % **Read**
Supervisor: Dr Miguel Bautista Martin, Prof. Dr Björn Ommer

B.Sc. Physics
- University Heidelberg — **2013 – 2014**

Change of degree after the first year, kept as minor studies.

EXPERIENCE

Graduate Teaching Assistant
- Universiteit van Amsterdam — **01/2020 – 04/2020**

Assisting with the master level courses:

- Information Retrieval
- Fairness, Accountability, Confidentiality and Transparency in AI

Each teaching tutorial sessions, correcting course work and support students in finishing scientific work and writing.

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Python / PyTorch
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Internship — ML for production quality control
- **BMW Group, Munich** — **06/2019 – 08/2019**

Worked within the engine development department. Building statistical models to analyze engine part quality and live fleet monitoring. Building a production-ready data visualization app.

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Python / PySpark / Palantir Foundry / PostgreSQL / Dash / Agile
development
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Full-stack Web developer
- **Bürgerwerke eG, Heidelberg** — **04/2018 – 08/2018**

Ground-up development of a team communication and organization web portal in Ruby on Rails. Backend and Frontend work. Software engineering from planning the project until complete delivery.

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Rails / Ruby / Software Engineering
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Laboratory admin
- **Alfred-Weber-Institute, Heidelberg** — **09/2016 – 06/2017**

Administrator in a computer lab for Behavioral Economics experiments. Development of an experiment administration software.

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Ruby / Python
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Teaching Assistant
- **University Heidelberg** — **10/2015 – 02/2016**

Assisting with the Bachelor course *Practical Computer Science*. Teaching in self-prepared weekly tutorial session.

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C++ / C
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VOLUNTARY WORK

CO-Founder
- **Collegium Academicum, Heidelberg** — **06/2015–**

Student-founded non-profit company building sustainable student housing. We are building an innovative living space for 200 young people. Creating an educational center for holistic self-learning.

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team building / lead generation / design work / writing grant
applications
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SKILLS

- Excellent skills in machine learning engineering with Python: PyTorch, TensorFlow, Caffe, Pandas, SciPy, OpenCV, Scikit-Learn
- Excellent skills in using GNU/Linux systems: System administration, BASH, Perl, Git, Slurm
- Strong academic and technical writing skills as well as enthusiasm for writing useful tutorials (see blog)
- Strong skills in data visualization: Dash (plotly), D3, web technologies
- Engineering experience in working with: MATLAB, Java, C++, JavaScript

LANGUAGES

- **German** native
- **English** fluent (TOEFL 112/120)
- **Persian** *beginner*

PERSONAL INTERESTS

- Climbing
- Mountaineering
- Electronic music production