

# 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** *awarded cum laude* GPA 4/4  
📍 **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 unsupervised music source separation. Do generative models know what they don't know? 📖 **Read**  
*Supervisor:* Maximilian Ilse (AMLab)

**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.

Python / PyTorch

### Machine learning engineer – Intern

📍 **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.

Python / PySpark / Palantir Foundry / PostgreSQL / Dash / Agile development

### Full-stack web developer

📍 **Bürgerwerke eG, Heidelberg** 📅 01/2018 – 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.

Rails / Ruby / Software Engineering

### Laboratory software administrator

📍 **Alfred-Weber-Institute, Heidelberg** 📅 06/2016 – 06/2017

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

Ruby / Python / Windows

### Teaching Assistant

📍 **University Heidelberg** 📅 10/2015 – 02/2016

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

C++ / C

### 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.

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

### 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

**Dutch** beginner

### ACADEMIC REFERENCES

• Maximilian Ilse (AMLab):  
M.Ilse@uva.nl

• Dr Miguel Bautista Martin (Apple Inc):  
mbautistamartin@apple.com