

Martin Thoma

Curriculum Vitae

Work Experience

IT Consultant 2017

Working for Netlight Consulting GmbH

Building ML applications and other Data Science work; Interviewing. A lot of Python, sklearn / NumPy / SciPy, Keras (Tensorflow backend), XGBoost, Jupyter Notebooks, Pandas, pytest, Flask and nginx. Usually in teams using Scrum or Kanban and Jira / Confluence. Often Packaging, Docker, AWS S3, ECR / ECS, DynamoDB, Cloudwatch. Sometimes MySQL or SQLite. Of course, using git. Occasionally, Kafka, GraphQL, building REST APIs and Selenium were involved.

Student research assistant 2014

developing neural nets for on-line handwriting recognition

My bachelors thesis includes getting on-line data of handwritten mathematical symbols, preprocessing, extracting features and using neural nets to classify those symbols. The data was collected with write-math.com. All results are available there, too.

Software Developer 2013
improving KIT lecture translator

I've implemented and integrated an unsupervised acoustic model training framework into KIT lecture translator system for automatic model adaption.

Scientific lector 2013
L^AT_EX, German and computer science

I've corrected a script for computer engineering.

Tutor for programming 2012
teaching students programming at university

I taught people about 30 students how to program in Java. Coding conventions and basic OOP was part of the course. All of my German presentations are online. → presentations

Freelancer at KTC 2011
programming for a consulting company

At KTC, I gained first experiences with business-logic and a big, but algorithmically not challenging project. To be honest, I only fixed some Java bugs.

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Education

2014 – 2017 **Master of Science**
Computer Science
Thesis about **Analysis and Optimization of Convolutional Neural Network Architectures** ([Link](#))
Karlsruhe Institute of Technology

2011 – 2014 **Bachelor of Science**
Computer Science
Karlsruhe Institute of Technology (KIT)
Carnegie Mellon University (CMU)
Thesis about **On-line Recognition of Handwritten Mathematical Symbols** ([Link](#))

2004 – 2010 **Abitur**
Intensive course physics and mathematics
Paul-Klee-Gymnasium Gersthofen

Awards

2010 **Winner Bundeswettbewerb Informatik**
Federal Competition for Computer Science

2008 **1st prize**
data analysis competition at University of Augsburg

2007 **Prize for science and research**
FOCUS pupils competition

Technological Stack

Basics	JavaScript, jQuery, Linux, SQL, AWS (S3, EC2, ECR / ECS, Lambda, Sagemaker), PHP, GraphQL
Intermediate	L ^A T _E X, Java, HTML, CSS, SQLAlchemy, Docker, git, CI/CD pipelines, REST
Expert	Python and it's eco-system, including packaging, pytest, pre-commit, Flask, Numpy, SciPy, Pandas, Jupyter, OOP, Type Annotations, Pypika, ...

Language Skills

German mother tongue

English Cambridge Certificate – C1

Work Experience

2011
Student research assistant at Institute of Toxicology and Genetics, KIT
participating in a university research project

In summer 2011 I worked for over a month for a research project at KIT. I have written bash scripts for file conversions, fixed some bugs and re-written a slow Mathematica script in a much faster Python version. But it quickly turned out that this project had a lot of C++ source which was rarely commented or documented. I realized, that I wouldn't have time for this project after beginning my studies at university.

since 2011

Freelance Work
building an online service

I have started to work as a freelancer at the beginning of 2011. I have developed an online-service which helped schools to coordinate their dates. I have sold this online service to two schools in bavaria and three other schools were interested. Unfortunately, the ministry of education of Bavaria released an application with similar functionality in 2012. This was the reason why I decided to shut down my service.

since 2006

HackIts, Puzzles and Challenges
ProjectEuler, bright-shadows.net and many more

I like solving logical, algorithmical or math puzzles and participated in competitions. I started to solve puzzles in 2006 and I still like them. This was the reason why I participated in a practical course at KIT for preparation for ICPC. It was fun, but I found out that many people are much faster in producing C++ code that passed the tests than I am. However, as I've been very successful at the Federal Competition for Computer Science ("Bundeswettbewerb Informatik") it seems as if I'm better in problem solving if I get more time to think about it.

About me

I love learning new stuff and giving that knowledge to others, often in the form of blog posts. Besides my studies, I have built a machine learning students group called *Machine Learning Karlsruhe* (ml-ka.de). In this group we organized regular „Paper Discussion Groups“ in which we talked about papers about convolutional networks.

Besides that, I love playing board games and bouldering.

Projects

- 02/2016 **The WiLI benchmark dataset**
written language identification → read more
- 02/2016 **A Survey of Semantic Segmentation**
writing a review paper about the work in the area → read more
- 01/2016 **Creativity in Machine Learning**
a little project to help people understand my fascination about the topic → read more
- 05/2015 **Semantic Segmentation with CNNs**
classifying street for self-driving cars
- 11/2013 **Book about Geometry and Topology**
writing an introduction to geometry and topology → read more
- 06/2013 **Interpolation**
creating an interactive HTML5/JS-example for interpolation → read more
- 06/2012 **Matrix multiplication**
examining algorithms and libraries for matrix multiplication → read more
- 09/2011 **Blogging on martin-thoma.com**
about Algorithms, the Web, University, ...
- 06/2011 **Community Chess**
This is a platform for programmers. They can use the API to create A.I.s that play chess against each other. → read more

Online Courses

- 09/2013 **Artificial Intelligence for Robotics** Udacity
finished 10/2013
- 06/2013 **Introduction to Artificial Intelligence** Udacity
finished 08/2013
- 05/2012 **Algorithms I** Stanford
finished 07/2012
- 06/2010 **Introduction to Computer Science and Programming** MIT
finished 09/2010

Profiles

- StackExchange careers.stackoverflow.com/thoma
- arXiv arxiv.org/a/thoma_m_1
- LinkedIn linkedin.com/in/martin-thoma